

Prepared for
Department of Defence Directorate of
PFAS Remediation (DPFASR),
Environment and Engineering (EE) Branch
ABN: 68706814312

AECOM

Annual Interpretive Report 2021

PFAS OMP - RAAF Base Edinburgh

18-Oct-2023
PFAS Ongoing Monitoring Plan
Doc No. 60612651_EDN_RP_2021InterpRpt_A_20220214

Annual Interpretive Report 2021

PFAS OMP - RAAF Base Edinburgh

Client: Department of Defence Directorate of PFAS Remediation (DPFASR), Environment and Engineering (EE) Branch

ABN: 68706814312

Prepared by

,

18-Oct-2023

Job No.: 60612561

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 and ISO45001.

Quality Information

Document Annual Interpretive Report 2021

Ref 60612561

Date 18-Oct-2023

Prepared by [REDACTED]

Reviewed by [REDACTED]

Revision History

Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
0	18-Oct-2023	Final	[REDACTED] Project Manager	[REDACTED]

Table of Contents

Executive Summary	v
Abbreviations and acronyms	1
1.0 Introduction	3
1.1 Purpose and Objectives	3
1.2 Scope	3
2.0 Site Setting	4
2.1 Site Description	4
2.2 Management Area	5
2.3 Source Areas	6
3.0 Sampling, Analytical Scope and Methodology	7
3.1 Sampling and Analysis Methodology	7
3.2 Summary of OMP Works 2021	7
3.3 Deviations from the SAQP	8
3.4 Changes to the Monitoring Network	9
4.0 Quality Assurance and Quality Control	10
5.0 Assessment Criteria	11
6.0 Contextual and Ancillary Information	12
6.1 Remediation Projects	12
6.2 Infrastructure Projects	12
6.3 Climate	13
7.0 Monitoring Data Summary	15
7.1 Groundwater	15
7.1.1 Background locations PFAS analytical results	15
7.1.2 Source area P4 PFAS analytical results	18
7.1.3 Source areas P9 and P15A/B, P11, P16 and P21 PFAS analytical results	22
7.1.4 Source areas P1, P3A, P3B and P27 PFAS analytical results	27
7.1.5 Southern, western and northern boundary PFAS analytical results	31
7.1.6 Helps Road Drain PFAS analytical results	37
7.1.7 Off-Base lateral extent of PFAS analytical results	41
7.1.8 Proximity to identified licensed groundwater users and private bore PFAS analytical results	45
7.1.9 Tertiary aquifer bores PFAS analytical results	48
7.1.10 Summary of PFAS in groundwater 2020 and 2021	51
7.1.11 Groundwater non-PFAS analytical results	52
7.1.12 Groundwater Elevations	53
7.1.13 Groundwater field parameters measurements	57
7.2 Surface Water	59
7.2.1 Upgradient (on- and off-Base) surface water PFAS results	59
7.2.2 On-Base surface water PFAS results	61
7.2.3 Helps Road Drain (off-Base) surface water PFAS results	62
7.2.4 Kaurna Park Wetland (off-Base) surface water PFAS results	64
7.2.5 Summary of PFAS in surface water 2020 and 2021	66
7.2.6 Surface water non-PFAS analytical results	67
7.2.7 Surface water field parameters measurements	68
8.0 Interpretive Analysis	69
8.1 Groundwater	69
8.1.1 On-Base Groundwater	69
8.1.2 Off-Base Groundwater	71
8.2 Surface Water	72
8.2.1 On-Base Surface Water	72
8.2.2 Off-Base Surface Water	72
9.0 Conceptual Site Model	74
10.0 Discussion	76
10.1 Risk Profile	76

10.2	Assessment of current OMP	77
11.0	Conclusion	79
12.0	References	80
Appendix A		
	Figures	A
Appendix B		
	Analytical Tables	B
Appendix C		
	Factual Reports	C
Appendix D		
	SAQP	D
Appendix E		
	Mann-Kendall Analysis	E
Appendix F		
	Groundwater Elevations and PFAS Concentrations	F
Appendix G		
	Registered Groundwater Bore Search	G

List of Figures

Figure 1	RAAF Base Edinburgh PFAS Management Area and Base Boundary	5
Figure 2	Rainfall data 2017-2021 and Mean Monthly Rainfall for Edinburgh RAAF Base (Station 023083) (BOM, 2021)	14
Figure 3	Monthly Mean Maximum Temperature 2017-2021 and Long-term Mean (Station 023083) (BOM, 2021)	14
Figure 4	Background sample locations. MW4011 was destroyed and replaced by MW4218.	17
Figure 5	Q1 monitoring wells PFHxS+PFOS concentration trends at background locations. Historical results for destroyed well MW4011 have been incorporated into replacement location MW4218 results.	18
Figure 6	Q2 monitoring wells PFHxS+PFOS concentration trends at background locations	18
Figure 7	Source area P4 sampled locations	20
Figure 8	Q1 monitoring wells PFHxS+PFOS concentration trends at source area P4. Logarithmic scale on the y-axis for display purposes	21
Figure 9	Q2 monitoring wells PFHxS+PFOS concentration trends at source area P4	21
Figure 10	Sampled locations in P9, P15A/B, P11, P16 and P21	25
Figure 11	Q1 monitoring wells PFHxS+PFOS concentration trends at source areas P9 and P15A/B, P11, P16 and P21 (below 1000 µg/L)	26
Figure 12	Q1 and Q2 monitoring wells PFHxS+PFOS concentration trends at source areas P9 and P15A/B, P11, P16 and P21 (above 1000 µg/L)*	26
Figure 13	Q2, Q3 and Q4 monitoring wells PFHxS+PFOS concentration trends at source areas P9 and P15A/B, P11, P16 and P21 (below 1000 µg/L)*	27
Figure 14	P1, P3A, P3B and P27 sampled locations	29
Figure 15	Q1 monitoring wells PFHxS+PFOS concentration trends at source areas P1, P3A, P3B and P27 (below 200 µg/L)*	30
Figure 16	Q1 monitoring wells PFHxS+PFOS concentration trends at source areas P1, P3A, P3B and P27 (above 200 µg/L)	30
Figure 17	Q2 monitoring wells PFHxS+PFOS concentration trends at source areas P1, P3A, P3B and P27*	31
Figure 18	Southern, western and northern boundary sampled locations	34
Figure 19	Southern boundary PFHxS+PFOS concentration trends*	35
Figure 20	Western boundary PFHxS+PFOS concentration trends (below 3 µg/L)*	35
Figure 21	Western boundary PFHxS+PFOS concentration trends (above 3 µg/L)	36
Figure 22	Northern boundary PFHxS+PFOS concentration trends	36

Figure 23	Helps road drain sampled locations	39
Figure 24	Q1 monitoring wells PFHxS+PFOS concentration trends at Helps Road Drain	40
Figure 25	Q2 monitoring wells PFHxS+PFOS concentration trends at Helps Road Drain*	40
Figure 26	Q3 and Q4 monitoring wells PFHxS+PFOS concentration trends at Helps Road Drain	41
Figure 27	Off-Base lateral extent sampled locations	44
Figure 28	Monitoring locations characterising the lateral extent of PFHxS+PFOS concentration trends. * Includes MW4063 (replaced location) results. Only results above the laboratory LOR are shown.	45
Figure 29	Sampled locations with proximity to identified licensed groundwater users	47
Figure 30	Q1 and Q2 monitoring locations with proximity to identified groundwater users PFHxS+PFOS concentration trends	48
Figure 31	Q3 and Q4 monitoring locations with proximity to identified groundwater users PFHxS+PFOS concentration trends	48
Figure 32	Sampled locations of T1 aquifer bores	50
Figure 33	Hydrograph for Q1 on-Base gauging locations	54
Figure 34	Hydrograph for Q1 on-Base gauging locations	54
Figure 35	Hydrograph for Q1 off-Base gauging locations	55
Figure 36	Hydrograph for Q2 on-Base gauging locations	55
Figure 37	Hydrograph for Q2 off-Base gauging locations	56
Figure 38	Hydrograph for on- and off-Base Q3 gauging locations	56
Figure 39	Hydrograph for on- and off-Base Q4 gauging location	57
Figure 40	Upgradient surface water locations PFHxS+PFOS concentration trends	60
Figure 41	On-Base surface water PFHxS+PFOS concentration trends	62
Figure 42	Helps Road Drain (off-Base) surface water PFHxS+PFOS concentration trends	64
Figure 43	Kaurna Park Wetlands surface water PFHxS+PFOS concentration trends	65

List of Tables

Table 1	Site Setting and CSM Summary	4
Table 2	Summary of Sampling and Analysis Methodology	7
Table 3	Summary of deviations from the SAQP	8
Table 4	Summary of Adopted Screening Criteria: Human Health	11
Table 5	Summary of Adopted Screening Criteria: Ecological	11
Table 6	Background locations on- and off-Base PFAS Summary Results (µg/L)	16
Table 7	Source area P4 PFAS Summary Results (µg/L)	19
Table 8	Source areas P9 and P15A/B, P11, P16 and P21 PFAS Summary Results (µg/L)	22
Table 9	Source areas P1, P3A, P3B and P27 PFAS Summary Results (µg/L)	28
Table 10	Southern, western and northern boundary PFAS Summary Results (µg/L)	32
Table 11	Helps Road Drain PFAS Summary Results (µg/L)	38
Table 12	Lateral extent of PFAS Summary Results (µg/L)	41
Table 13	Proximity to identified licensed groundwater users and private bore PFAS Summary Results (µg/L)	46
Table 14	Tertiary aquifer bores PFAS Summary Results (µg/L)	49
Table 15	Summary of PFOS, PFOA and sum of PFOS and PFHxS concentrations in groundwater	51
Table 16	Groundwater field parameter ranges (min – max)	57
Table 17	Upgradient surface water PFAS Summary Results (µg/L)	60
Table 18	On-Base surface water PFAS Summary Results (µg/L)	61
Table 19	Helps Road Drain (off-Base) PFAS Summary Results (µg/L)	62
Table 20	Kaurna Park Wetland (off-Base) PFAS Summary Results (µg/L)	65
Table 21	Summary of PFOS, PFOA and sum of PFOS and PFHxS concentrations in surface water	66
Table 22	Surface water field parameter ranges for the 2020 and 2021 monitoring rounds (minimum to maximum)	68
Table 23	Mann-Kendall analysis for on-Base locations	69
Table 24	Off-Base Mann-Kendall analysis results	71
Table 25	Summary of conceptual site model source-pathway-receptor linkages	74

Table 26	Summary of PMAP triggers and OMP results	77
----------	--	----

Executive Summary

Introduction

AECOM Australia Pty Ltd (AECOM) was engaged by the Department of Defence (Defence) to carry out the Per- and Poly-Fluoroalkyl Substances (PFAS) Ongoing Monitoring Plan (OMP) outlined in the PFAS Management Area Plan (PMAP) (Defence, 2019)¹ at the Royal Australian Air Force (RAAF) Base Edinburgh (the Base), located in South Australia (SA). The OMP and PMAP can be accessed at the RAAF Base Edinburgh PFAS management webpage¹.

The OMP outlines the rationale and scope for the monitoring of the concentrations and extent of PFAS in groundwater (water beneath the earth's surface) and surface water (water that collects on the ground) originating from the Base. The monitoring program includes biannual monitoring events. During this monitoring period samples were taken in January/February 2021 (summer) and July/August 2021 (winter). Sampling under these different seasonal conditions provides a better understanding of the movement and concentrations of PFAS in the environment.

The OMP was undertaken within the RAAF Base Edinburgh Management Area (Management Area), as shown in Figure 1 and **Figure A1.1 of Appendix A**. The Management Area covers the Base and selected off-Base areas, including Kaurna Park Wetland and the Helps Road Drain network. Groundwater and surface water is being monitored at these locations (both on and off-Base) as part of the OMP.

Within the Management Area there were 12 locations identified as PFAS source areas that represent a source of PFAS contamination. These areas are listed in **Section 2.3** and shown in **Figure A1.3 of Appendix A**.

Objectives

The OMP provides information on changes in the location and concentrations of PFAS in groundwater and surface water within the Management Area. The collected data is used to assist risk management decisions by Defence to protect human health and the environment, and assess the effectiveness of on-Base remedial actions.

Monitoring Scope

AECOM completed monitoring of groundwater and surface water during the OMP monitoring period of January 2021 through August 2021 in general accordance with the sampling and analysis quality plan (SAQP) developed by AECOM (2021c, 2020b). The monitoring targeted PFAS analytical testing at 105 groundwater wells and 21 surface water locations on-Base and in surrounding off-Base areas.

Interpretive Analysis

Data collected during the monitoring period was compared to historical data that has been collected since 2017 at the OMP sampling locations.

Groundwater Results

Groundwater Flow Direction

Groundwater results indicated that groundwater generally flows to the south-west across the Base, consistent with historical data. Groundwater elevations appeared to show minor differences between seasons at most monitoring locations (higher in winter, lower in summer); however, have generally remained stable over time.

PFAS Concentrations

PFAS concentrations in groundwater were generally consistent or lower in this monitoring period (2021)

What is an 'order of magnitude'?

This refers to something decreasing or increasing by multiples of ten. For instance, an increase from 10 to 100 is an order of magnitude increase. When assessing changes in PFAS concentrations at an individual location, all concentrations are considered when determining trends, but order of magnitude changes are discussed separately as they represent a significant change in concentrations from what was reported in the previous event.

If a change is close to established health or environmental criteria, it will also be considered significant.

¹ Available at <https://www.defence.gov.au/about/locations-property/pfas/pfas-management-sites/raaf-base-edinburgh>

compared to the previous period (2020). This suggests that the overall PFAS plume size is unchanged. The groundwater monitoring results support the current management actions within the PMAP.

The following was observed:

- The highest concentrations of PFAS in groundwater within the monitoring network are associated with PFAS source areas on-Base (specifically source area P11: current fire station and former AFFF concentrate storage area). Whereas PFAS concentrations at off-Base locations were generally lower than those observed on-Base. These findings are consistent with modelling of the identified PFAS plume.
- Based on groundwater results, PFAS concentrations at on-Base locations near source areas are potentially increasing, and PFAS concentrations at off-Base locations are potentially decreasing. Observed increases in PFAS concentrations near source areas may be due to PFAS migrating to groundwater at higher rates corresponding with groundwater interacting with shallow PFAS impacted soils, and increased surface water infiltration from high precipitation during the 2019 and 2021 wet seasons. Additionally, the cause of decreasing PFAS concentration trends observed at off-Base locations has not been identified. Additional monitoring may determine if increased PFAS concentrations near source areas will eventually result in increased PFAS concentrations downgradient in off-Base areas.
- Exceedances of the PFAS NEMP Human Health Drinking Water guideline value for PFAS reported at 18 off-Base locations were generally consistent in order of magnitude and location with historical exceedances. No new exceedances of the adopted criteria were reported for groundwater sampling locations off-Base in 2021. No first-time detections of PFAS in groundwater were reported during the OMP monitoring round.

Surface Water Results

PFAS concentrations in surface water were generally consistent with historical results. This suggests that the understanding of PFAS migration via surface water is unchanged and the results support the current management actions within the PMAP.

The following was observed:

- PFAS concentrations reported at on-Base and off-Base locations were below the PFAS NEMP Recreational Water Quality guideline values for PFAS.
- A new exceedance of the PFAS NEMP Freshwater 95% Species Protection guideline for PFAS was reported at one on-Base surface water location (SW017) in February 2021.
- PFAS concentrations reported at off-Base locations were below the PFAS NEMP Freshwater 95% Species Protection guideline value for PFAS.
- First-time detections of PFAS above the laboratory limited of reporting (LOR) were reported at one on-Base location (SW018) and at two off-Base locations (SW012 and SW059).

What is a 'limit of reporting'?

The limit of reporting (LOR) is the lowest concentration level that the laboratory is able to measure in a sample with a reasonable degree of certainty. Where monitoring shows <LOR, it means that if PFAS is present in the sample it is too low for the laboratory to measure with any degree of certainty.

CSM and Risk Profile

The conceptual site model (CSM) was reviewed in light of the new monitoring data collected in the monitoring period, and no changes were identified to sources of PFAS contamination, transport pathways or potential receptors at the Base or within the Management Area to change the risk profile, as described in the 2019 PMAP¹.

Increased PFAS concentrations observed within some groundwater wells suggests that the changes are generally limited to some source areas, and therefore there is no evidence that the CSM and risk profile have changed as a result. Monitoring continues at these locations, and this will be re-assessed in the 2022 Ongoing Monitoring Interpretive Report (OMR).

Conclusions

The following conclusions are based on the data collected during the monitoring period:

- The results for the monitoring period indicate that the nature and extent of PFAS in groundwater and surface water are consistent with previous findings.
- The CSM was reviewed, and based on the results presented within this report, no changes were identified to source, pathway or receptors at the Base or within the Management Area.
- Based on the data collected during the monitoring period, no changes to the risk profile were identified.
- The sampling conducted over the monitoring period is considered to have met the objectives of the SAQP and the OMP.
- The monitoring network satisfies the OMP requirements for the program.
- Ongoing monitoring of PFAS concentrations in groundwater and surface water will continue to inform the OMP, identifying potential PFAS migration and any associated changes to the risk profile.

Abbreviations and acronyms

Abbreviation	Term
AECOM	AECOM Australia Pty Ltd
AFFF	aqueous film forming foam
ARFF	Aviation Rescue Fire Fighting
AHD	Australian Height Datum
ALS	ALS Environmental
ADWG	Australian Drinking Water Guidelines
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure 1999
BOM	Bureau of Meteorology
CSM	conceptual site model
Defence	Department of Defence
DENR	Department of Environment and Natural Resource
DO	dissolved oxygen
DoH	Department of Health
DSI	Detailed Site Investigation
EC	electrical conductivity
EPA	Environment Protection Agency
FSANZ	Food Standards Australia New Zealand
GAC	granulated activated carbon
TDI	tolerable daily intake
HEPA	Heads of Environment Protection Authority
HHRA	Human Health Risk Assessment
LOR	limit of reporting
ML	megalitre
MW	monitoring well
NEMP	National environmental management plan
NEPM	National environment protection measure
NHMRC	National Health and Medical Research Council
NATA	National Association of Testing Authorities
NSW	New South Wales
NMI	National Measurement Institute
OLA	ordnance loading area
OMP	Ongoing Monitoring Plan
ORP	oxidation reduction potential
PFAS	per- and poly-fluoroalkyl substances

Abbreviation	Term
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PFHxS	perfluorohexanesulfonic acid
PMAP	PFAS Management Area Plan
QA/QC	quality assurance and quality control
Q1	first Quaternary aquifer
Q2	second Quaternary aquifer
Q3	third Quaternary aquifer
Q4	fourth Quaternary aquifer
RAAF	Royal Australian Air Force
RAP	Remediation Action Plan
SA	South Australia
SAQP	Sampling and Analysis Quality Plan
STP	sewage treatment plant
SW	surface water
T1	first Tertiary aquifer
TSS	total suspended solids
WTP	Water treatment plant
µg/L	micrograms per litre
g	grams
km	kilometre
L	litre
m	metre

1.0 Introduction

AECOM Australia Pty Ltd (AECOM) was engaged by the Department of Defence (Defence) to implement the Ongoing Monitoring Plan (OMP) for monitoring of per- and poly-fluoroalkyl substances (PFAS) at RAAF Base Edinburgh (the Base), South Australia (SA).

The monitoring targeted PFAS and included selected locations on-Base and in surrounding off-Base areas, including the RAAF Edinburgh Management Area which includes the Groundwater and Surface Water Management Areas (herein referred to as the Management Area) as identified in the PFAS Management Area Plan (PMAP).

This report has been prepared in accordance with the Defence (2021) *OMP Annual Interpretive Report Guidance*. PFAS Investigation and Management Branch. Version 0.3, November 2021.

1.1 Purpose and Objectives

The objective of the OMP is to continue to assess changes in the nature and extent of PFAS within the environment, where Defence's historical use of legacy Aqueous Film Forming Foam (AFFF) has led to an identified potentially elevated risk to a receptor, or potential future risk to a receptor.

Assessing changes in the distribution, concentration, and transport (pathways and flow rates) of the contaminants against appropriate guideline values provides:

- an evidence base for targeted and effective risk management decision making to protect human health and environmental receptors; and
- an early warning that additional management of PFAS contamination may be warranted in areas not currently understood to be affected by PFAS.

The monitoring data will be evaluated to assess environmental variability and trends in PFAS concentrations and changes to the known risk profile, and to inform recommendations to review the OMP and PMAP, if warranted.

1.2 Scope

The scope of works for this interpretive report included assessing changes to the distribution of PFAS during the OMP monitoring period of January 2021 through August 2021 compared to historical data and associated changes to the conceptual site model (CSM) and the risk profile with respect to PFAS impacts at the Base. This included the evaluation of data reported in the following factual reports, as well as other data provided by Defence and ancillary external data sources:

- RAAF Base Edinburgh – Sampling Event Factual Report – January and February 2021 (AECOM, 2021a).
- RAAF Base Edinburgh – Sampling Event Factual Report – July and August 2021 (AECOM, 2021b).
- Ancillary external data sources including meteorological data (see **Section 6.3**).

To complete this scope of work AECOM completed groundwater and surface water monitoring between January 2021 and August 2021. Sampling was undertaken in general accordance with the Sampling and Analysis Quality Plans (SAQP) for the summer sampling event (AECOM, 2021c) and the winter sampling event (AECOM, 2020b), **Appendix D**. The reporting period for this AIR is from January 2021 to August 2021, capturing the results for the duration of sampling program at the time of reporting.

2.0 Site Setting

2.1 Site Description

The following summarises the Base identification and setting presented in the PFAS Management Area Plan (PMAP) (Defence, 2019).

Table 1 Site Setting and CSM Summary

Element	Description
Site ID	RAAF Base Edinburgh, property number 0939
Regional Climate	The annual climate of the surrounding Adelaide region is characterised by a generally dry and hot summer season between December and March and a mild winter season with moderate rainfall between May and August. Adelaide has an annual average rainfall of 526.7 mm (BOM, 2021).
Topography, geology and hydrogeology	<p>The Base is generally flat and low-lying with some minor undulations. Elevations range between 11 and 29 metres Australian Height Datum (mAHD).</p> <p>The hydrogeologic units underlying the Base include the following lithologies:</p> <ul style="list-style-type: none"> Quaternary units (Q1, Q2, and Q3): The Pooraka Formation, a sandy clay and clayey to sandy silt with interbeds and layers of clay, sand, gravel, pebbles, cobbles and boulders that generally extends to a depth of approximately 6 m to 8 m, generally overlying the Hindmarsh Clay, a fluvatile and alluvial clay and silt unit with interbedded sands and gravels in outwash areas that extends to a maximum depth of approximately 100 m. Comprised of up to three semi-confined aquifers. Quaternary unit (Q4): Carisbrooke Sand; Fluvatile, alluvial fine sands and silts with some clay and thin gravel beds in outwash areas and is the deepest Quaternary unit. This unit is a confined aquifer with possible hydraulic connection with the T1 aquifer in some areas. Tertiary units (T1): Hallett Cove Sandstone, Dry Creek Sand and Croydon Facies - limestone, calcareous sandstone and sand of marine deposition and usually abundantly fossiliferous; and the underlying Port Willunga Formation (upper) a fossiliferous sandy limestone with sands and sandstones. This unit is a confined aquifer. <p>The Quaternary aquifers are complex due to the interconnection of individual lenses and layers of gravels, sands, clays, and silts. This presents a complex 3-dimensional groundwater flow regime where the mechanisms of contaminant transport are likely to be defined by preferential flow paths through more permeable materials and retardation of contaminant migration through less permeable materials (JBS&G, 2018)</p>
Groundwater depth and flow	Groundwater generally flows from the north east to the south west and conforms with the major surface water drainage network on the Base.
Surface Water	The surface water drainage system on RAAF Base Edinburgh includes lined and unlined stormwater drainage channels. The major drainage network includes the major unlined open drain, the Helps Road Drain.
Current and Previous land use	<p>The Base was compulsorily acquired in 1940 to build a munitions factory; prior to this the land was used for agricultural purposes. The construction of the RAAF Base commenced in 1953. The Base is bound in all directions by Heaslip Road, Womma Road, West Avenue and Edinburgh Road.</p> <p>Current surrounding land uses detailed in the PMAP are summarised as:</p> <ul style="list-style-type: none"> North: Childcare facility located within 200 m of the Base. Industrial, agricultural and recreational land uses. Low-density residential to the north east.

Element	Description
	<ul style="list-style-type: none"> • East: Industrial, residential and commercial properties including Defence Science and Technology Group (DSTG) to the south east. • South: Agricultural (primary production), industrial, commercial and residential properties with some designated open spaces (e.g. Kaurna Park Wetland) • West: Agricultural (Primary Production) and industrial (Urban Employment) land uses are located to the west of the Base, with some low-density residential land use.

2.2 Management Area

The location of the Site and the Management Area as defined by the PMAP (Defence 2019) is shown in **Figure 1** (below) and **Figure A1.1 (Appendix A)**. The Management Area covers all of the Base (groundwater and surface water) and a limited area off-Base, which includes groundwater and surface water at the Kaurna Park Wetland and the Helps Road Drain network.

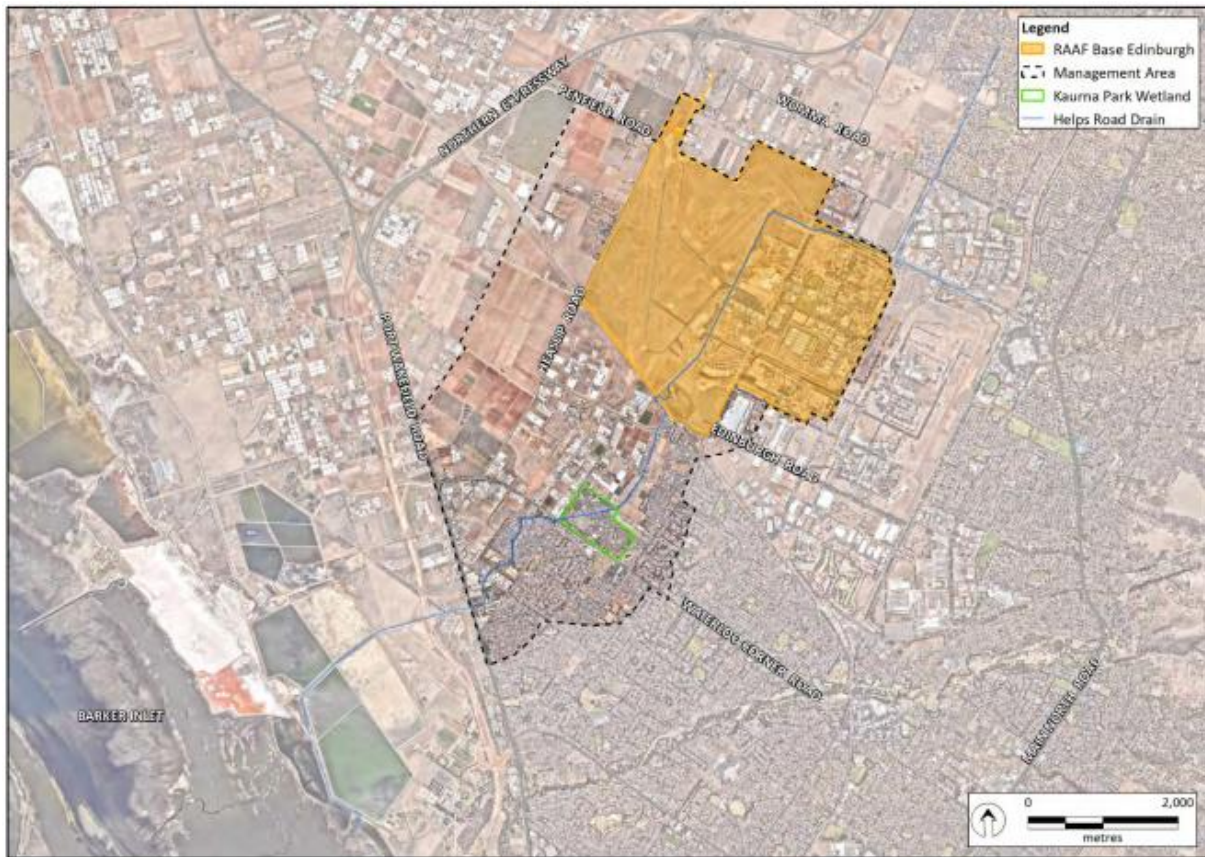


Figure 1 RAAF Base Edinburgh PFAS Management Area and Base Boundary

2.3 Source Areas

The PMAP (Defence 2019) identified 12 locations as PFAS source areas that represent a significant source of PFAS contamination; these areas are listed below and shown in **Figure A1.3 (Appendix A)**:

- P1: AFFF wastewater retention tank and AFFF wastewater evaporation pond. PFAS presence in sediment, soil, concrete and groundwater.
- P2: The Base's bulk fuel storage facility including an automated AFFF deluge system. PFAS presence in soil and groundwater.
- P3A and P3B: AFFF wastewater retention infrastructure, the Chesterfield Stumps, at the eastern and western end of the aircraft hangars. PFAS presence in groundwater.
- P4: Former fire training area and sub-surface waste dump in the northern portion of the airside operations area. PFAS presence in soil and groundwater.
- P8: Sub-surface waste dump at the central portion of the western Base boundary. PFAS presence in groundwater.
- P9: Current fire training area located in the southern portion of the airside operations area. PFAS presence in soil, concrete and groundwater.
- P10: Former sewage treatment plant (STP) and fire training area in the southern portion of the airside operations area and adjacent to the Helps Road Drain discharge point. PFAS presence in soil and groundwater.
- P11: Current fire station and former AFFF concentrate storage area. PFAS presence in soil, concrete and groundwater.
- P15A and P15B: Former fire training area in the Ordinance Unloading Area. PFAS presence in soil and groundwater.
- P16: Former fire training area around the Engine Run-up facility. PFAS presence in soil and groundwater.
- P23: Location of a historical train and semi-trailer crash at the corner of the western and south-western boundaries. PFAS presence in groundwater.
- P27: Suspected former fire training area. PFAS presence in soil and groundwater.

3.0 Sampling, Analytical Scope and Methodology

3.1 Sampling and Analysis Methodology

The sampling and analysis methodology is presented in the SAQP (AECOM, 2021c, AECOM, 2020b) (**Appendix D**) and is summarised in **Table 2**.

Table 2 Summary of Sampling and Analysis Methodology

Item	Description
Groundwater and Surface Water Methodology	
Groundwater gauging	Where possible, the depth to groundwater was measured in each monitoring well using an interface probe immediately prior to collection of groundwater samples.
Field parameters	Temperature, electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (ORP), pH and observations of water quality were recorded for all groundwater and surface water samples collected.
Sample Collection	<p>Groundwater samples were collected from accessible monitoring wells using no-purge methodology HydraSleeves™, which were installed within the screened interval of the wells for a minimum of 24 hours prior to the sampling round. This was based on a review of the well construction log. Once sampling was completed, new HydraSleeves™ were deployed at the screened interval depth in preparation for the next sampling round. Following sample collection, field parameters were recorded ex-situ.</p> <p>Surface water samples were collected from approximately 0.1 metres below the water surface to minimise collection of sediment or floating materials in the samples. At each location, a new, laboratory supplied container was lowered into the water, using an aluminium sampling pole, with the cap immediately applied once the container was full.</p>
QA/QC Samples Collected	Field QA/QC samples include intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits), rinsate samples and field blank samples.
Sample Analysis	<p>Samples were submitted to the primary and secondary laboratories.</p> <p>ALS Environmental (Melbourne, Victoria) was used as the primary laboratory. The National Measurement Institute (NMI) of Sydney, New South Wales was used as the secondary laboratory. ALS Environmental and NMI are accredited by the National Association of Testing Authorities (NATA) for the methods employed.</p>

3.2 Summary of OMP Works 2021

A more detailed summary of the monitoring works implemented as part of the SAQP (AECOM, 2021c, AECOM, 2020b), **Appendix D**, between January and August 2021 is presented in the subsections below and changes in monitoring network are summarised in **Section 3.4**.

- Monitoring works undertaken in January/February 2021 comprised of:
 - Sampling of groundwater at 105 monitoring wells
 - Gauging of 18 monitoring wells
 - Sampling of surface water at 20 locations in February 2021
 - Analysis of all samples for the extended PFAS suite
 - Analysis of 20% of samples for additional geochemical parameters in January/February 2021 only (AECOM, 2020b).
- Monitoring works undertaken in July/August 2021 comprised of:
 - Sampling of groundwater at 102 monitoring wells in July/August 2021.

- Gauging of 18 monitoring wells
- Sampling of surface water at 20 locations August 2021
- Analysis of all samples for the extended PFAS suite

3.3 Deviations from the SAQP

Deviations from the SAQP in field monitoring events completed between January and August 2021 are summarised below in **Table 3** and presented in full in the factual reports (AECOM, 2021a, AECOM, 2021b).

Table 3 Summary of deviations from the SAQP

Monitoring Rounds	Media	Deviation	Impact on data set and interpretations in the OMP
January and February 2021	Groundwater	All monitoring wells and bores were accessible and able to be sampled with the exception of the following: <ul style="list-style-type: none"> • Field parameters were not obtained at MW2188 due to an insufficient water column; however, a sample was obtained from this location. • Field parameters were not obtained at MW2180 due to a field transcription error. 	No impact. Sufficient data from previous monitoring events is available to supplement interpretations for field parameters for these locations. All locations are to remain part of the sampling network for future monitoring rounds.
	Surface water	All surface water sampling locations were accessible or able to be sampled with the exception of the following: <ul style="list-style-type: none"> • SW037 was dry and was not sampled. 	No impact. Sampling location SW037 has routinely been reported as dry in previous monitoring events. Available analytical and field data from previous monitoring events will be used to supplement interpretations for this location.
July and August 2021	Groundwater	All monitoring wells and bores were accessible and able to be sampled with the exception of the following: <ul style="list-style-type: none"> • MW4027, MW4061 and MW4076 were not accessed due to being submerged in pooled surface water. 	Minimal impact. Sufficient data from previous monitoring events is available to supplement interpretations for these locations. Data collected for nearby sampling locations that represent the same aquifer and purpose (as outlined in Section 7.0) are also available for

Monitoring Rounds	Media	Deviation	Impact on data set and interpretations in the OMP
			interpretation of the broader site conditions.
		Off-base tertiary aquifer bore location names were updated to be compliant with Annex L of the Defence Contamination Management Manual (DCMM; Department of Defence, 2019a). The corresponding location names are the following: MW20327 updated to MW4220 MW21322 updated to MW4221 MW22767 updated to MW4222 MW15586 updated to MW4223	No impact, naming updated across the program.
	Surface water	All surface water sampling locations were accessible or able to be sampled with the exception of the following: <ul style="list-style-type: none"> SW037 had insufficient water for sampling. 	No impact. Sampling location SW037 has routinely been reported as dry in previous monitoring events. Available analytical and field data from previous monitoring events will be used to supplement interpretations for this location.
	Groundwater and surface water	Defence notified the AECOM project management team via email on 27th January 2021 that “all future OMP sampling events across all sites, the inclusion of non-PFAS analysis will need to be justified in advance and agreed by Defence Tech Policy through review of the SAQP”.	No impact. SAQP updated and sampling of additional non-PFAS analytes ceased.

3.4 Changes to the Monitoring Network

The following summarises the factual report (AECOM, 2021a; AECOM, 2021b) observations on the condition of the monitoring well network. The monitoring well network was generally in good condition and no changes to the network were made in 2021.

4.0 Quality Assurance and Quality Control

Data validation completed as part of the 2021 monitoring events (AECOM, 2021a and AECOM, 2021b) is included in both reports (**Appendix C**). Specific data quality issues identified are summarised below.

Data validation procedures employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results and overall quality of the analytical data produced is acceptably reliable for the purpose of the factual and annual interpretive reports.

January and February 2021

Groundwater

- The potential exists for 10:2 FTS and PFPeS to be under reported in batches EM2100517 and EM2100359, this potential for under reporting should be taken into consideration when using data quantitatively.
 - These analytes are not utilised quantitatively for the purposes of reporting.
- The potential exists for 10:2 FTS in batch EM2100359 to be over reported and should be taken into consideration when using data quantitatively.
 - This analyte is not utilised quantitatively for the purposes of reporting.
- The potential exists for PFBA to be bias low in laboratory batch EM2100359. The potential for under reporting should be taken into consideration when using results quantitatively.
 - This analyte is not utilised quantitatively for the purposes of reporting.
- The potential exists for PFAS in samples 0939_QC110_210114 (batch EM2100517) and 0939_MW2116_210112 (batch EM2100359) to be under reported. This apparent lack of accuracy should be taken into consideration when interpreting concentrations for PFAS close to guidelines.
 - Samples reported in these batches were generally reported within the historical range.
- Elevated RPDs for PFBA, FOSA or TSS should be taken into consideration when using the data quantitatively.
 - These analytes are not utilised quantitatively for the purposes of reporting.
- Elevated RPDs for PFPeS, PFHpS, PFHpA, PFBA, PFDS, FOSA, PFOS, PFHxA, 6:2 FTS, ionic balance, potassium, TSS, calcium and magnesium should be taken into consideration when using the data quantitatively.
 - These analytes are not utilised quantitatively for the purposes of reporting.

Surface water

- pH and TDS were analysed outside of holding times, under reporting should be taken into consideration when using data quantitatively.
 - pH and TDS are applicable to surface water and were reported within the expected range for all locations.

July to August 2021

Groundwater and surface water

- Elevated RPDs for FOSA associated with batch EM21126269, PFBS associated with batch RN1327474 and PFDS associated with batch RN1328532 should be taken into consideration when interpreting data quantitatively.
 - These analytes are not utilised quantitatively for the purposes of reporting.
- Elevated RPDs should be taken into consideration where PFOA and PFHxS+PFOS are reported close to guidelines in batches EM2115885 and EM2116269.
 - Samples reported in these batches were generally reported within the historical range.
- PFAS analytes PFBA, MeFOSA, EtFOSA, EtFOSE, PFHpS, PFBA, PFTTrDA, FOSA, MeFOSA, EtFOSA, MeFOSE, EtFOSE, 10:2 FTS for matrix spike recoveries were reported outside of control limits and have the potential to be bias low.
 - These analytes are not utilised quantitatively for the purposes of reporting.
- PFAS analytes PFBA, MeFOSA, EtFOSA, EtFOSE, PFHpS, PFBA, PFTTrDA, FOSA, MeFOSA, EtFOSA, MeFOSE, EtFOSE, 10:2 FTS for matrix spike recoveries were reported outside of control limits and have the potential to be bias low.
 - These analytes are not utilised quantitatively for the purposes of reporting.
- Surrogate spike recoveries were reported outside of control limits for PFAS surrogate 13C4-PFOS in batch EM2116269 and have the potential to be bias low. This apparent lack of accuracy should be taken into consideration where PFHxS+PFOS is reported close to guidelines.
 - Samples reported in this batch were generally reported within historical ranges.

5.0 Assessment Criteria

At the time of preparing this report, a number of guidance documents were available in Australia including:

- National Health and Medical Research Council (NHMRC) 2019. Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water.
- Heads of the Environmental Protection Authority (HEPA) 2020. PFAS National Environmental Management Plan (NEMP) Version 2.
- Department of Health (DoH), 2019. Health Based Guidance Values for PFAS for use in site investigations in Australia. September 2019.
- Food Standards Australia New Zealand (FSANZ) 2017, Perfluorinated Chemicals in Food

The PFAS screening criteria adopted to assess the data are presented in **Table 4** and **Table 5** and are based on the HEPA 2020, DoH 2019 and NHMRC 2019.

Table 4 Summary of Adopted Screening Criteria: Human Health

Pathway	Compound	Criteria	Comment / Reference
Drinking water	PFHxS+PFOS	0.07 µg/L	The values presented in the PFAS NEMP, 2020 are from DoH 2019, which published final health-based guidance values for PFAS for use in site investigations in Australia.
	PFOA	0.56 µg/L	
Recreational use*	PFHxS+PFOS	2 µg/L	The values presented in the PFAS NEMP, 2020 are from NHMRC 2019, which published final health-based guidance values for PFAS for use in site investigations in Australia.
	PFOA	10 µg/L	

PFHxS+PFOS: Perfluorooctanesulfonic acid and Perfluorohexanesulfonic acid

PFOA: Perfluorooctanoic acid

* Criteria adopted for surface water only

Table 5 Summary of Adopted Screening Criteria: Ecological

Pathway	Compound	Criteria	Comment / Reference
Freshwater (surface water)	PFOS	0.13 µg/L	HEPA (2020) NEMP 95% species protection
	PFOA	220 µg/L	HEPA (2020) NEMP 95% species protection

6.0 Contextual and Ancillary Information

Events occurring within the Management Area and other factors with the potential to have affected monitoring results over the period of reporting are discussed below.

6.1 Remediation Projects

Remediation projects at the Base include the Ventia PFAS soil treatment project, which commenced in 2018 and the Enviropacific Services Pty Ltd groundwater treatment plant for the removal of PFAS in extracted groundwater, which has been operating since mid-August 2019. Soil and groundwater Remediation Action Plans (RAP) targeting the major PFAS source areas of the Base were finalised in August 2021 and have been endorsed by the Site Auditor.

The Enviropacific groundwater treatment works includes a series of extraction wells installed in the Q2 aquifer located within the P9 source area which extract groundwater for removal of PFAS in the water treatment plant (WTP). Flow rates typically observed from extraction of the Q2 aquifer range from 0.5 and 0.75 litres per second since commissioning in August 2019, with water being treated successfully against performance criteria prior to reinjection into the Q2 aquifer in the vicinity of the WTP.

Sampling locations included in the OMP within the P9 source area (MW2148 (Q1), MW2158 (Q2), MW2284 (Q3) and MW2272 (Q4)) were investigated by AECOM in 2020 (AECOM, 2020a) as part of an assessment of potential WTP impacts to groundwater. The findings of the investigation indicated that there was insufficient data to conclude whether the WTP was having a material impact on PFAS concentrations in the Q1 and Q2 aquifers in the extraction area, although concentrations appeared stable (AECOM, 2020a). Concentrations in the deeper Q3 and Q4 aquifer appeared to increase initially during operation of the WTP although declined again over a one-year cycle (AECOM, 2020a). It is noted that the quaternary groundwater formations are clayey in nature with low hydraulic conductivity and yield. Future works for the WTP include the installation of additional extraction wells and the extraction and treatment of groundwater targeting source areas P3B, P11 and P27, which are scheduled to commence in 2022.

Soil remediation works target the excavation and treatment of the upper 0.5 m of soil from defined extents within source areas P4, P9, P10, P11, P15A/B and P16. Remedial works under the RAP for soil include soil washing and immobilising PFAS in soils with the addition of granulated activated carbon (GAC) prior to reinstatement in excavations with a GCL base liner and transport of highly contaminated materials off-Base for thermal destruction. Upon the decommissioning of the soil treatment plant in May 2022, soil remediation works will only include the stabilisation of PFAS in soils with GAC. Soil remediation works are expected to be completed by the end of 2022.

The overall aim of the soil remediation works is to reduce the mobilisation of PFAS from on-Base impacted soils to surface water and groundwater and the objective of groundwater remediation works is to achieve mass removal of PFAS in groundwater. Samples obtained within or adjacent to these remediation projects may exhibit decreasing PFAS trends over time depending on the efficacy of the remediation works. Therefore, the remediation works within these source areas should be taken into consideration when interpreting PFAS concentrations trends for sampling locations within or adjacent to these areas.

The statistical trends for groundwater data collected to date within the vicinity of the WTP and soil remediation area in P9 are discussed further in **Section 8.1.1**.

6.2 Infrastructure Projects

Development works at the Base have included a number of facility developments. AECOM is not aware of any ongoing practices or recent incidents which are likely to influence the nature or extent of PFAS at the Base.

6.3 Climate

The 2021 monitoring period for the PFAS OMP monitoring events (AECOM, 2021a, AECOM, 2021b), was characterised by generally dry conditions.

Monthly rainfall was generally reported below the long-term average between February 2018 and August 2021 with exceptions in May and June 2019, February, April and October 2020 and January, June and July 2021 (**Figure 2**). Mean monthly maximum temperatures were generally consistent with the long-term mean for the period between 2018 and 2021 (**Figure 3**) (BOM, 2021).

Climatic conditions over a period of years may result in changes to the hydrogeological system and manifest in a number of outcomes relevant to the monitoring of PFAS at RAAF Edinburgh and surrounds. When compared to historical data, changes may include groundwater gradients, groundwater flow directions and PFAS characteristics in drainage networks.

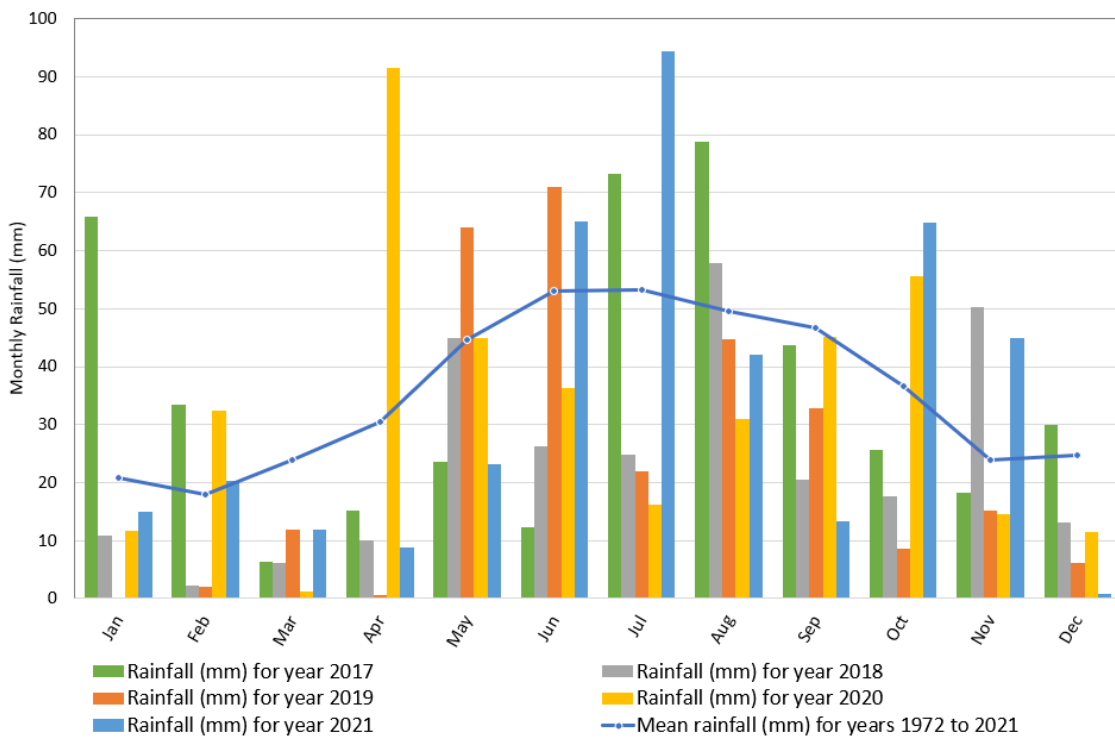


Figure 2 Rainfall data 2017-2021 and Mean Monthly Rainfall for Edinburgh RAAF Base (Station 023083) (BOM, 2021)

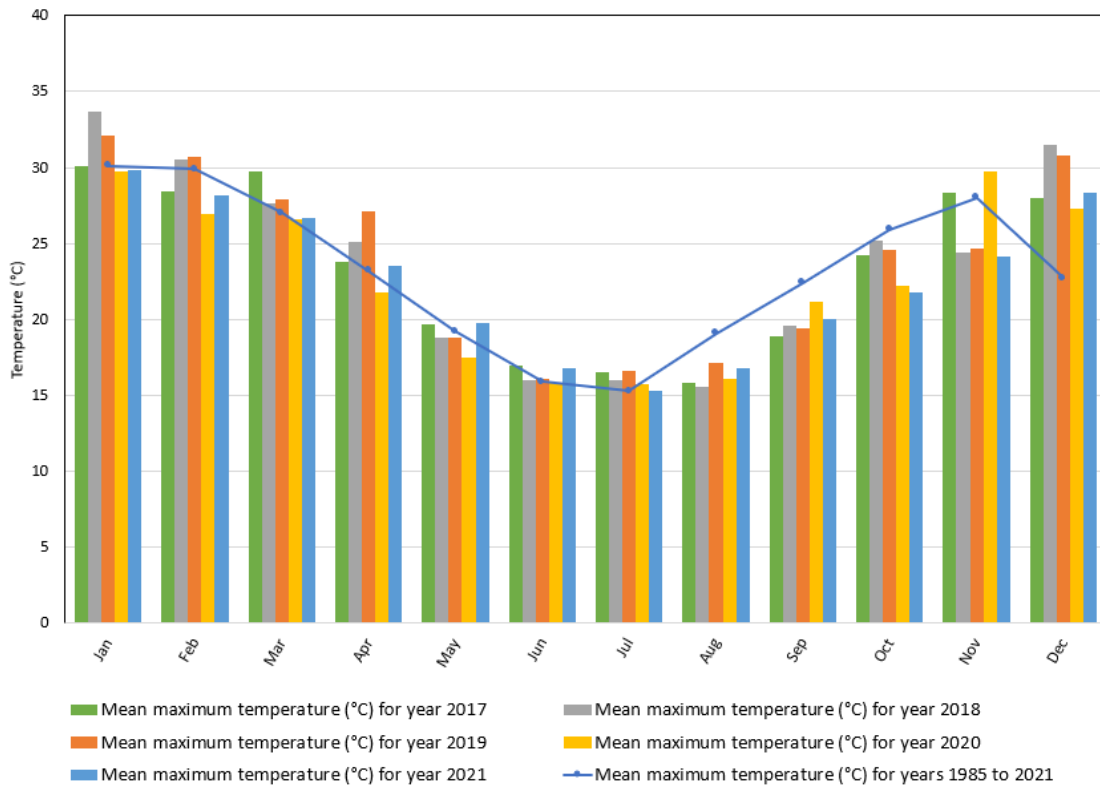


Figure 3 Monthly Mean Maximum Temperature 2017-2021 and Long-term Mean (Station 023083) (BOM, 2021)

7.0 Monitoring Data Summary

7.1 Groundwater

Groundwater information is presented as follows:

- Analytical results are presented in **Table T1 (Appendix B)** and monitoring activities are summarised in OMP Factual Reports provided in **Appendix C**.
- Analytical results are summarised in **Sections 7.1.1 to 7.1.10**.
- Groundwater elevation data is summarised in **Section 7.1.11**.
- Groundwater field parameters are summarised in **Section 7.1.12**.
- Monitoring locations are presented in **Figure A2 (Appendix A)**, concentration maps are presented in **Figure A4.1 and A4.2 (Appendix A)** and locations with potential increasing trends, as identified by Mann-Kendall statistical analysis, are presented in **Figure A4.3**.

7.1.1 Background locations PFAS analytical results

Monitoring wells both on- and off-Base in the north and eastern portion of the Base are located to measure PFAS concentrations to represent the background conditions of groundwater in the Q1 and Q2 aquifers. A summary of the well locations follows:

- MW2325 (Q1), MW2134 (Q1), and MW2218 (Q2) located on-Base closest to the eastern boundary;
- MW2135 (Q1), MW2159 (Q1) and MW2216 (Q2) located on-Base and closest to the northern boundary;
- MW4218 (Q1) located off-Base and north east of the Base on Stebonheath Road.

All concentrations were below the laboratory limit of reporting (LOR) for PFHxS+PFOS for the 2021 monitoring rounds, with the exception of MW2218 (Q2) and MW2134 (Q1) located close to the eastern boundary. Detections of PFHxS+PFOS were reported at MW2134 (Q1) and MW2218 (Q2) in both the summer and winter 2021 monitoring rounds. PFHxS+PFOS concentrations reported in 2021 were within the historical range for these locations. The PFAS NEMP 2020 Human Health Drinking Water guideline (0.07 µg/L) was exceeded at MW2218 in both 2021 monitoring rounds.

Concentrations of PFOA were reported below the laboratory LOR in 2021 for background locations, with the exception of results reported in August 2021 at MW2218 (Q2). It is noted that these results did not exceed the PFAS NEMP 2020 Human Health Drinking Water guideline (0.56µg/L) and were within the historical range.

It is noted that concentrations of PFHxS+PFOS and PFOA were generally reported at lower concentrations in 2021 than in 2020 for the respective summer and winter monitoring rounds.

Analytical results are summarised in **Table 6**, the location of each background well sampled is displayed in **Figure 4** and PFHxS+PFOS trends are illustrated in **Figure 5** and **Figure 6**. For graphical purposes where concentrations are reported below the LOR, the concentrations are represented as half the LOR (i.e. 0.005 µg/L).

Table 6 Background locations on- and off-Base PFAS Summary Results (µg/L)

Well ID	Analyte	Historical Range 2017-2019		OMP Monitoring			
		Min	Max	March 2020	July 2020	January/February 2021	July/August 2021
MW2134 (Q1)	PFOS+ PFHxS	0.03	0.05	0.44	0.08	0.05	0.04
	PFOA	ND	ND	ND	ND	ND	ND
MW2135 (Q1)	PFHxS+PFOS	ND	ND	0.03	0.01	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
MW2159 (Q1)	PFHxS+PFOS PFHxS+PFOS	0.02	0.03	0.02	0.42	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
MW2216 (Q2)	PFHxS+PFOS	ND	ND	0.03	ND	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
MW2218 (Q2)	PFHxS+PFOS	ND	ND	5.08	3.18	0.98	1.25
	PFOA	ND	ND	0.10	0.06	ND	0.01
MW2325 (Q1)	PFHxS+PFOS	ND	0.03	0.29	ND	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
MW4218 (Q1)	PFHxS+PFOS	ND*	ND*	NA	ND	ND	ND
	PFOA	ND*	ND*	NA	ND	ND	ND

Bold denotes exceedance of PFAS NEMP (2020) drinking water guideline (0.07 µg/L for PFHxS+PFOS and 0.56 µg/L for PFOA)

ND = Not detected above laboratory limits of reporting

NA = Not analysed

* Historical values adopted from destroyed monitoring location MW4011

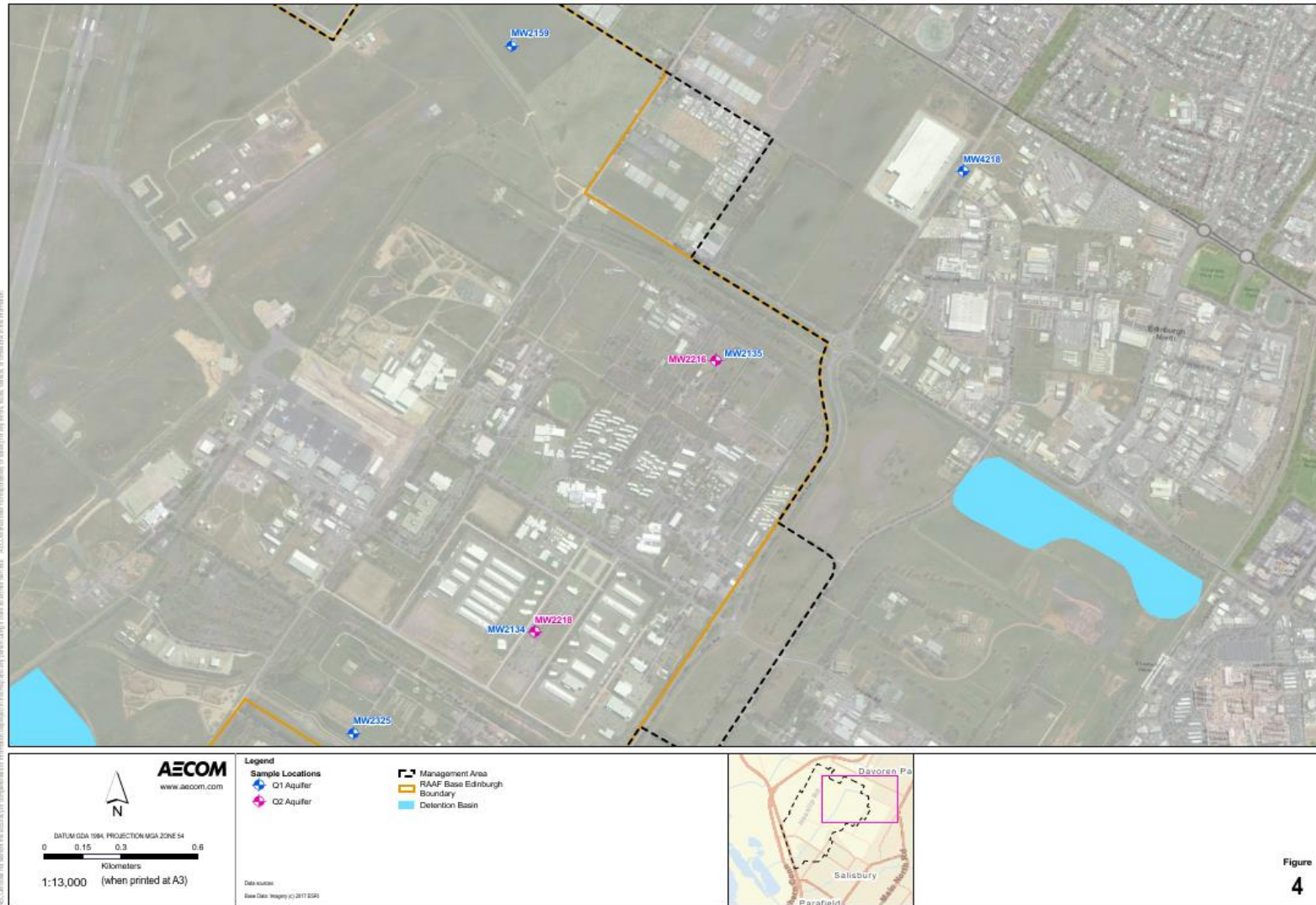


Figure 4

Figure 4 Background sample locations. MW4011 was destroyed and replaced by MW4218.

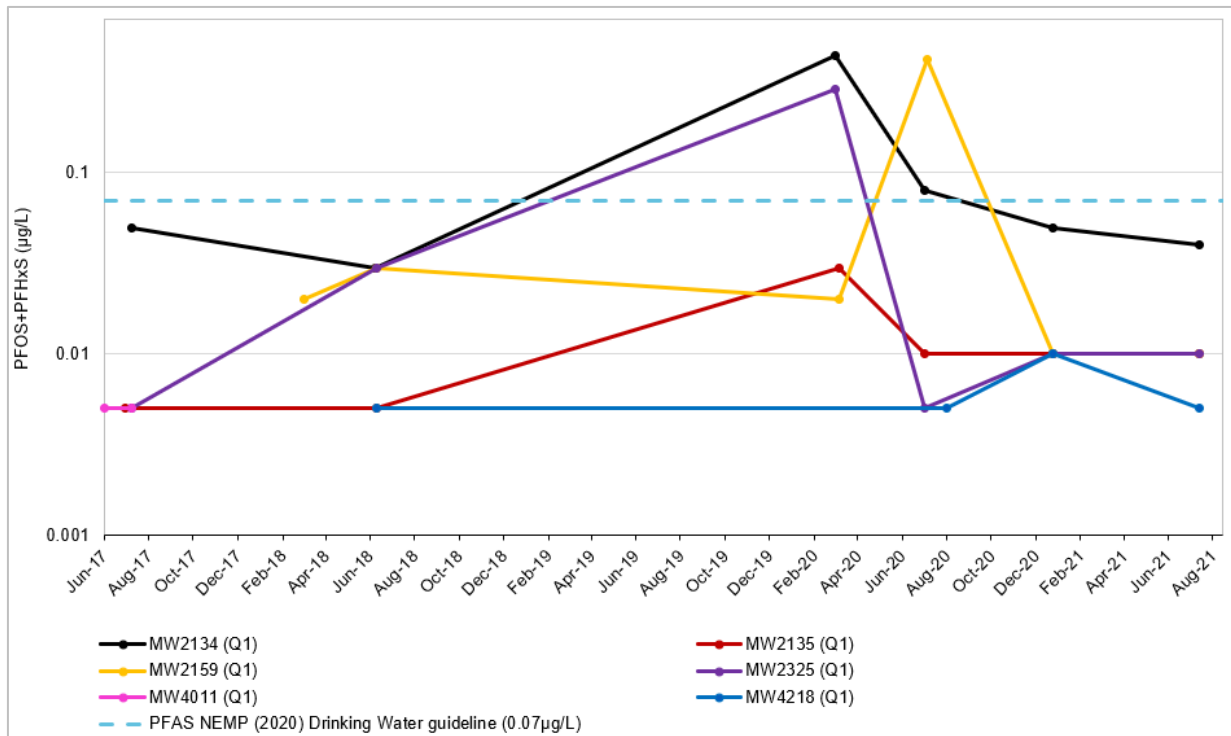


Figure 5 Q1 monitoring wells PFHxS+PFOS concentration trends at background locations. Historical results for destroyed well MW4011 have been incorporated into replacement location MW4218 results.

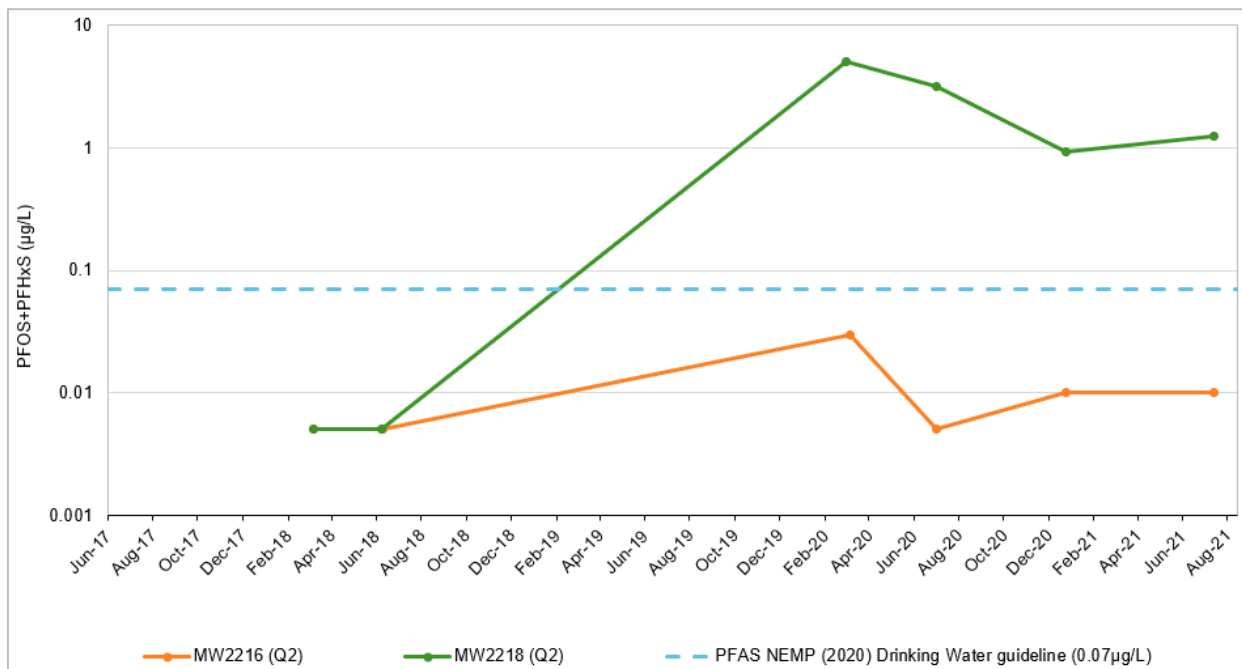


Figure 6 Q2 monitoring wells PFHxS+PFOS concentration trends at background locations

7.1.2 Source area P4 PFAS analytical results

Selected on-Base monitoring wells in the airside operations area were sampled to measure PFAS concentrations relating to the source area P4, the former fire training ground and sub-surface waste dump. The locations include:

- Q1 monitoring wells: MW2358, MW2411 and MW2394; and
- Q2 monitoring wells: MW2126 and MW2162.

All concentrations of PFHxS+PFOS were reported above the laboratory LOR in both monitoring rounds in 2021 and exceeded the PFAS NEMP 2020 Human Health Drinking Water guideline (0.07 µg/L), with the exception of MW2394 (Q1) which was reported above the laboratory LOR but below the guideline in January 2021. These results are consistent with historical exceedances of the adopted guideline.

PFOA results were reported above the laboratory LOR at all locations, with the exception of MW2394 (Q1) in both the summer and winter 2021 monitoring rounds. Concentrations of PFOA exceeded the PFAS NEMP 2020 Human Health Drinking Water guideline (0.56µg/L) at MW2358 (Q1) in both the summer and winter 2021 monitoring rounds, consistent with historical exceedances of the adopted guideline.

With the exception of MW2358 (Q1) and the winter rounds for MW2394 (Q1), it is noted that concentrations of PFHxS+PFOS and PFOA were generally reported at lower concentrations in 2021 than in 2020 for the respective summer and winter monitoring rounds.

Analytical results are summarised in **Table 7**, the locations sampled are located in **Figure 7** and PFHxS+PFOS trends are illustrated in **Figure 8** and **Figure 9**. For graphical purposes where concentrations are reported below the LOR, the concentrations are represented as half the LOR (i.e. 0.005 µg/L).

Table 7 Source area P4 PFAS Summary Results (µg/L)

Well ID	Analyte	Historical Range 2017-2018		OMP Monitoring			
		Min	Max	March 2020	July 2020	January/February 2021	July/August 2021
MW2126 (Q2)	PFHxS+PFOS	2.1	2.34	1.71	2.50	1.23	1.5
	PFOA	0.05	0.05	0.05	0.07	0.03	0.04
MW2162 (Q2)	PFHxS+PFOS	2.15	2.15	2.18	2.83	1.58	0.79
	PFOA	0.03	0.03	0.06	0.07	0.03	0.02
MW2358 (Q1)	PFHxS+PFOS	470	660	376	226	442	138
	PFOA	13	15	9.49	5.40	10.5	3.35
MW2394 (Q1)	PFHxS+PFOS	0.07	0.1	0.37	0.02	0.06	0.1
	PFOA	ND	ND	ND	ND	ND	ND
MW2411 (Q1)	PFHxS+PFOS	0.54	3.97	3.32	5.29	1.92	1.43
	PFOA	ND	0.02	0.04	0.06	0.01	0.02

Bold denotes exceedance of PFAS NEMP (2020) drinking water guideline (0.07 µg/L for PFHxS+PFOS and 0.56 µg/L for PFOA)

ND = Not detected above laboratory limits of reporting

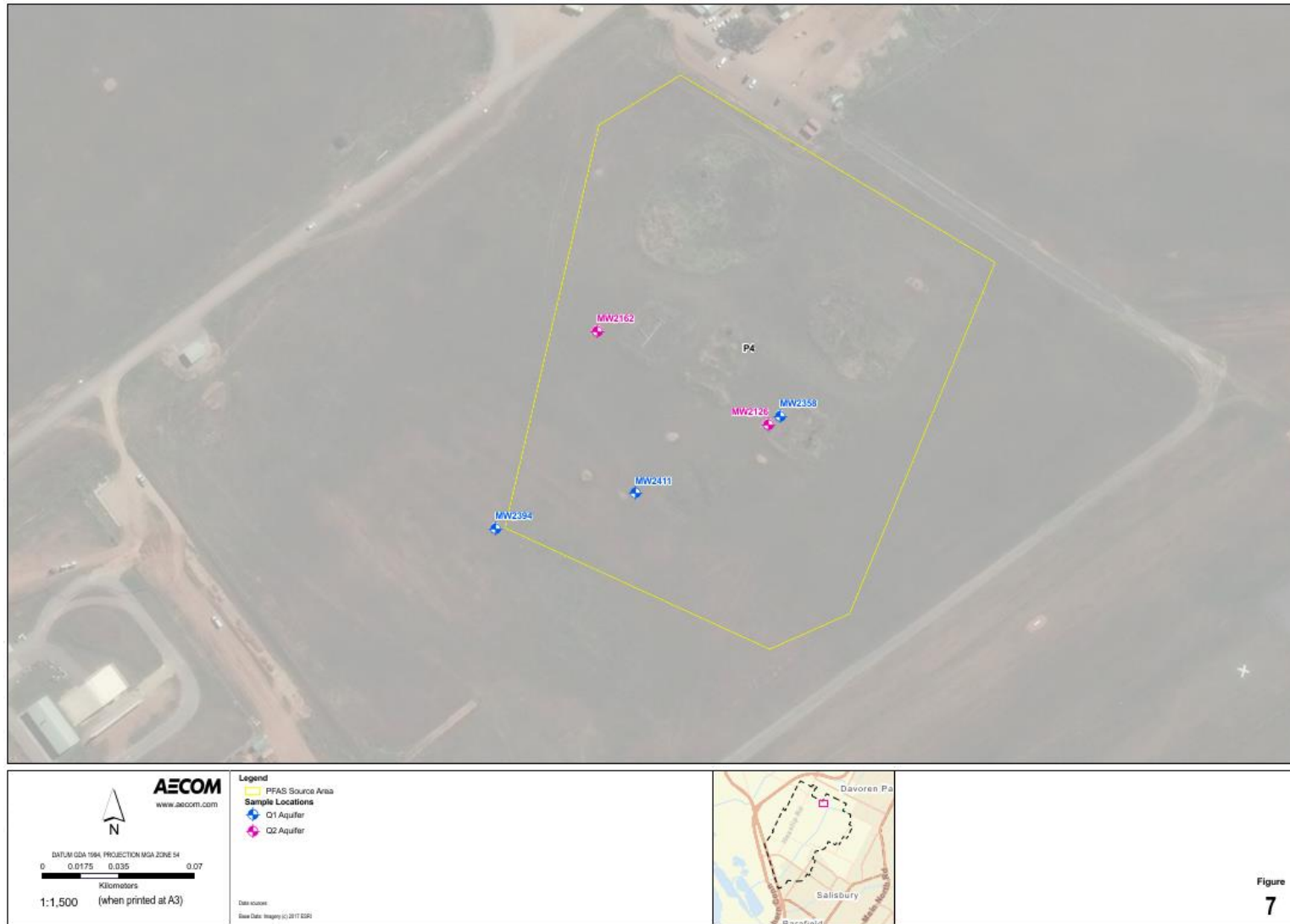


Figure
7

Figure 7 Source area P4 sampled locations

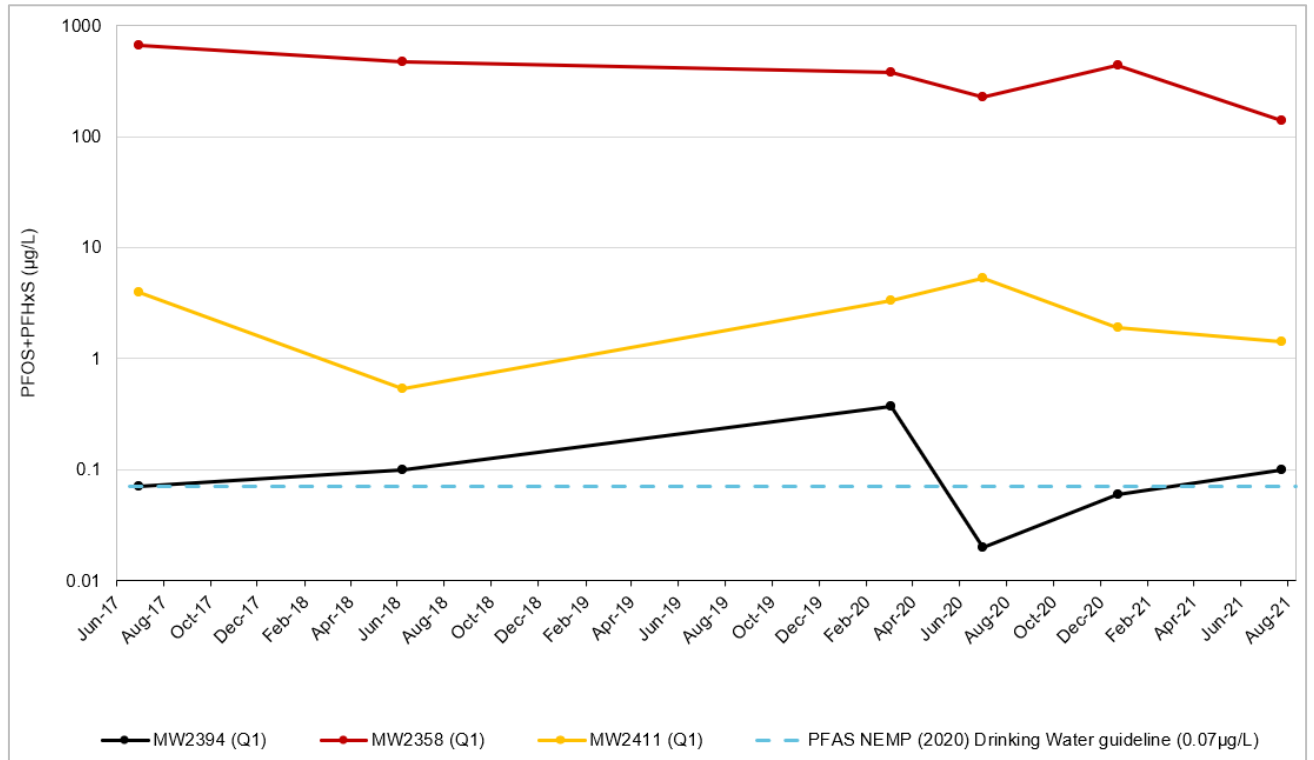


Figure 8 Q1 monitoring wells PFHxS+PFOS concentration trends at source area P4. Logarithmic scale on the y-axis for display purposes

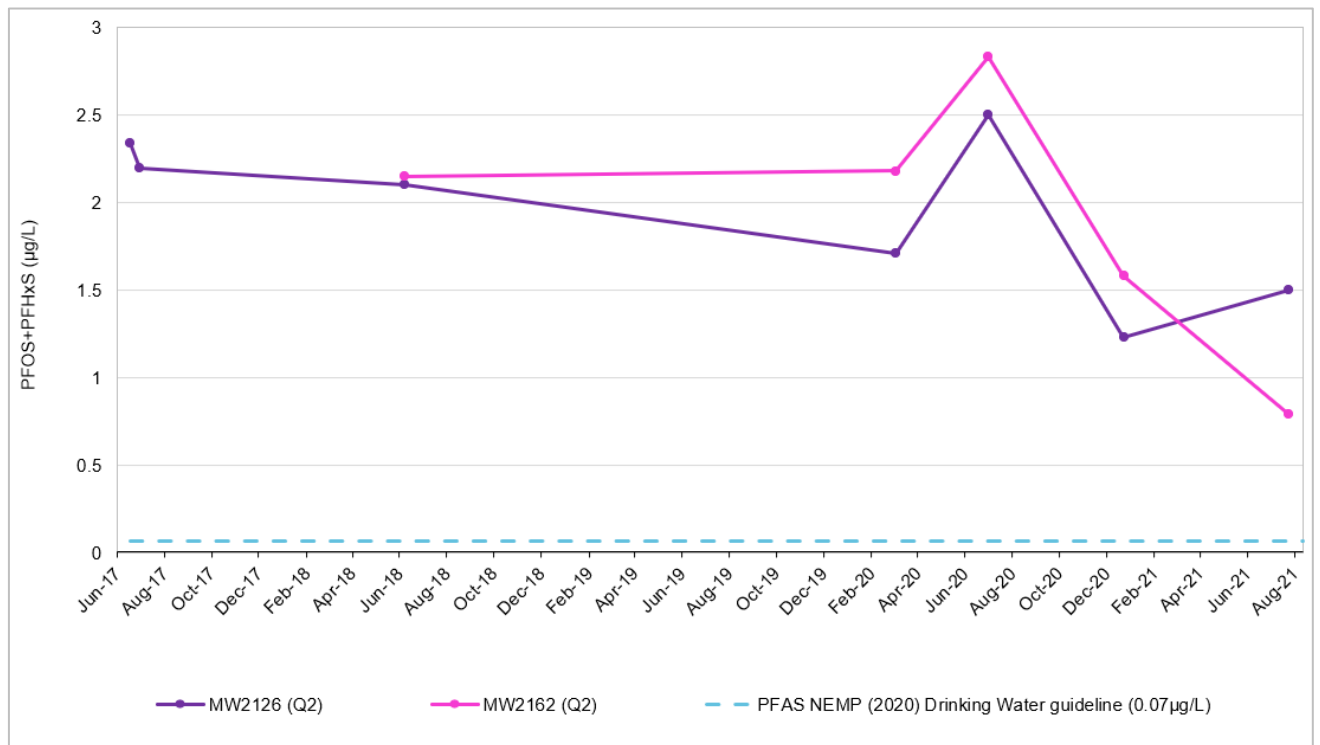


Figure 9 Q2 monitoring wells PFHxS+PFOS concentration trends at source area P4

7.1.3 Source areas P9 and P15A/B, P11, P16 and P21 PFAS analytical results

Selected monitoring wells located on-Base were sampled to measure PFAS concentrations in the central portion of the site and in the vicinity of source areas P9, P15A/B, P11, P16 and P21. These locations are summarised as:

- Q1 aquifer: MW2112, MW2116, MW2120, MW2148, MW2149, MW2150, MW2188, MW2194, MW2197, MW2201, MW2203, MW2499;
- Q2 aquifer: MW2158, MW2189, MW2200, MW2202;
- Q3 aquifer: MW2270, MW2272; and
- Q4 aquifer: MW2284.

New maximum PFHxS+PFOS concentrations were reported at MW2188 (Q1), MW2272 (Q3) and MW2284 (Q4) in August 2021. All locations reported detections of PFHxS+PFOS above the laboratory LOR and all locations reported detections above the PFAS NEMP 2020 Human Health Drinking Water guideline (0.07µg/L) in January and August 2021, with the exception of MW2202, consistent with previous observations.

All concentrations were above the laboratory LOR in January and August 2021 for PFOA, with the exception of MW2201 (Q1) and MW2202 (Q2), consistent with historical observations. New maximum concentrations of PFOA were reported at MW2272 (Q3) and MW2284 (Q4) in August 2021. PFOA results exceeded the PFAS NEMP 2020 Human Health Drinking Water guideline (0.56µg/L) in January and August 2021 at all locations with the exception of MW2120 (Q1) (below the guideline for the first time in August 2021) and at MW2112 (Q1), MW2150 (Q1), MW2194 (Q1), MW2201 (Q1), MW2202 (Q2), MW2270 (Q3), consistent with historical observations.

PFHxS+PFOS

With the exception of MW2148 (Q1), MW2158 (Q2), MW2189 (Q2), MW2272 (Q3), MW2284 (Q4) and MW2499 (Q1), it is noted that concentrations of PFHxS+PFOS and PFOA were generally reported at lower concentrations in 2021 than in 2020 for the respective summer and winter monitoring rounds.

It is noted that the January/February and August 2021 results were consistent with the 2020 results reported for PFHxS+PFOS and PFOA at on-Base location MW2194 (Q1), which was reported at an order of magnitude greater than historical sampling events conducted prior to the OMP. An order of magnitude reduction was observed between the 2020 monitoring results and 2021 monitoring results for PFOA, however the 2021 PFOA results remained higher than detections reported prior to OMP sampling events (non-detect).

Analytical results are summarised in **Table 8**, sampled locations are depicted in **Figure 10** and PFHxS+PFOS trends are illustrated in **Figure 11-13**. For graphical purposes where concentrations are reported below the LOR, the concentrations are represented as half the LOR (i.e. 0.005 µg/L).

Table 8 Source areas P9 and P15A/B, P11, P16 and P21 PFAS Summary Results (µg/L)

Well ID	Analyte	Historical Range 2017-2019		OMP Monitoring			
		Min	Max	March 2020	July 2020	January/ February 2021	July/ August 2021
MW2112 (Q1)	PFHxS+PFOS	8.8	19.4	5.72	6.90	3.32	4.32
	PFOA	0.17	0.45	0.11	0.10	0.06	0.05
MW2116 (Q1)	PFHxS+PFOS	11,200	23,100	23,000	23,400	11,000	9,560
	PFOA	310	500	582	638	219	192
MW2120 (Q1)	PFHxS+PFOS	210	264	49.7	81.3	41.9	40.2
	PFOA	2.3	3.2	0.85	1.07	0.85	0.44
	PFHxS+PFOS	256	870	435	350	361	679

Well ID	Analyte	Historical Range 2017-2019		OMP Monitoring			
		Min	Max	March 2020	July 2020	January/ February 2021	July/ August 2021
MW2148 (Q1)	PFOA	7.18	31	11.0	10.6	11.0	25.4
MW2149 (Q1)	PFHxS+PFOS	204	320	133	267	101	205
	PFOA	8.7	14	6.42	11.6	2.30	8.23
MW2150 (Q1)	PFHxS+PFOS	20.7	25	20.6	21.9	14	14.2
	PFOA	0.14	0.17	0.16	0.18	0.15	0.12
MW2158 (Q2)	PFHxS+PFOS	413	2,620	2,650	924	1,820	2,020
	PFOA	12.9	45	69.4	26.2	45.6	58.2
MW2188 (Q1)	PFHxS+PFOS	133	184	162	231	112	238¹
	PFOA	4.2	8.5	3.23	5.56	4.55	4.62
MW2189 (Q2)	PFHxS+PFOS	500	500	NA	51.3	98.8	348
	PFOA	11	11	NA	1.15	2.91	7.8
MW2194 (Q1)	PFHxS+PFOS	0.02	0.04	5.07	4.77	2.44	2.3
	PFOA	ND	ND	0.11	0.10	0.05	0.05
MW2197 (Q1)	PFHxS+PFOS	200	570	463	630	397	562
	PFOA	5.1	13	11.3	14.7	8.11	10.9
MW2200 (Q2)	PFHxS+PFOS	148	480	241	343	135	98.1
	PFOA	5.6	17	8.23	11.6	4.34	3.27
MW2201 (Q1)	PFHxS+PFOS	0.79	1.06	1.42	1.39	0.94	1.05
	PFOA	ND	0.01	ND	0.12	ND	ND
MW2202 (Q2)	PFHxS+PFOS	ND	ND	0.02	ND	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
MW2203 (Q1)	PFHxS+PFOS	6,500	6,900	4,840	3,500	3,730	3,770
	PFOA	110	110	82.0	58.0	62.0	49.6
MW2270 (Q3)	PFHxS+PFOS	0.28	0.55	0.89	1.22	0.89	1.02
	PFOA	ND	0.02	0.03	0.04	0.03	0.03
MW2272 (Q3)	PFHxS+PFOS	2.9	147	276	217	187	297¹
	PFOA	0.15	9.44	16.8	13.5	10.6	17.3¹
MW2284 (Q4)	PFHxS+PFOS	0.06	11.6	49.1	25.4	43.0	62.3¹
	PFOA	ND	0.51	2.48	1.44	2.11	3.34¹
MW2499 (Q1)	PFHxS+PFOS	41.2	729	88.6	56.0	146	206
	PFOA	0.91	9.4	1.94	1.96	2.06	3.05

Bold denotes exceedance of PFAS NEMP (2020) drinking water guideline (0.07 µg/L for PFHxS+PFOS and 0.56 µg/L for PFOA)

ND = Not detected above laboratory limits of reporting

¹New maximum value

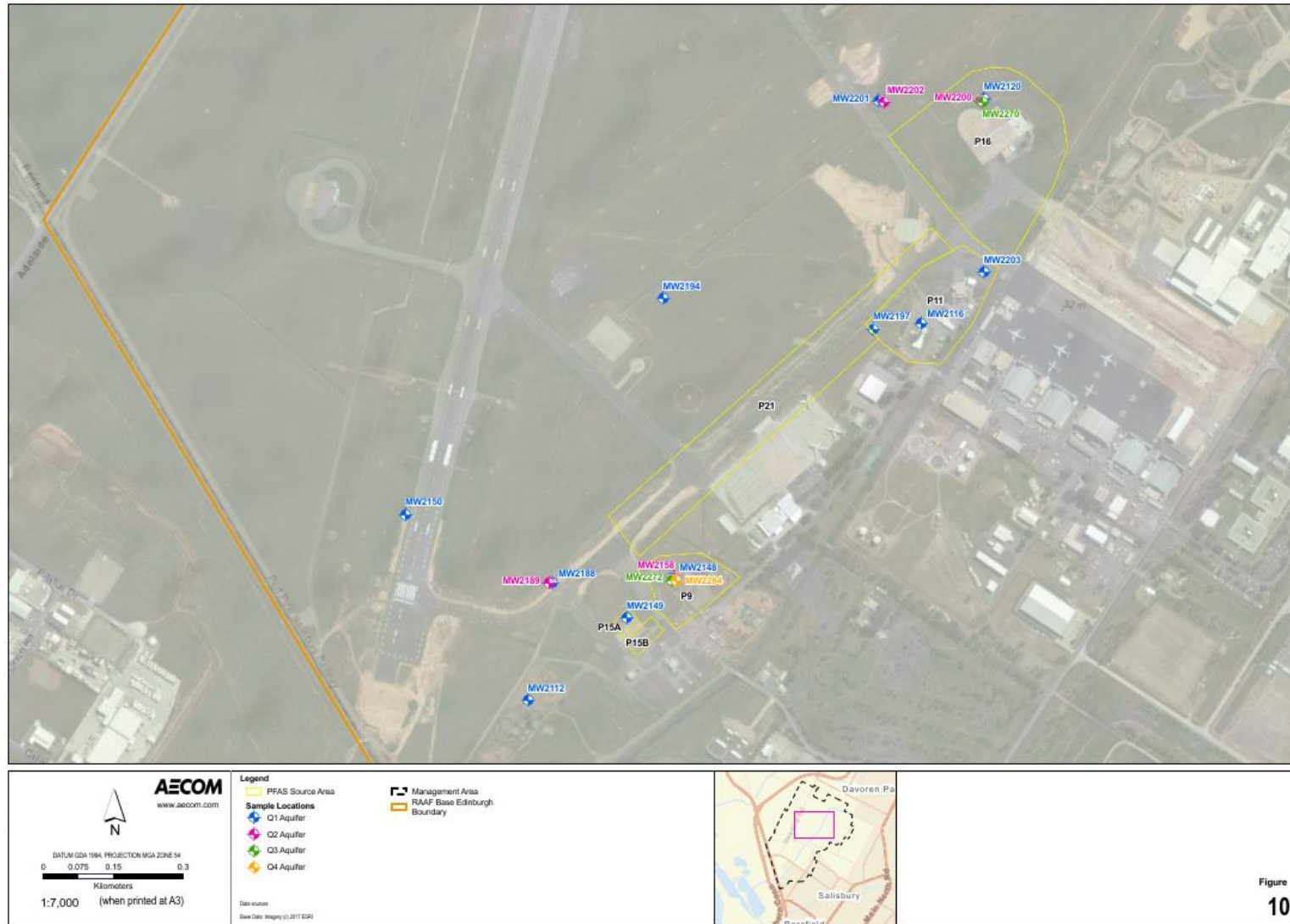


Figure 10

Figure 10 Sampled locations in P9, P15A/B, P11, P16 and P21

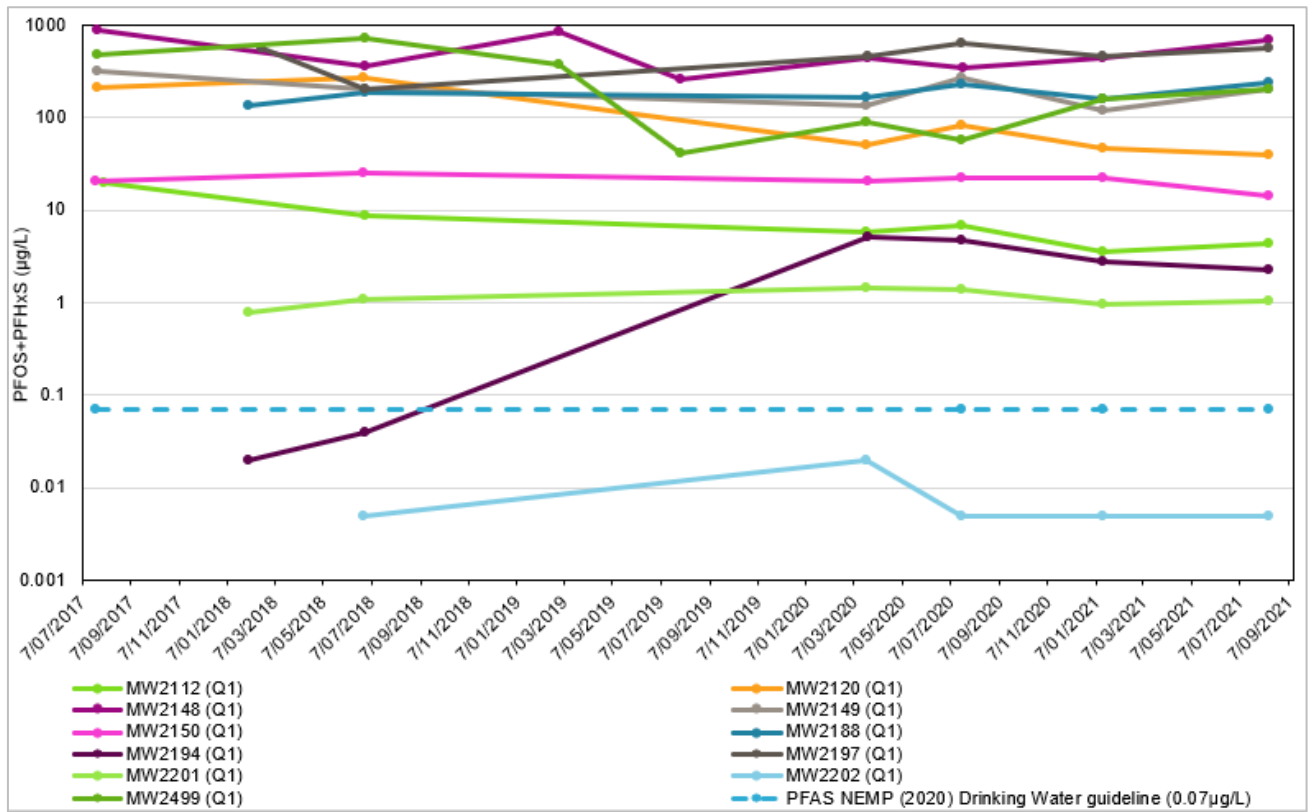


Figure 11 Q1 monitoring wells PFHxS+PFOS concentration trends at source areas P9 and P15A/B, P11, P16 and P21 (below 1000 µg/L)

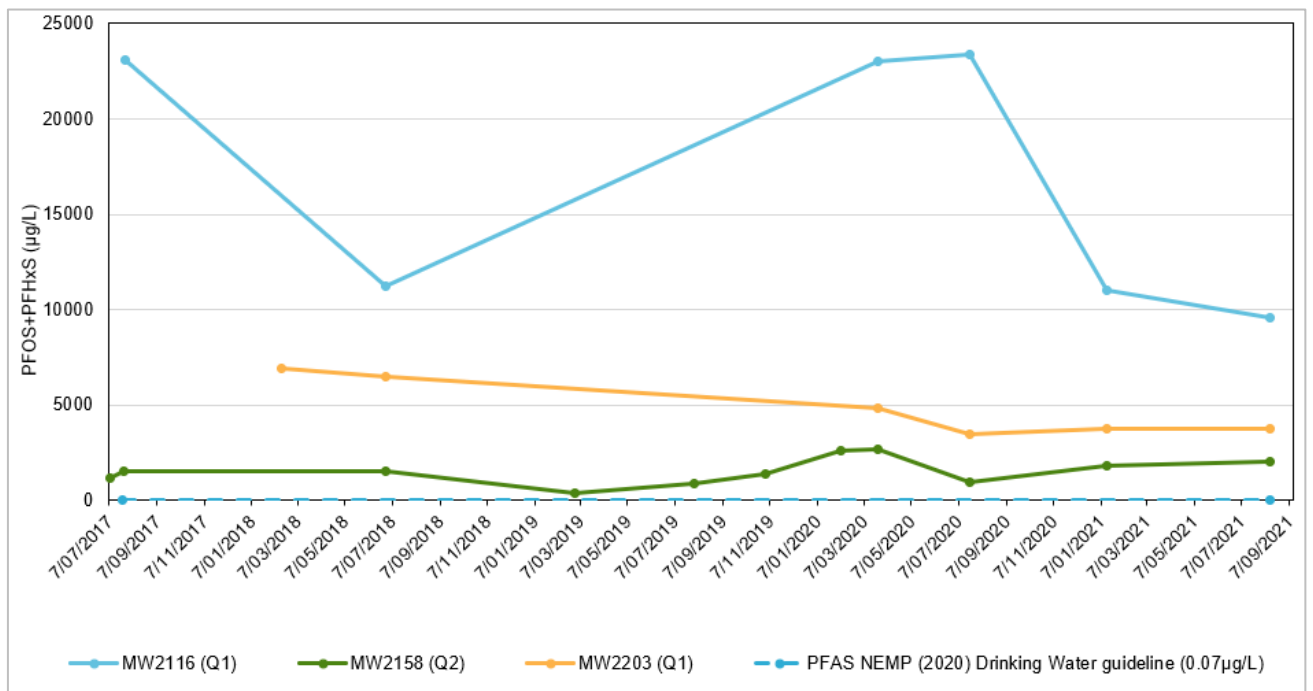


Figure 12 Q1 and Q2 monitoring wells PFHxS+PFOS concentration trends at source areas P9 and P15A/B, P11, P16 and P21 (above 1000 µg/L)*

* Care should be taken when interpreting PFAS concentration trend graphs that include wells that vary in the number of times they have been sampled, the overall duration of monitoring, or the aquifer in which they are installed.

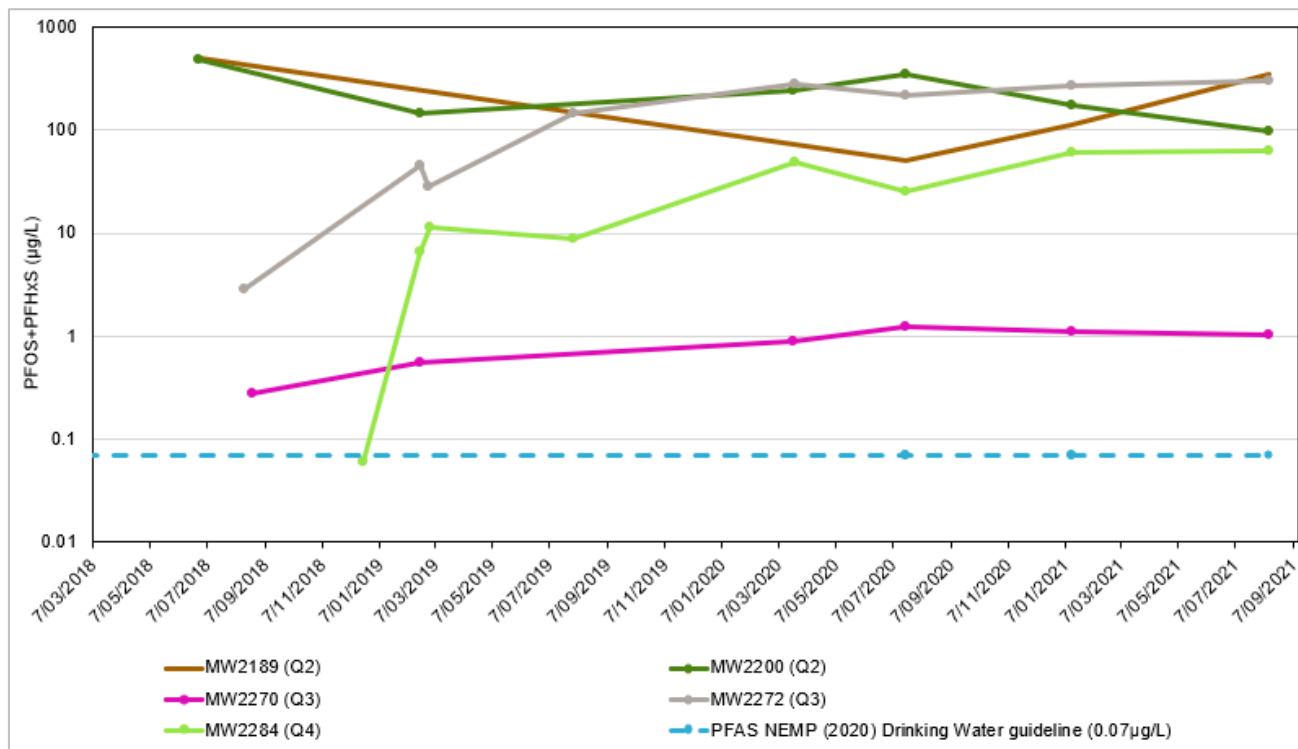


Figure 13 Q2, Q3 and Q4 monitoring wells PFHxS+PFOS concentration trends at source areas P9 and P15A/B, P11, P16 and P21 (below 1000 µg/L)*

* Care should be taken when interpreting PFAS concentration trend graphs that include wells that vary in the number of times they have been sampled, the overall duration of monitoring, or the aquifer in which they are installed.

7.1.4 Source areas P1, P3A, P3B and P27 PFAS analytical results

Selected monitoring wells located on-Base were sampled to measure PFAS concentrations in the vicinity of source areas P1, P3A, P3B and P27. Sampled locations include:

- Q1: MW2528, MW2490, MW2114, MW2130, MW2131 and MW2193; and
- Q2: MW2157, MW2209, MW2210.

New maximum PFHxS+PFOS concentrations were reported at MW2528 (Q1) and MW2114 (Q1) in January/February 2021 and at MW2210 (Q2) in August 2021. All concentrations of PFHxS+PFOS were reported above the laboratory LOR in January/February and August 2021.

New maximum concentrations of PFOA were reported at MW2528 (Q1) and MW2114 (Q1) in August 2021. All locations reported concentrations of PFOA above the laboratory LOR in January/February and August 2021, with the exception of MW2209 (Q2). PFOA results exceeded the PFAS NEMP 2020 Human Health Drinking Water guideline (0.56µg/L) at all locations, except for MW2157 (Q2) and MW2209 (Q2).

With the exception of MW2114 (Q1), MW2131 (Q1), MW2193 (Q1), MW2210 (Q2) and MW2528 (Q1) it is noted that concentrations of PFHxS+PFOS and PFOA were generally reported at lower concentrations in 2021 than in 2020 for the respective summer and winter monitoring rounds.

Analytical results are summarised in **Table 9**, sampled locations are depicted in **Figure 14** and PFHxS+PFOS trends are illustrated in **Figure 15-17**. For graphical purposes where concentrations are reported below the LOR, the concentrations are represented as half the LOR (i.e. 0.005 µg/L).

Table 9 Source areas P1, P3A, P3B and P27 PFAS Summary Results (µg/L)

Well ID	Analyte	Historical Range 2017-2018		OMP Monitoring			
		Min	Max	March 2020	July 2020	January/February 2021	July/August 2021
MW2114 (Q1)	PFHxS+PFOS	12.4	59	88.2	165	168	176¹
	PFOA	0.68	3.3	5.44	8.56	8.78	11.3¹
MW2130 (Q1)	PFHxS+PFOS	850	1160	670	935	510	408
	PFOA	41	43	39.3	44.1	20.8	17.6
MW2131 (Q1)	PFHxS+PFOS	306	594	120	133	118	144
	PFOA	4.5	4.5	8.6	11.7	5.97	8.21
MW2157 (Q2)	PFHxS+PFOS	17.7	24.5	21.1	16.7	12.3	15
	PFOA	0.29	0.38	0.36	0.34	0.27	0.38
MW2193 (Q1)	PFHxS+PFOS	60	95	73.5	105	85.7	85.9
	PFOA	1.5	1.7	1.72	2.38	1.39	1.52
MW2209 (Q2)	PFHxS+PFOS	0.03	0.03	0.1	0.11	0.08	0.06
	PFOA	ND	ND	ND	ND	ND	ND
MW2210 (Q2)	PFHxS+PFOS	135	135	185	185	167	250¹
	PFOA	2.7	2.7	5.5	5.91	3.61	5.83
MW2490 (Q1)	PFHxS+PFOS	2,900	2,900	6,670	9,460	5,540	4,910
	PFOA	62	62	190	220	132	122
MW2528 (Q1)	PFHxS+PFOS	71	78	49.8	51.5	61.4	75
	PFOA	2.0	2.2	1.88	1.65	2.15	2.52¹

Bold denotes exceedance of PFAS NEMP (2020) drinking water guideline (0.07 µg/L for PFHxS+PFOS and 0.56 µg/L for PFOA)

ND = Not detected above laboratory limits of reporting

¹ New maximum value



Figure
14

Figure 14 P1, P3A, P3B and P27 sampled locations

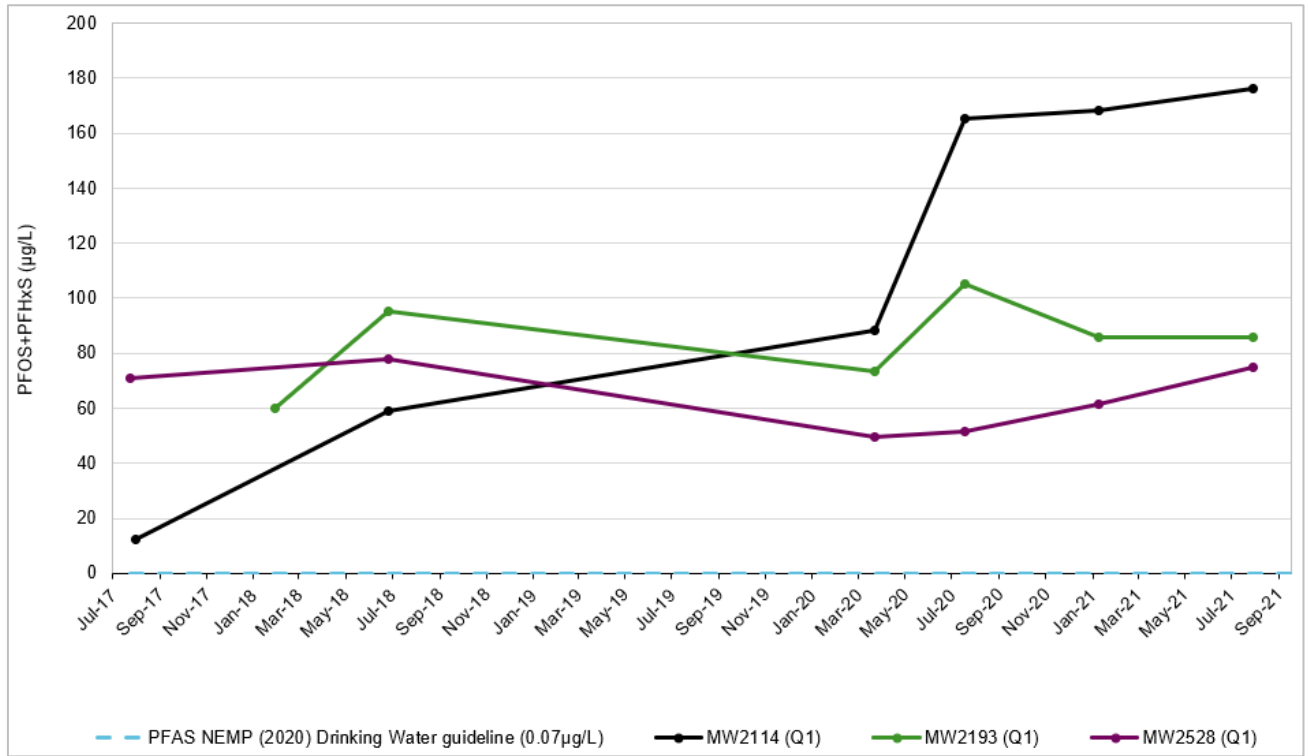


Figure 15 Q1 monitoring wells PFHxS+PFOS concentration trends at source areas P1, P3A, P3B and P27 (below 200 µg/L)*

* Care should be taken when interpreting PFAS concentration trend graphs that include wells that vary in the number of times they have been sampled, the overall duration of monitoring, or the aquifer in which they are installed.

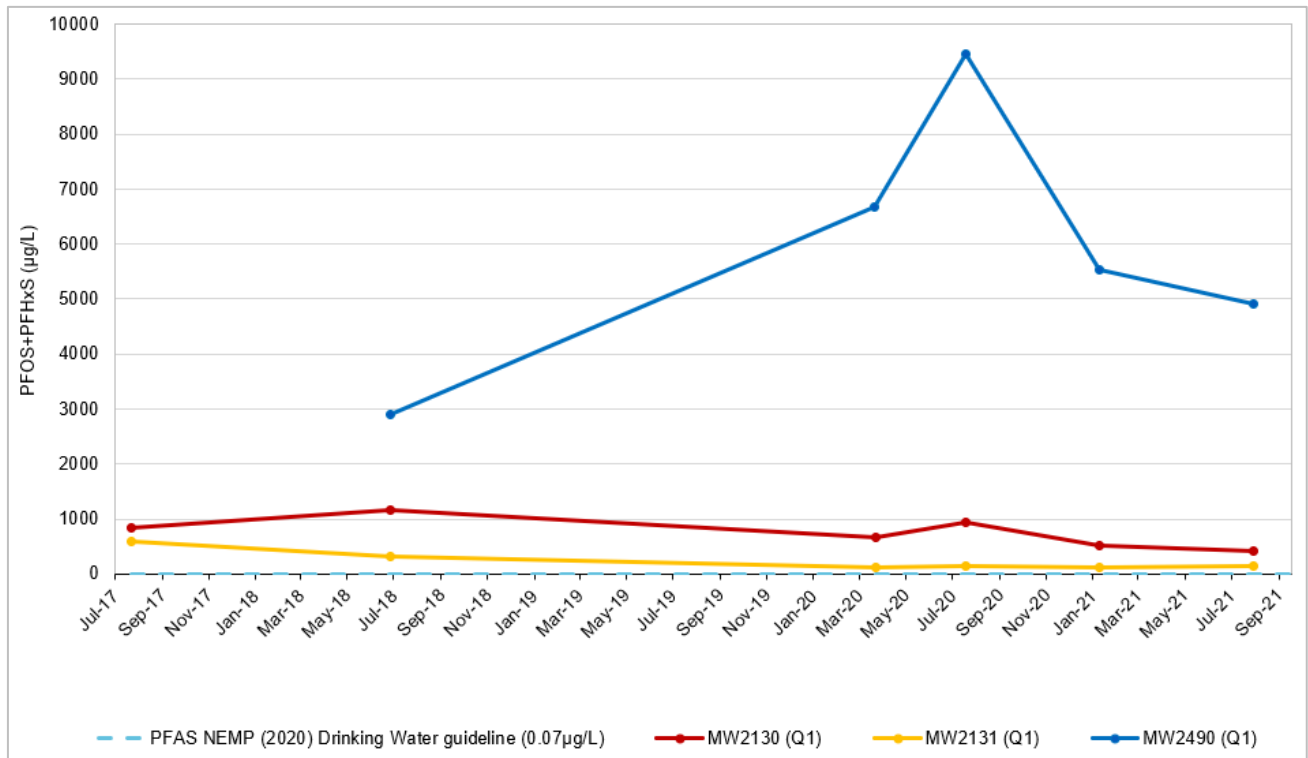


Figure 16 Q1 monitoring wells PFHxS+PFOS concentration trends at source areas P1, P3A, P3B and P27 (above 200 µg/L)

* Care should be taken when interpreting PFAS concentration trend graphs that include wells that vary in the number of times they have been sampled, the overall duration of monitoring, or the aquifer in which they are installed.

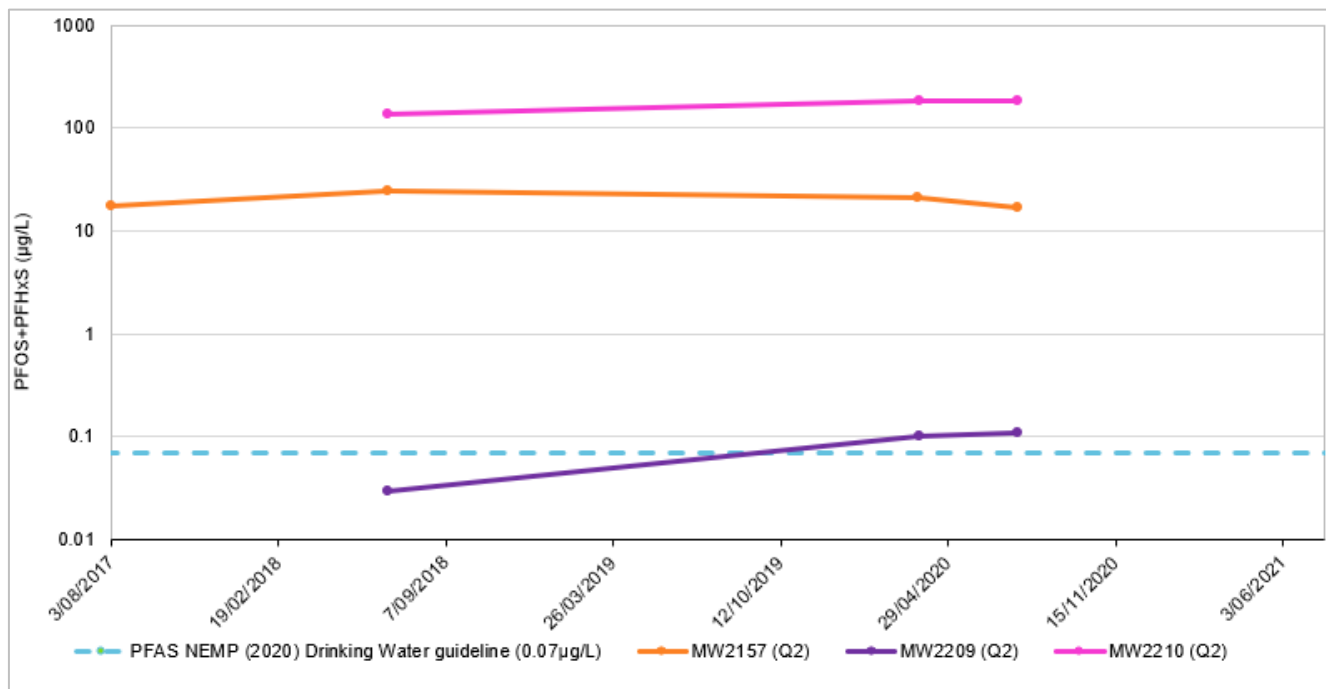


Figure 17 Q2 monitoring wells PFHxS+PFOS concentration trends at source areas P1, P3A, P3B and P27*

* Care should be taken when interpreting PFAS concentration trend graphs that include wells that vary in the number of times they have been sampled, the overall duration of monitoring, or the aquifer in which they are installed

7.1.5 Southern, western and northern boundary PFAS analytical results

Twenty one monitoring wells on-Base and one off-Base location were sampled to measure PFAS conditions located at the Base boundaries. These locations are summarised as:

- Q1 monitoring wells: MW2129, MW2137, MW2139, MW2166, MW2169, MW2172, MW2175, MW2177, MW2180, MW2182, MW2184, MW2501, MW4013 (off-Base);
- Q2 monitoring wells: MW2145, MW2173, MW2176, MW2183, MW2185;
- Q3 monitoring wells: MW2275, MW2281; and
- Q4 monitoring wells: MW2285, MW2286.

New maximum PFHxS+PFOS concentrations were reported at MW2183 for PFHxS+PFOS in August 2021 and at MW2185 for PFOA and PFHxS+PFOS in January/February 2021.

Concentrations of PFOA were below the laboratory LOR in January/February and August 2021 at 10 of the 22 sampled locations; MW2139 (Q1), MW2166 (Q1), MW2169 (Q1), MW2172 (Q1), MW2173 (Q2), MW2175 (Q1), MW2176 (Q2), MW2182 (Q1), MW2184 (Q1) and MW2185 (Q2). Concentrations were reported below the laboratory LOR in August 2021 at MW2286 (Q4). PFOA results exceeded the PFAS NEMP 2020 Human Health Drinking Water guideline (0.56µg/L) at MW2129 (Q1) in January/February 2021 and at MW2180 (Q1) in both monitoring rounds in 2021.

All locations reported concentrations of PFHxS+PFOS above the laboratory LOR in January/February and August 2021. The PFAS NEMP Human Health Drinking Water (0.07µg/L) guideline for PFHxS+PFOS was exceeded at all locations in 2021 monitoring events, with the exception of MW2166 (Q1) and MW2176 (Q2), reported as non-detect, and at MW2173 (Q2) in August 2021.

With the exception of MW2145 (Q2), MW2173 (Q2), MW2183 (Q2), MW2185 (Q2), MW2275 (Q3) and MW2281 (Q3) it is noted that concentrations of PFHxS+PFOS and PFOA were generally reported at lower concentrations in 2021 than in 2020 for the respective summer and winter monitoring rounds.

Analytical results are summarised in **Table 10**, sampled locations are depicted in **Figure 18** and PFHxS+PFOS trends are illustrated in **Figure 19-22**. For graphical purposes where concentrations are reported below the LOR, the concentrations are represented as half the LOR (i.e. 0.005 µg/L).

Table 10 Southern, western and northern boundary PFAS Summary Results (µg/L)

Well ID	Analyte	Historical Range 2017-2019		OMP Monitoring			
		Min	Max	March 2020	July 2020	January/February 2021	July/August 2021
MW2129 (Q1)	PFHxS+PFOS	28.93	74	98.3	47.2	40.4	15.7
	PFOA	1.2	3.6	3.82	1.41	1.35	0.44
MW2137 (Q1)	PFHxS+PFOS	11.1	25	38.1	38.8	26.0	23.4
	PFOA	0.2	0.35	0.54	0.56	0.41	0.36
MW2139 (Q1)	PFHxS+PFOS	0.25	0.44	0.22	0.24	0.17	0.17
	PFOA	ND	ND	ND	ND	ND	ND
MW2145 (Q2)	PFHxS+PFOS	1.5	1.5	1.59	2.45	1.64	1.59
	PFOA	0.02	0.02	0.04	0.05	0.03	0.03
MW2166 (Q1)	PFHxS+PFOS	ND	ND	ND	ND	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
MW2169 (Q1)	PFHxS+PFOS	0.4	0.54	0.54	0.67	0.52	0.49
	PFOA	ND	ND	ND	ND	ND	ND
MW2172 (Q1)	PFHxS+PFOS	0.16	0.19	0.12	0.11	0.13	0.08
	PFOA	ND	ND	ND	ND	ND	ND
MW2173 (Q2)	PFHxS+PFOS	0.03	0.05	0.04	0.07	0.08¹	0.02
	PFOA	ND	ND	ND	ND	ND	ND
MW2175 (Q1)	PFHxS+PFOS	0.41	0.51	0.46	0.62	0.27	0.39
	PFOA	ND	ND	ND	ND	ND	ND
MW2176 (Q2)	PFHxS+PFOS	ND	ND	0.02	ND	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
MW2177 (Q1)	PFHxS+PFOS	9.5	9.9	11.3	10.4	7.26	7.64
	PFOA	0.21	0.25	0.24	0.22	0.15	0.15
MW2180 (Q1)	PFHxS+PFOS	180	214	231	234	138	120
	PFOA	11	12	11.9	13.5	8.01	7.05
MW2182 (Q1)	PFHxS+PFOS	0.08	0.1	0.06	0.20	0.09	0.09
	PFOA	ND	ND	ND	ND	ND	ND
MW2183 (Q2)	PFHxS+PFOS	2	2.38	3.84	4.63	3.55	5.13¹
	PFOA	0.03	0.04	0.07	0.08	0.07	0.07
MW2184 (Q1)	PFHxS+PFOS	0.77	0.88	0.77	0.91	0.28	0.82
	PFOA	ND	0.01	ND	ND	ND	ND
	PFHxS+PFOS	3.07	4	5.73	8.05	8.23	8.68¹

Well ID	Analyte	Historical Range 2017-2019		OMP Monitoring			
		Min	Max	March 2020	July 2020	January/February 2021	July/August 2021
MW2185 (Q2)	PFOA	0.04	0.05	0.08	0.11	0.14	0.13
MW2275 (Q3)	PFHxS+PFOS	0.12	1.78	0.79	1.08	0.78	1.7
	PFOA	ND	0.19	0.06	0.09	0.05	0.13
MW2281 (Q3)	PFHxS+PFOS	1.36	2.6	3.25	1.99	2.94	2.48
	PFOA	0.03	0.09	0.04	0.02	0.04	0.03
MW2285 (Q4)	PFHxS+PFOS	ND	0.02	1.15	0.81	0.17	0.15
	PFOA	ND	ND	0.02	0.02	ND	ND
MW2286 (Q4)	PFHxS+PFOS	0.08	0.08	2.04	2.05	1.27	0.76
	PFOA	ND	ND	0.04	0.04	0.02	ND
MW2501 (Q1)	PFHxS+PFOS	0.75	0.77	0.81	0.59	0.30	0.29
	PFOA	0.02	0.03	0.03	0.03	0.02	0.01
MW4013 (Q1)	PFHxS+PFOS	9.3	17.6	12.1	8.12	7.63	6.33
	PFOA	0.12	0.24	0.24	0.13	0.15	0.11

Bold denotes exceedance of PFAS NEMP (2020) drinking water guideline (0.07 µg/L for PFHxS+PFOS and 0.56 µg/L for PFOA)

ND = Not detected above laboratory limits of reporting

¹New maximum value

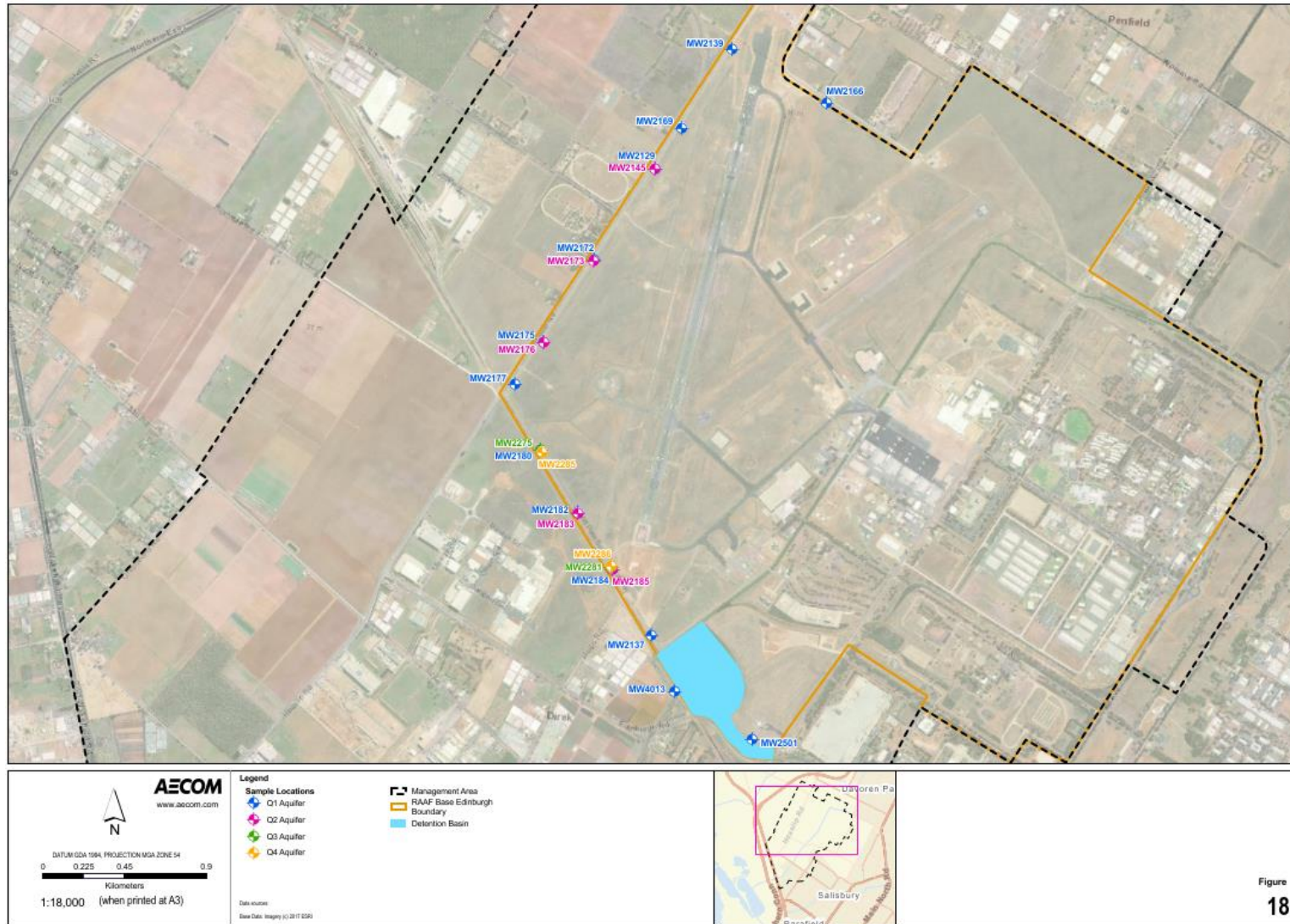


Figure 18 Southern, western and northern boundary sampled locations

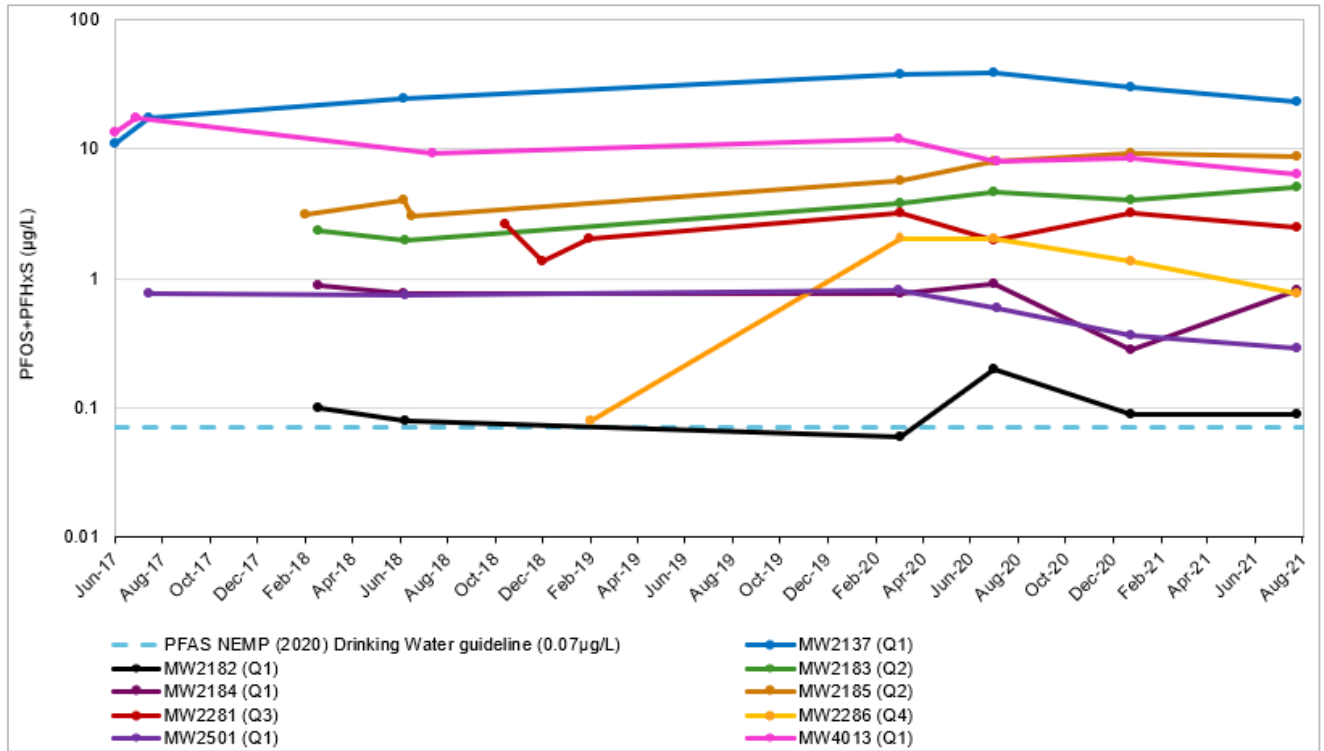


Figure 19 Southern boundary PFHxS+PFOS concentration trends*

* Care should be taken when interpreting PFAS concentration trend graphs that include wells that vary in the number of times they have been sampled, the overall duration of monitoring, or the aquifer in which they are installed.

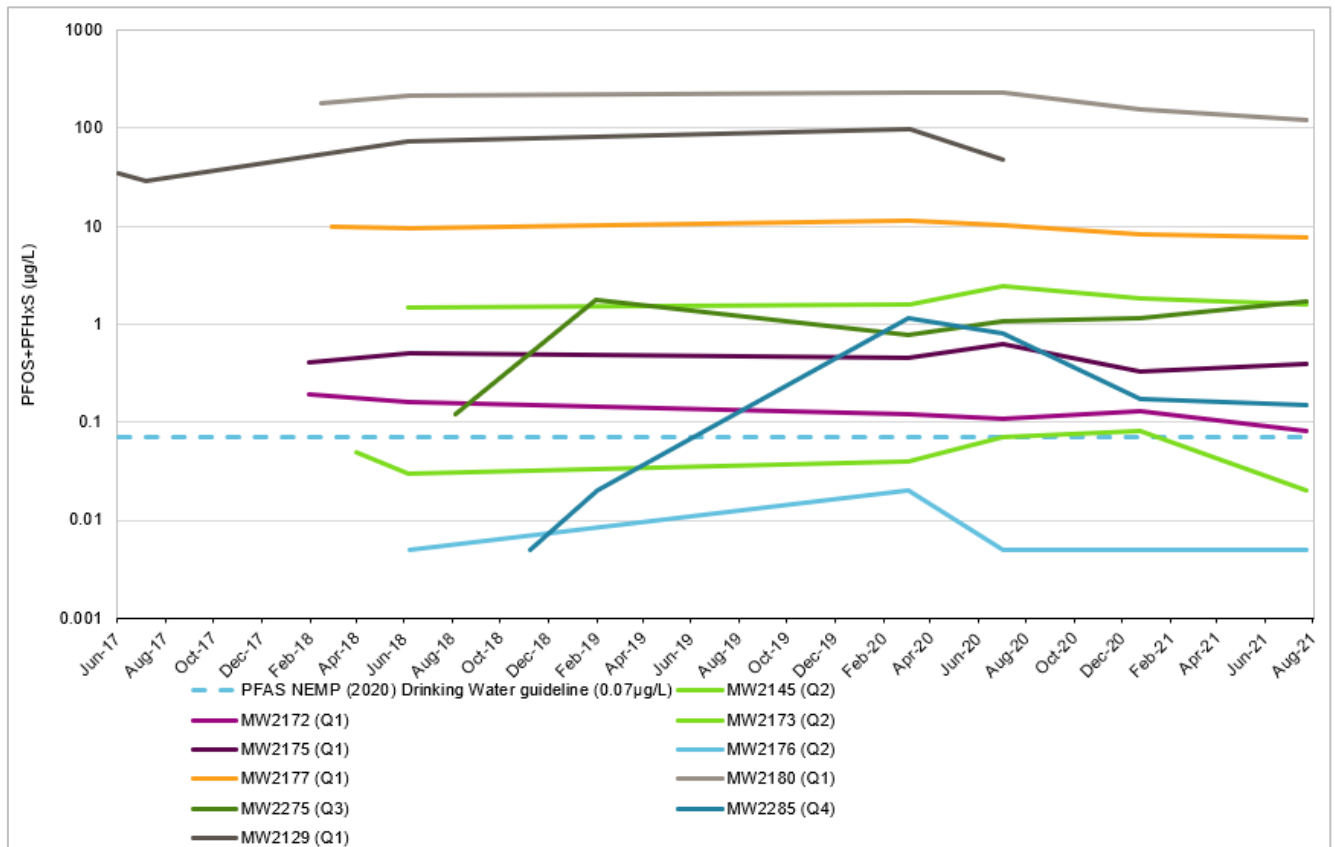


Figure 20 Western boundary PFHxS+PFOS concentration trends (below 3 µg/L)*

* Care should be taken when interpreting PFAS concentration trend graphs that include wells that vary in the number of times they have been sampled, the overall duration of monitoring, or the aquifer in which they are installed.

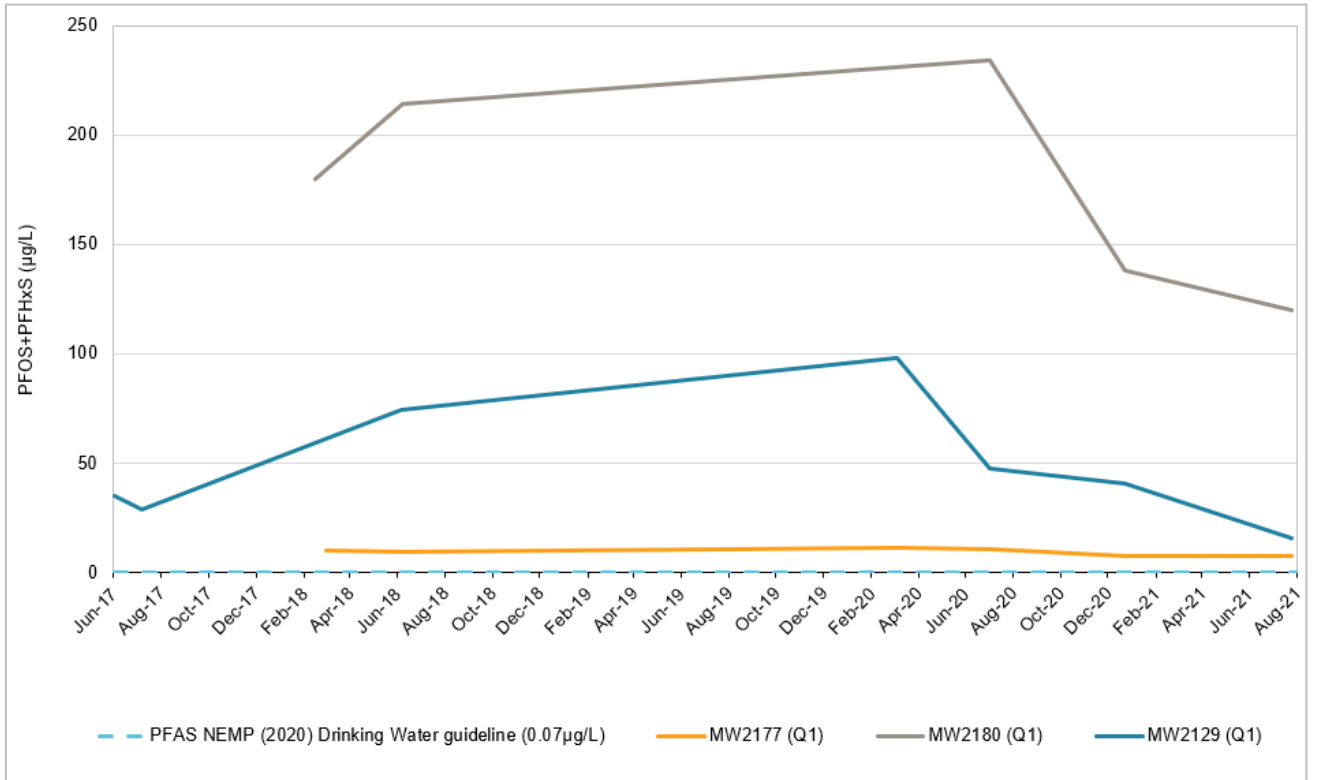


Figure 21 Western boundary PFHxS+PFOS concentration trends (above 3 µg/L)

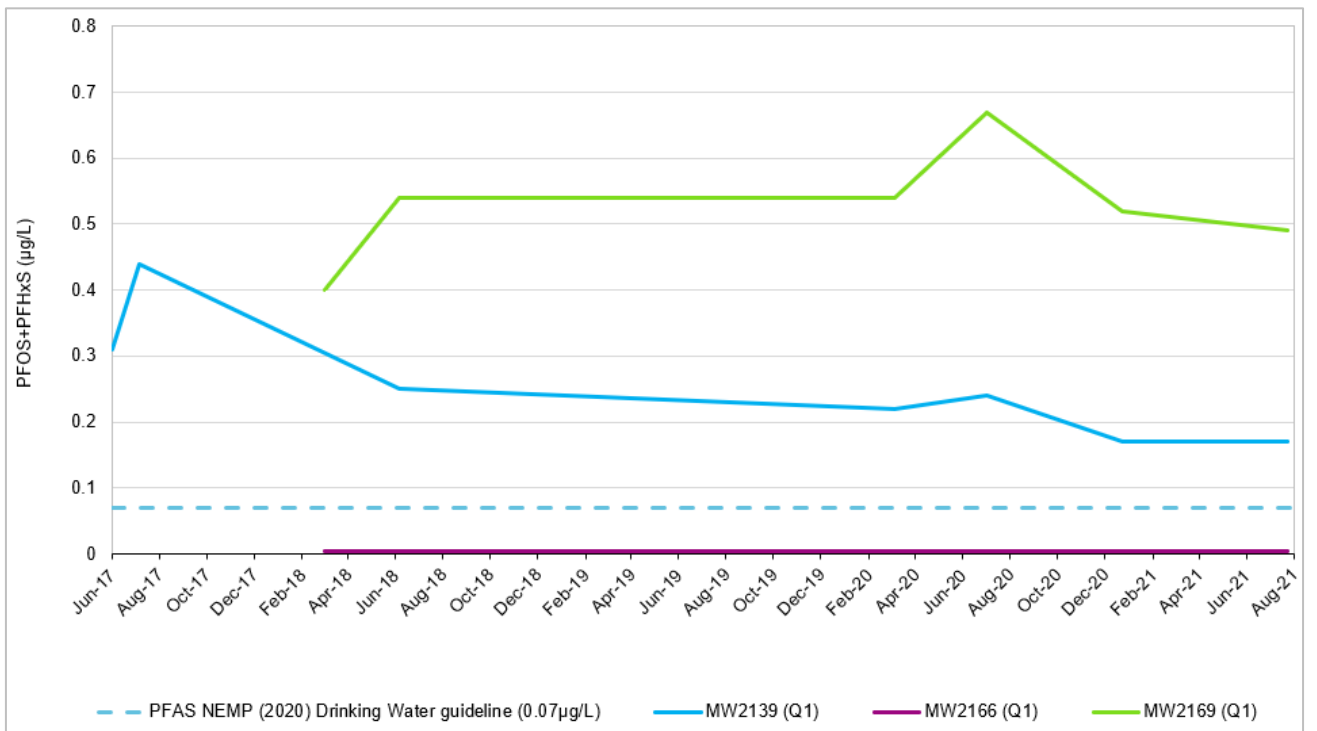


Figure 22 Northern boundary PFHxS+PFOS concentration trends

7.1.6 Helps Road Drain PFAS analytical results

Eleven off-Base monitoring wells were sampled to measure PFAS conditions around the Helps Road Drain. These locations are summarised as:

- Q1 monitoring wells: MW4001, MW4003, MW4015 and MW4053;
- Q2 monitoring wells: MW4035, MW4045 and MW4048;
- Q3 monitoring wells: MW4068, MW4069 and MW4070; and
- Q4 monitoring wells: MW4075.

Concentrations of PFHxS+PFOS were reported above the laboratory LOR at all locations in 2021 with the exception of MW4070 (Q3) and at MW4075 (Q4) in August 2021. The PFAS NEMP Human Health Drinking Water (0.07µg/L) guideline for PFHxS+PFOS was exceeded at all locations in 2021, with the exception of MW4070 (Q3) in both 2021 monitoring events and at MW4075 (Q2) in August 2021.

Concentrations of PFOA were reported above the laboratory LOR at all locations during the 2021 monitoring events, with the exception of MW4070 (Q3) and MW4075 (Q4) which were non-detect. PFOA results did not exceed the PFAS NEMP 2020 Human Health Drinking Water guideline (0.56µg/L) at any location during the 2021 monitoring rounds.

With the exception of MW4003 (Q1) and MW4035 (Q2), it is noted that concentrations of PFHxS+PFOS and PFOA were generally reported at lower concentrations in 2021 than in 2020 for the respective summer and winter monitoring rounds.

Results for monitoring location MW4069 (Q3) are discussed further in Section 7.1.8 as this location has multiple data applications.

Analytical results are summarised in **Table 11** sampled locations are depicted in **Figure 23** and PFHxS+PFOS trends are illustrated in **Figure 24-26**. For graphical purposes where concentrations are reported below the LOR, the concentrations are represented as half the LOR (i.e. 0.005 µg/L).

Table 11 Helps Road Drain PFAS Summary Results (µg/L)

Well ID	Analyte	Historical Range 2017-2019		OMP Monitoring			
		Min	Max	March 2020	July 2020	January/February 2021	July/August 2021
MW4001 (Q1)	PFHxS+PFOS	3.67	4.5	1.77	1.80	1.24	1.23
	PFOA	0.08	0.13	0.04	0.05	0.04	0.04
MW4003 (Q1)	PFHxS+PFOS	11.3	17.8	17.2	10.7	12.1	12.3
	PFOA	0.17	0.21	0.28	0.16	0.23	0.23
MW4015 (Q1)	PFHxS+PFOS	15.3	19.8	19.4	20.2	11.2	13.5
	PFOA	0.21	0.29	0.26	0.32	0.18	0.2
MW4035 (Q2)	PFHxS+PFOS	38	44	14.3	13.3	16.2	20.1
	PFOA	0.50	0.50	0.19	0.31	0.27	0.32
MW4045 (Q2)	PFHxS+PFOS	0.87	1.55	0.64	0.63	0.36	0.37
	PFOA	0.01	0.02	0.01	0.01	ND	ND
MW4048 (Q2)	PFHxS+PFOS	1.69	2.17	1.40	1.54	1.09	0.96
	PFOA	0.06	0.07	0.06	0.06	0.04	0.04
MW4053 (Q1)	PFHxS+PFOS	1.26	2.15	1.32	1.21	0.82	0.71
	PFOA	0.03	0.04	0.03	0.03	0.02	0.02
MW4068 (Q3)	PFHxS+PFOS	ND	2.14	22.5	18.4	13.0	10.1
	PFOA	ND	0.04	0.34	0.31	0.22	0.15
MW4070 (Q3)	PFHxS+PFOS	ND	ND	0.07	0.02	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
MW4075 (Q4)	PFHxS+PFOS	0.01	0.01	0.21	0.13	0.13	ND
	PFOA	ND	ND	0.01	ND	ND	ND

Bold denotes exceedance of PFAS NEMP (2020) drinking water guideline (0.07 µg/L for PFHxS+PFOS and 0.56 µg/L for PFOA)
 ND = Not detected above laboratory limits of reporting

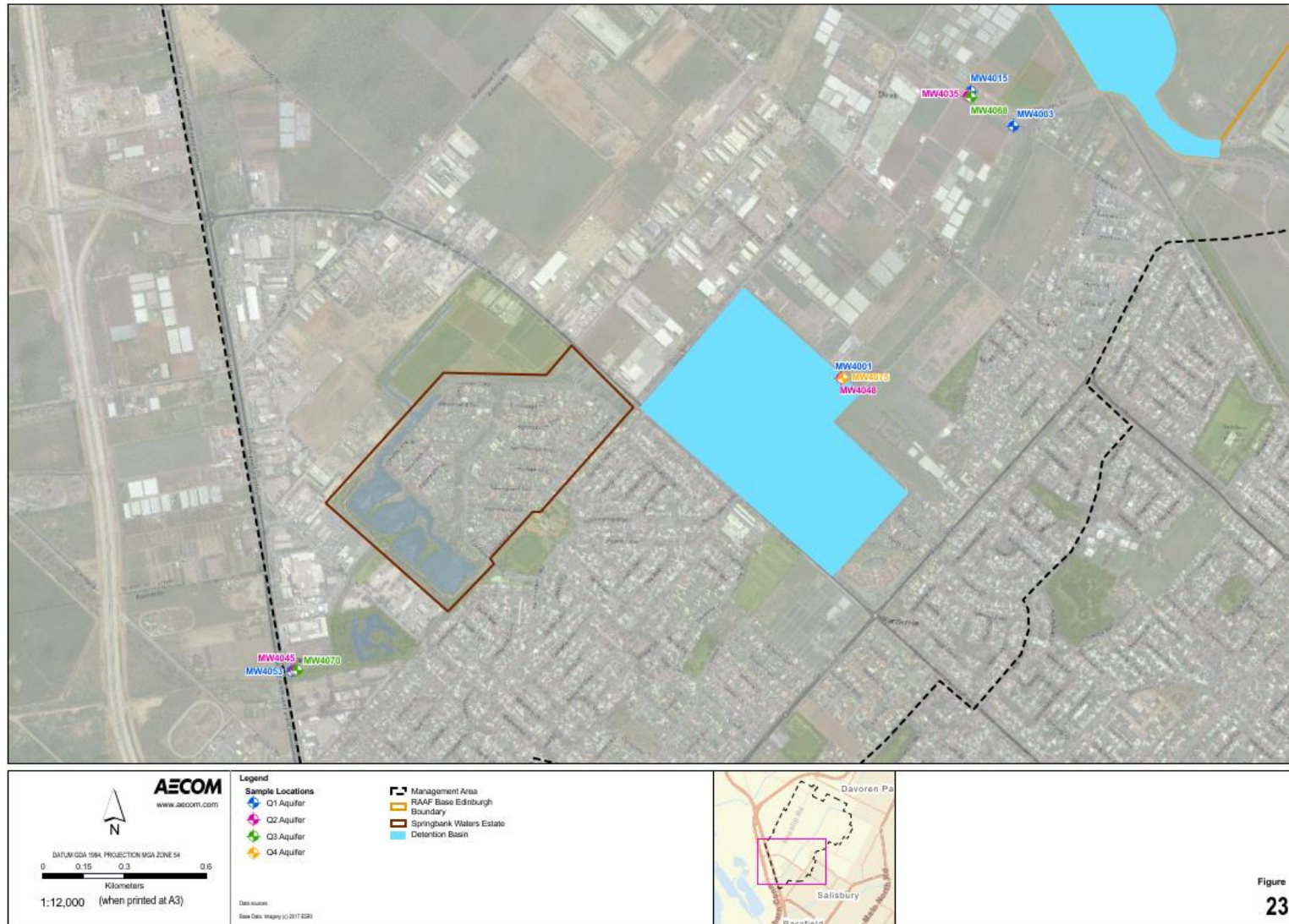


Figure 23
23

Figure 23 Helps road drain sampled locations

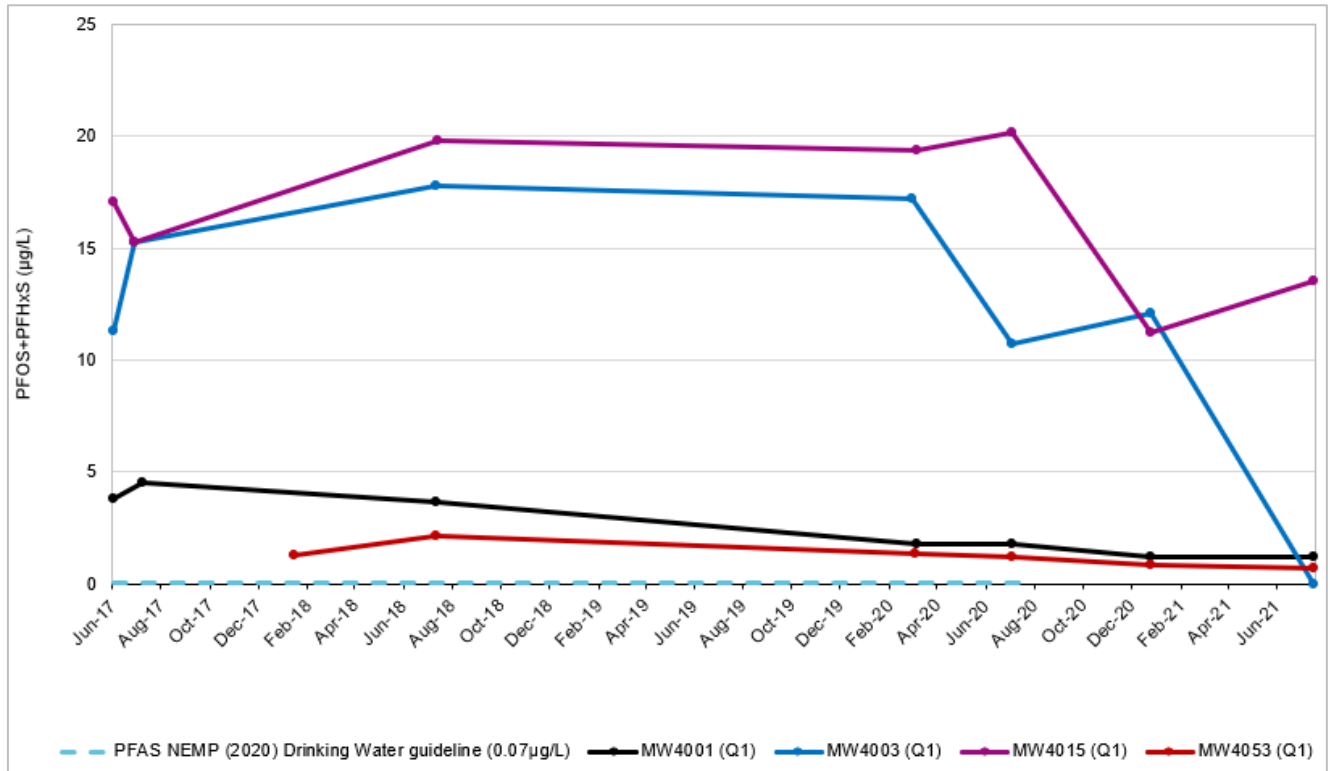


Figure 24 Q1 monitoring wells PFHxS+PFOS concentration trends at Helps Road Drain

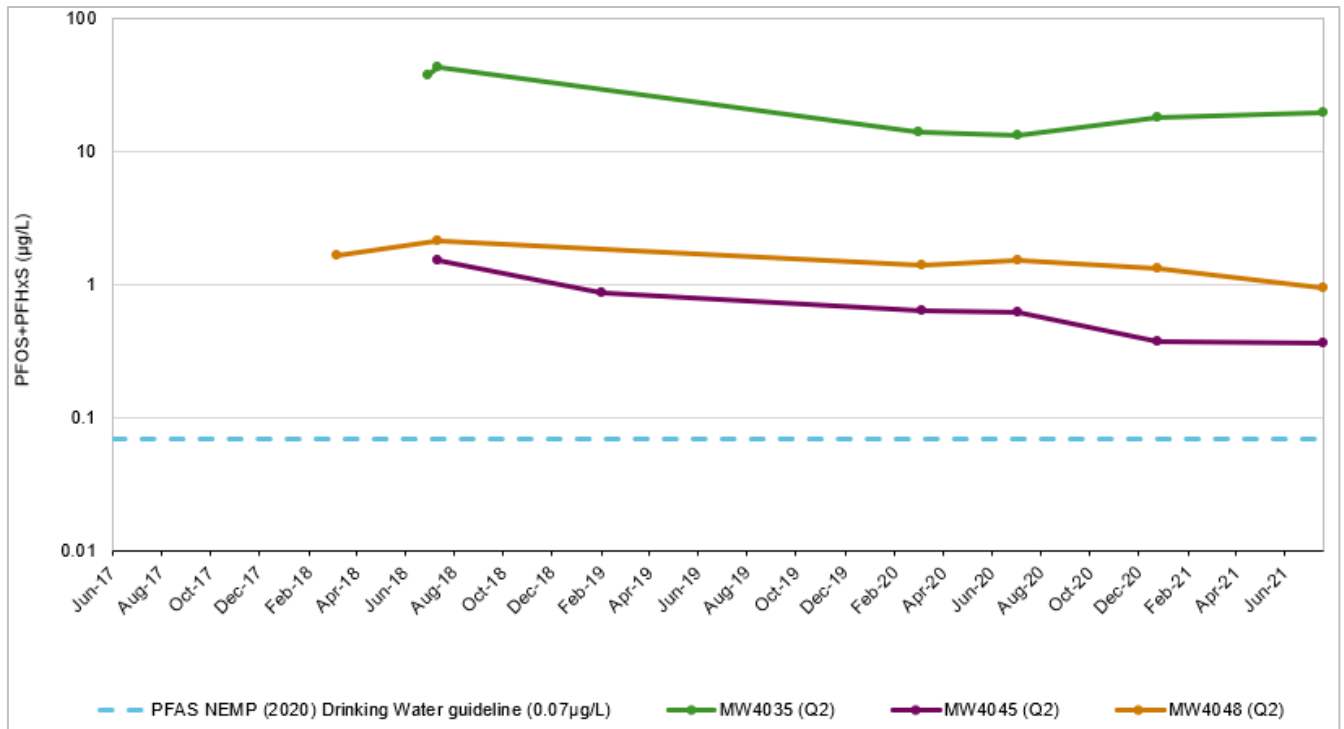


Figure 25 Q2 monitoring wells PFHxS+PFOS concentration trends at Helps Road Drain*

* Care should be taken when interpreting PFAS concentration trend graphs that include wells that vary in the number of times they have been sampled, the overall duration of monitoring, or the aquifer in which they are installed.

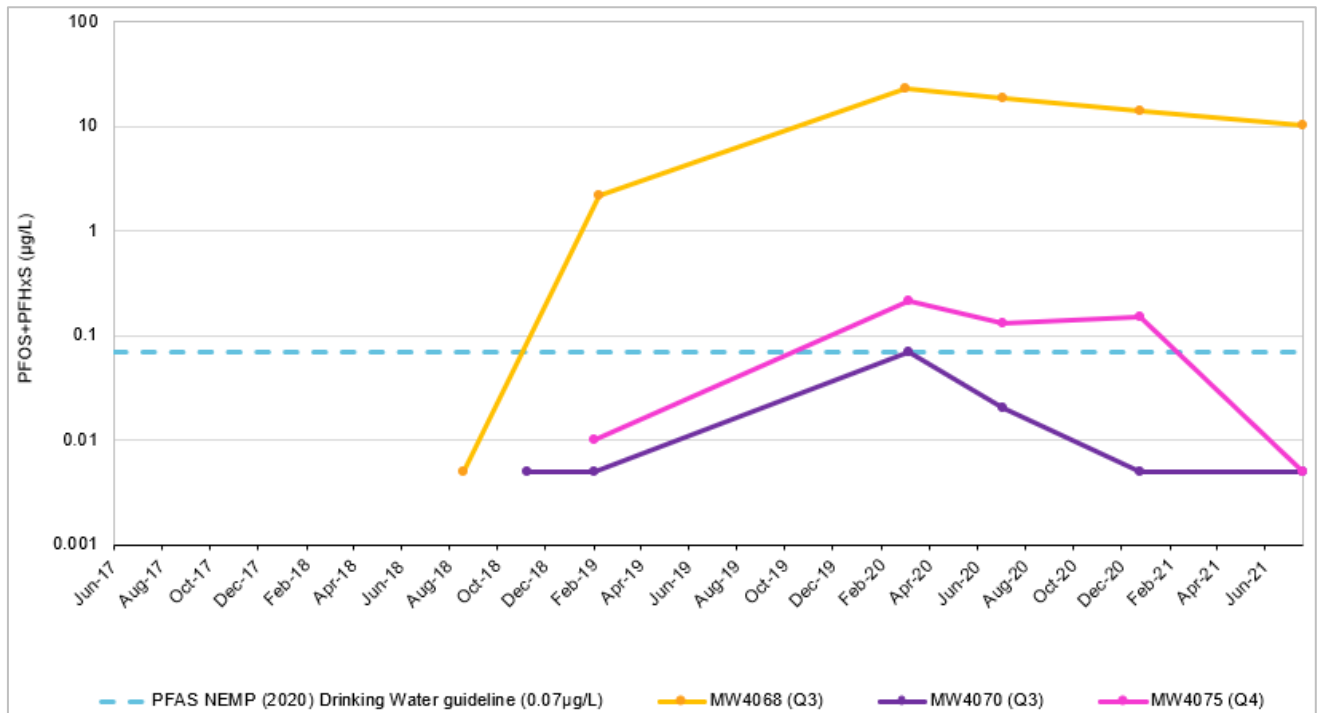


Figure 26 Q3 and Q4 monitoring wells PFHxS+PFOS concentration trends at Helps Road Drain

7.1.7 Off-Base lateral extent of PFAS analytical results

Twenty off-Base monitoring wells were sampled to investigate the lateral extent of PFAS in groundwater off-Base. These locations are summarised as:

- Q1 monitoring wells: MW4009, MW4020, MW4023, MW4027, MW4037, MW4041, MW4052, MW4055, MW4059, MW4060, MW4061, MW4064, MW4072 and MW4219;
- Q2 monitoring wells: MW4021, MW4022, MW4024, MW4076 and MW4077; and
- Q3 monitoring wells: MW4071.

It is noted that MW4027 (Q1), MW4061 (Q1) and MW4076 (Q2) were not sampled in August 2021 due to being submerged in pooled surface water.

Concentrations of PFOA were reported above the laboratory LOR at MW4023 (Q1), MW4024 (Q2) and MW4219 (Q1) in both 2021 monitoring events, all other locations were reported below the laboratory LOR. PFOA results did not exceeded the PFAS NEMP 2020 Human Health Drinking Water guideline (0.56µg/L) at any location in the 2021 monitoring events.

Concentrations of PFHxS+PFOS were reported above the laboratory LOR at MW4023 (Q1), MW4024 (Q2), MW4052 (Q1), MW4055 (Q1), MW4071 (Q3), MW4076 (Q2) and MW4219 (Q1), all other locations were reported below the laboratory LOR. The PFAS NEMP Human Health Drinking Water (0.07µg/L) guideline for PFHxS+PFOS was exceeded at MW4023 (Q1), MW4024 (Q2) and MW4219 (Q1) in the 2021 monitoring events. These results are consistent with historical exceedances of the adopted criteria.

It is noted that monitoring wells that identified concentrations of PFHxS+PFOS and PFOA were generally reported at lower concentrations in 2021 than in 2020 for the respective summer and winter monitoring rounds, with the exception of MW4055 (Q1).

Analytical results are summarised in **Table 12**, sampled locations are depicted in **Figure 27**, and PFHxS+PFOS trends are illustrated in **Figure 28**. For graphical purposes only results above guidelines are presented.

Table 12 Lateral extent of PFAS Summary Results (µg/L)

Well ID	Analyte	Historical Range 2018-2019		OMP Monitoring			
		Min	Max	March 2020	July/August 2020	January/February 2021	July/August 2021
MW4009 (Q1)	PFHxS+PFOS	ND	0.11	ND	ND	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
MW4020 (Q1)	PFHxS+PFOS	ND	0.03	ND	ND	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
MW4021 (Q2)	PFHxS+PFOS	ND	0.01	0.01	ND	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
MW4022 (Q1)	PFHxS+PFOS	ND	0.01	ND	0.01	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
MW4023 (Q1)	PFHxS+PFOS	2.12	2.5	2.38	2.55	1.56	1.92
	PFOA	0.03	0.05	0.05	0.06	0.03	0.04
MW4024 (Q2)	PFHxS+PFOS	1.12	1.53	1.47	1.44	0.90	1.03
	PFOA	0.03	0.03	0.03	0.03	0.02	0.02
MW4027 (Q1)	PFHxS+PFOS	0.02	0.43	0.06	ND	ND	NA
	PFOA	ND	ND	ND	ND	ND	NA
MW4037 (Q1)	PFHxS+PFOS	0.01	0.01	0.02	0.02	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
MW4041 (Q1)	PFHxS+PFOS	0.03	0.06	ND	0.05	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
MW4052 (Q1)	PFHxS+PFOS	0.07	0.09	0.03	0.04	0.01	0.02
	PFOA	0.02	0.02	ND	0.01	ND	ND
MW4055 (Q1)	PFHxS+PFOS	ND	0.77	ND	ND	0.03	ND
	PFOA	ND	ND	ND	ND	ND	ND
MW4059 (Q1)	PFHxS+PFOS	ND	0.02	0.04	0.03	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
MW4060 (Q1)	PFHxS+PFOS	ND	0.01	ND	ND	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
MW4061 (Q1)	PFHxS+PFOS	0.05	0.06	ND	0.05	ND	NA
	PFOA	ND	ND	ND	0.01	ND	NA
MW4064 (Q1)	PFHxS+PFOS	0.04	0.04	ND	0.01	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
MW4071 (Q3)	PFHxS+PFOS	ND	ND	0.02	0.02	0.01	0.01
	PFOA	ND	ND	ND	ND	ND	ND
MW4072 (Q1)	PFHxS+PFOS	0.01	0.01	ND	0.02	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND

Well ID	Analyte	Historical Range 2018-2019		OMP Monitoring			
		Min	Max	March 2020	July/August 2020	January/February 2021	July/August 2021
MW4076 (Q2)	PFHxS+PFOS	0.03	0.04	0.29	0.13	0.02	NA
	PFOA	ND	ND	ND	0.01	ND	NA
MW4077 (Q2)	PFHxS+PFOS	ND	ND	ND	0.03	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
MW4219 (Q1)	PFHxS+PFOS	0.08*	0.08*	NA	0.90	0.38	0.50
	PFOA	ND*	ND*	NA	0.03	0.01	0.02

Bold denotes exceedance of PFAS NEMP (2020) drinking water guideline (0.07 µg/L for PFHxS+PFOS and 0.56 µg/L for PFOA)

ND = Not detected above laboratory limits of reporting

* Historical results adopted from destroyed monitoring location MW4063

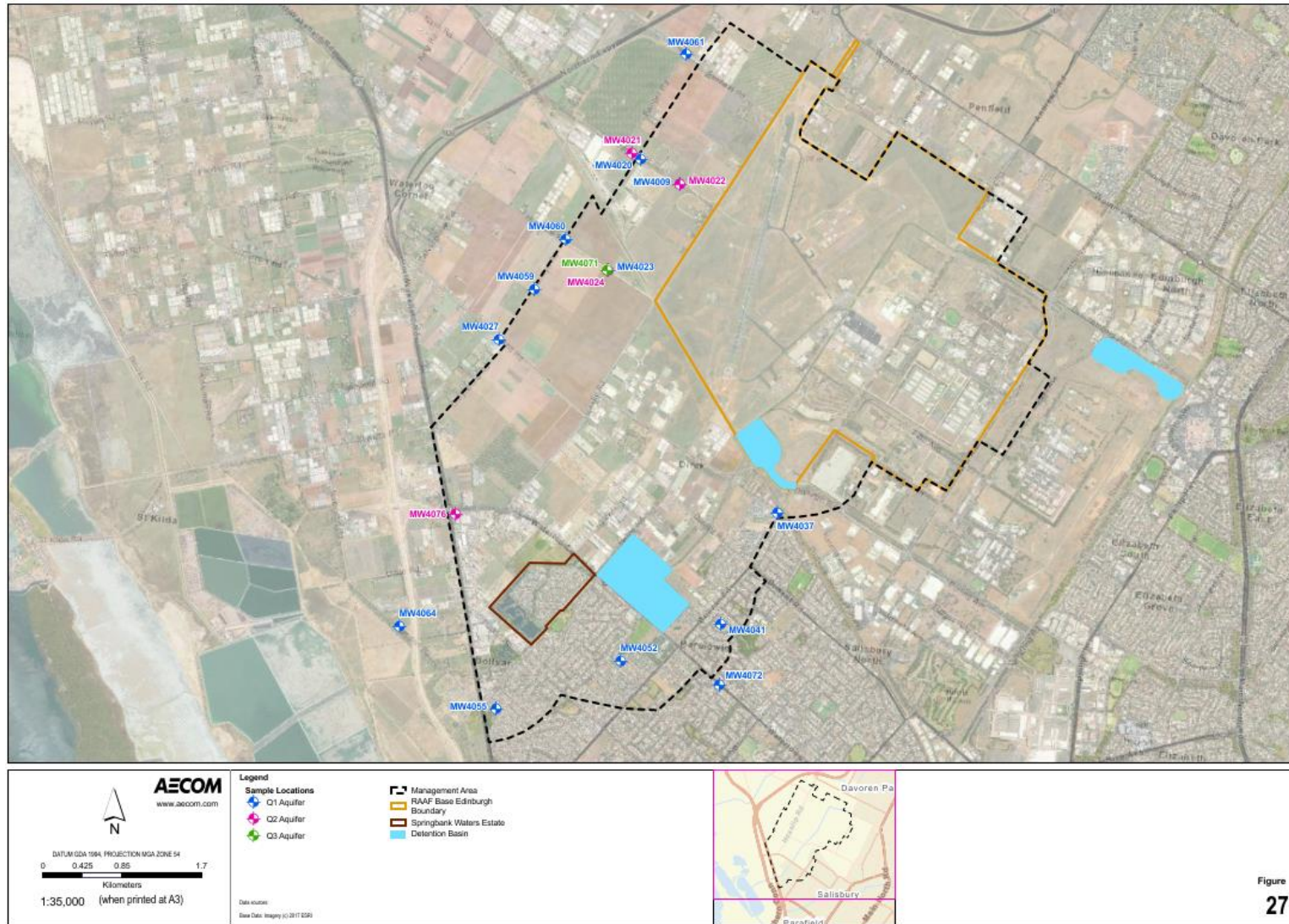


Figure 27 Off-Base lateral extent sampled locations

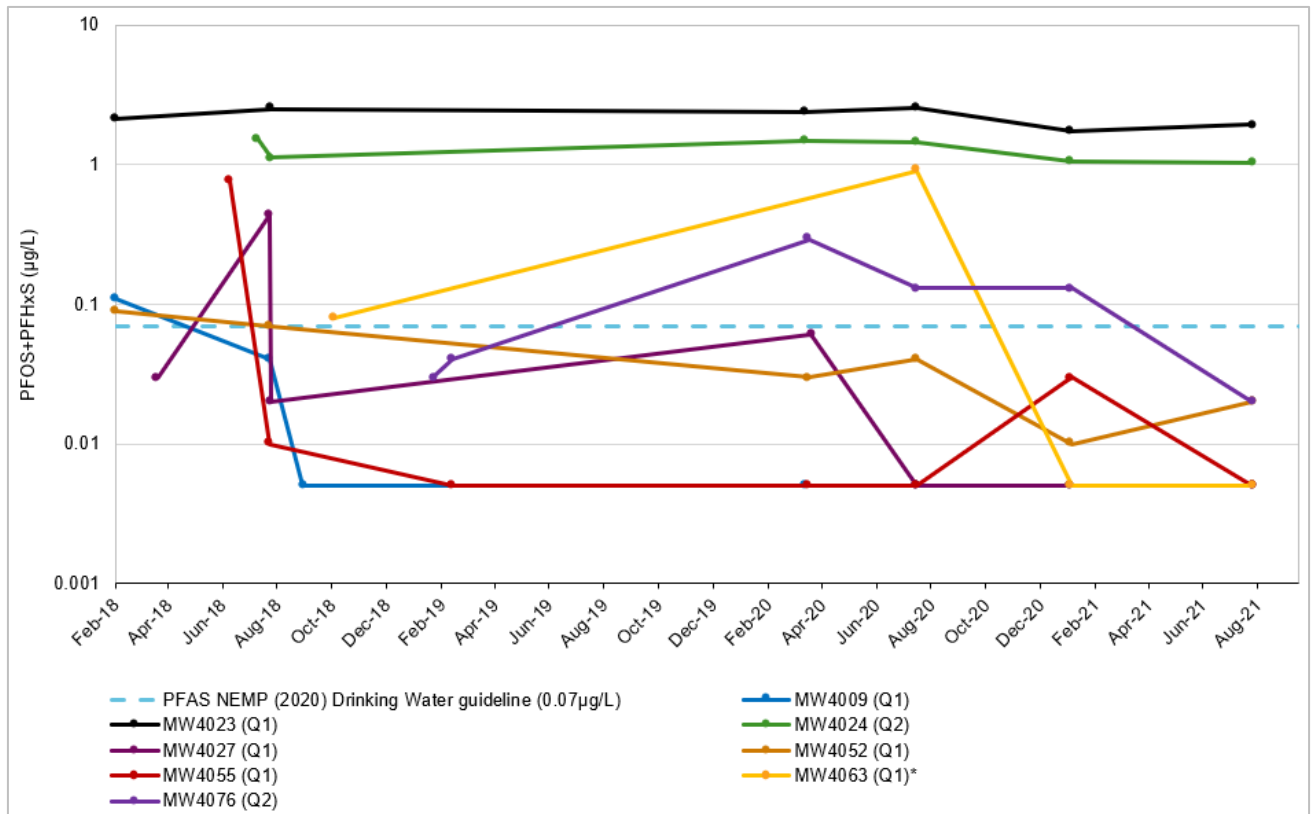


Figure 28 Monitoring locations characterising the lateral extent of PFHxS+PFOS concentration trends. * Includes MW4063 (replaced location) results. Only results above the laboratory LOR are shown.

7.1.8 Proximity to identified licensed groundwater users and private bore PFAS analytical results

Selected monitoring wells off-Base are located to measure PFAS concentrations with proximity to identified licensed groundwater users, including sampling at one private property bore. A summary of the well locations follows:

- Q1 monitoring wells: MW4057 and MW4058;
- Q2 monitoring wells: MW4223, MW4065 and MW4066;
- Q3 monitoring wells: MW4069, MW4073 and MW4074; and
- Q4 monitoring wells: MW4078 and MW4079.

A new maximum PFHxS+PFOS concentration was reported at MW4057 in January 2021.

All concentrations of PFOA were below the PFAS NEMP Human Health Drinking Water (0.56µg/L) guideline. Concentrations of PFOA were reported above the laboratory LOR at all locations with the exception of MW4058 (Q1), MW4065 (Q2), MW4074 (Q3) and MW4078 (Q4) in both 2021 monitoring events and MW4079 (Q4) in August 2021.

The PFAS NEMP Human Health Drinking Water (0.07µg/L) guideline for PFHxS+PFOS was exceeded at MW4057 (Q1), MW4066 (Q2), MW4069 (Q3) and MW4073 (Q3) in both 2021 monitoring events and at MW4079 in January 2021.

All concentrations at private bore MW4223 (Q2) were below the laboratory LOR in both 2021 monitoring events, consistent with historical results.

It is noted that concentrations of PFHxS+PFOS and PFOA were generally consistent between 2021 and 2020 monitoring rounds.

Analytical results are summarised in **Table 13**, sampled locations are depicted in **Figure 29** and PFHxS+PFOS trends are illustrated in **Figure 30** and **Figure 31**. For graphical purposes where concentrations are reported below the LOR, the concentrations are represented as half the LOR (i.e. 0.005 µg/L).

Table 13 Proximity to identified licensed groundwater users and private bore PFAS Summary Results (µg/L)

Well ID	Analyte	Historical Range 2018-2019		OMP Monitoring			
		Min	Max	March 2020	July 2020	January/February 2021	July/August 2021
MW4057 (Q1)	PFHxS+PFOS	0.18	0.36	0.31	0.25	0.25	0.19
	PFOA	0.02	0.02	0.05	0.04	0.04	0.02
MW4058 (Q1)	PFHxS+PFOS	ND	0.01	ND	ND	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
MW4065 (Q2)	PFHxS+PFOS	ND	ND	ND	ND	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
MW4066 (Q2)	PFHxS+PFOS	0.27	0.42	0.28	0.30	0.22	0.23
	PFOA	0.02	0.02	0.02	0.02	0.02	0.01
MW4069 (Q3)	PFHxS+PFOS	2.77	4.3	2.68	4.41	2.08	2.35
	PFOA	0.06	0.09	0.07	0.11	0.05	0.06
MW4073 (Q3)	PFHxS+PFOS	0.29	0.78	0.60	0.49	0.30	0.30
	PFOA	0.03	0.06	0.12	0.04	0.03	0.03
MW4074 (Q3)	PFHxS+PFOS	ND	0.01	ND	0.03	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
MW4078 (Q4)	PFHxS+PFOS	ND	0.04	0.06	ND	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
MW4079 (Q4)	PFHxS+PFOS	0.05	0.05	0.04	0.88	0.07	0.04
	PFOA	0.01	0.01	ND	0.02	0.01	ND
MW4223 (Q2)	PFHxS+PFOS	NA	NA	ND	ND	ND	ND
	PFOA	NA	NA	ND	ND	ND	ND

Bold denotes exceedance of PFAS NEMP (2020) drinking water guideline (0.07 µg/L for PFHxS+PFOS and 0.56 µg/L for PFOA)

ND = Not detected above laboratory limits of reporting

NA = Not analysed

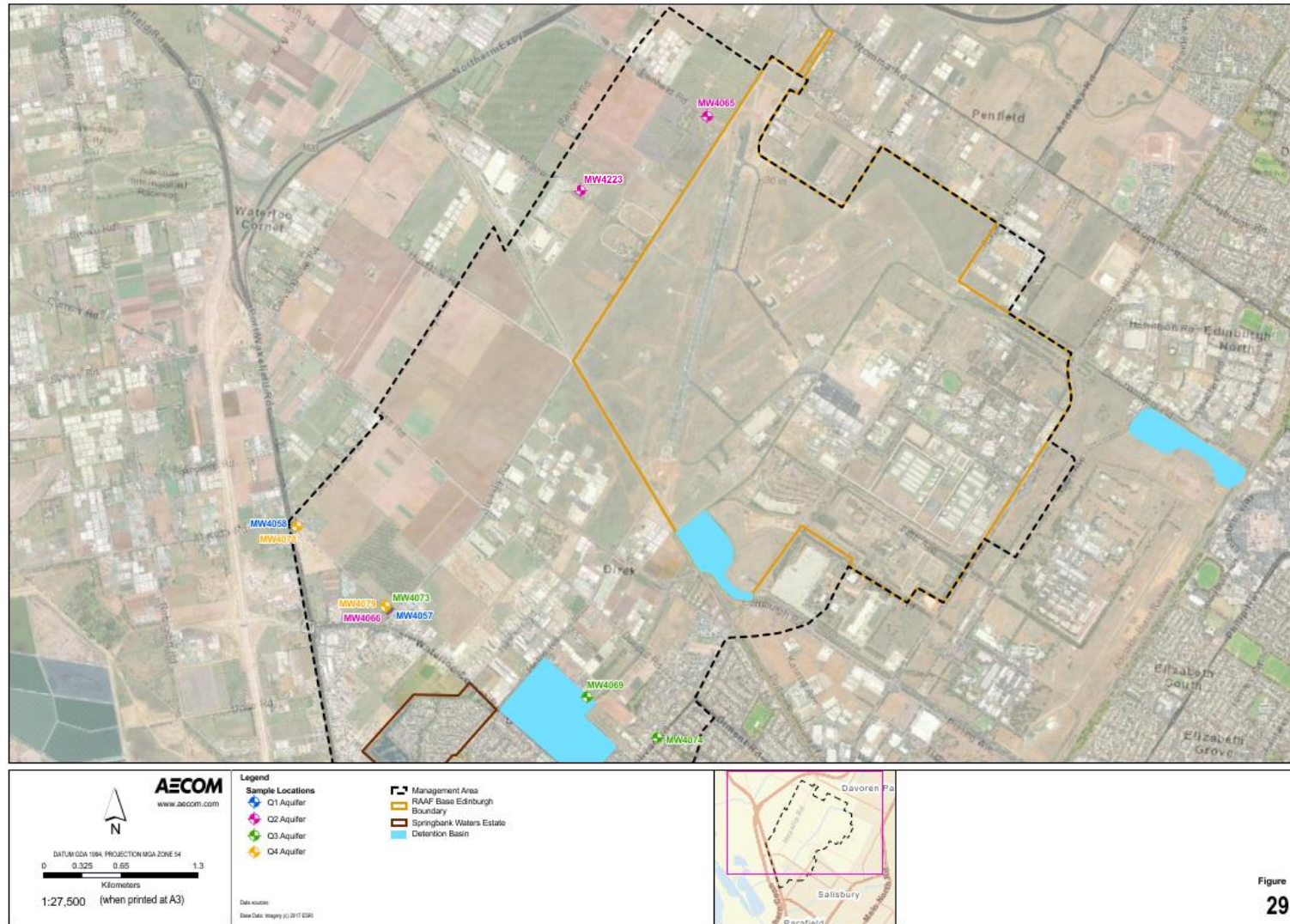


Figure 29 Sampled locations with proximity to identified licensed groundwater users

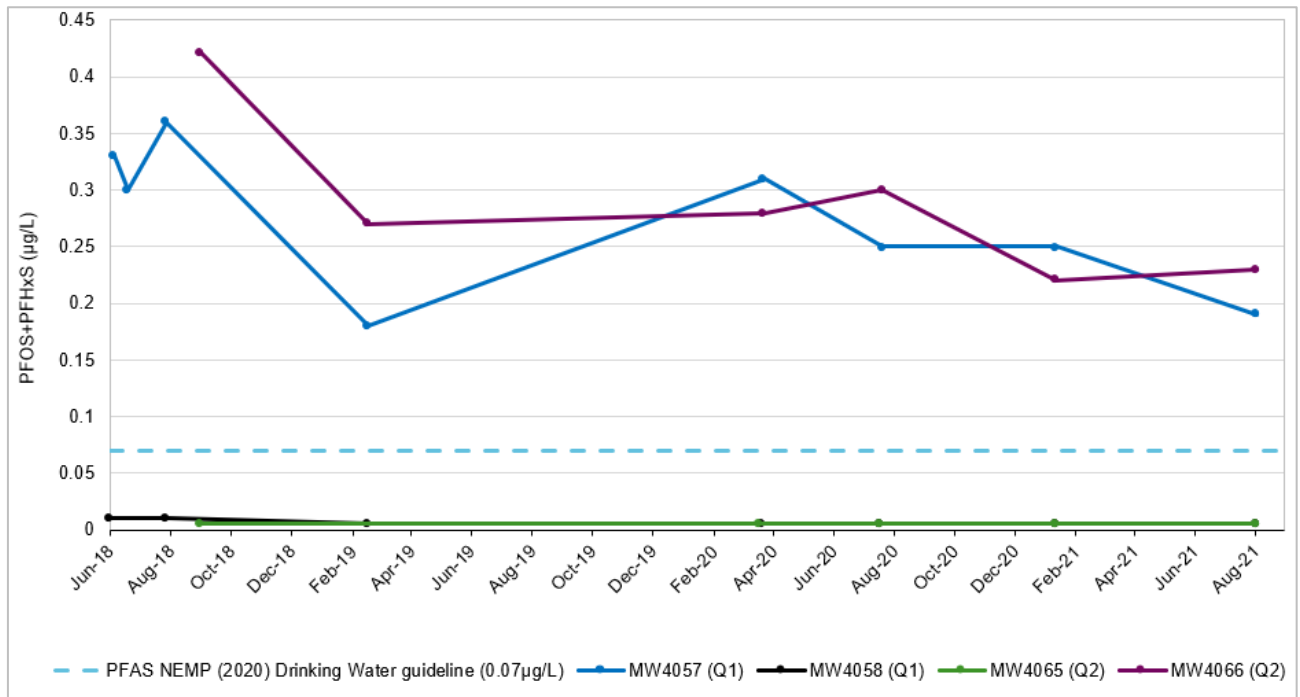


Figure 30 Q1 and Q2 monitoring locations with proximity to identified groundwater users PFHxS+PFOS concentration trends

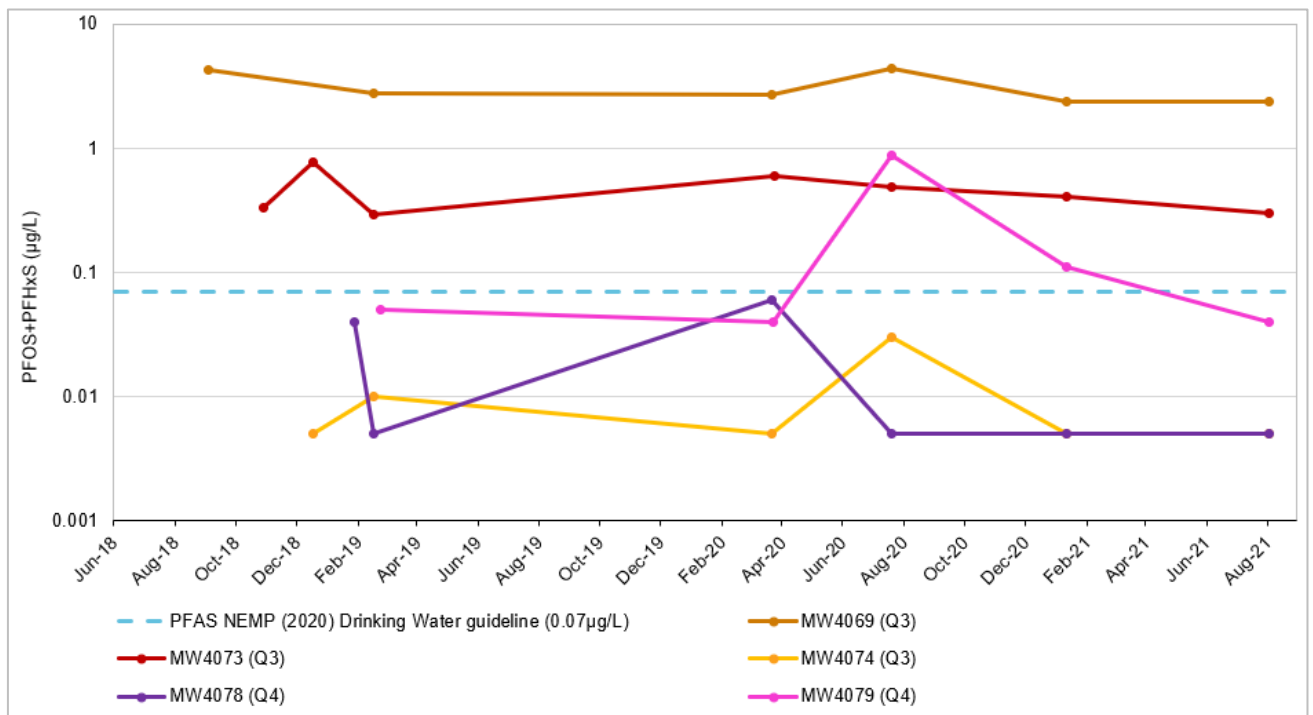


Figure 31 Q3 and Q4 monitoring locations with proximity to identified groundwater users PFHxS+PFOS concentration trends

7.1.9 Tertiary aquifer bores PFAS analytical results

Off-Base T1 monitoring wells MW4220, MW4221 and MW4222 are included in the OMP to measure PFAS concentrations within the T1 aquifer. These bores are used for irrigation purposes and are operated by the Salisbury City Council (MW4221 and MW4222) and the Department for Environment and Water (MW4220).

Concentrations of PFOA and PFHxS+PFOS at all T1 monitoring well locations were below the laboratory LOR for both 2021 monitoring events.

The PFAS NEMP Human Health Drinking Water guideline was not exceeded for PFHxS+PFOS or PFOA at any location.

Analytical results are summarised in **Table 14** and sample locations are depicted in **Figure 32**.

Table 14 Tertiary aquifer bores PFAS Summary Results (µg/L)

Well ID	Analyte	Historical Results 2017	OMP Monitoring			
			March 2020	July 2020	January/February 2021	July/August 2021
MW4221 (T1)	PFHxS+PFOS	ND	ND	ND	ND	ND
	PFOA	ND	ND	ND	ND	ND
MW4220 (T1)	PFHxS+PFOS	NA	0.02	ND	ND	ND
	PFOA	NA	ND	ND	ND	ND
MW4222 (T1)	PFHxS+PFOS	ND	ND	ND	ND	ND
	PFOA	ND	ND	ND	ND	ND

ND = Not detected above laboratory limits of reporting

NA = Not analysed

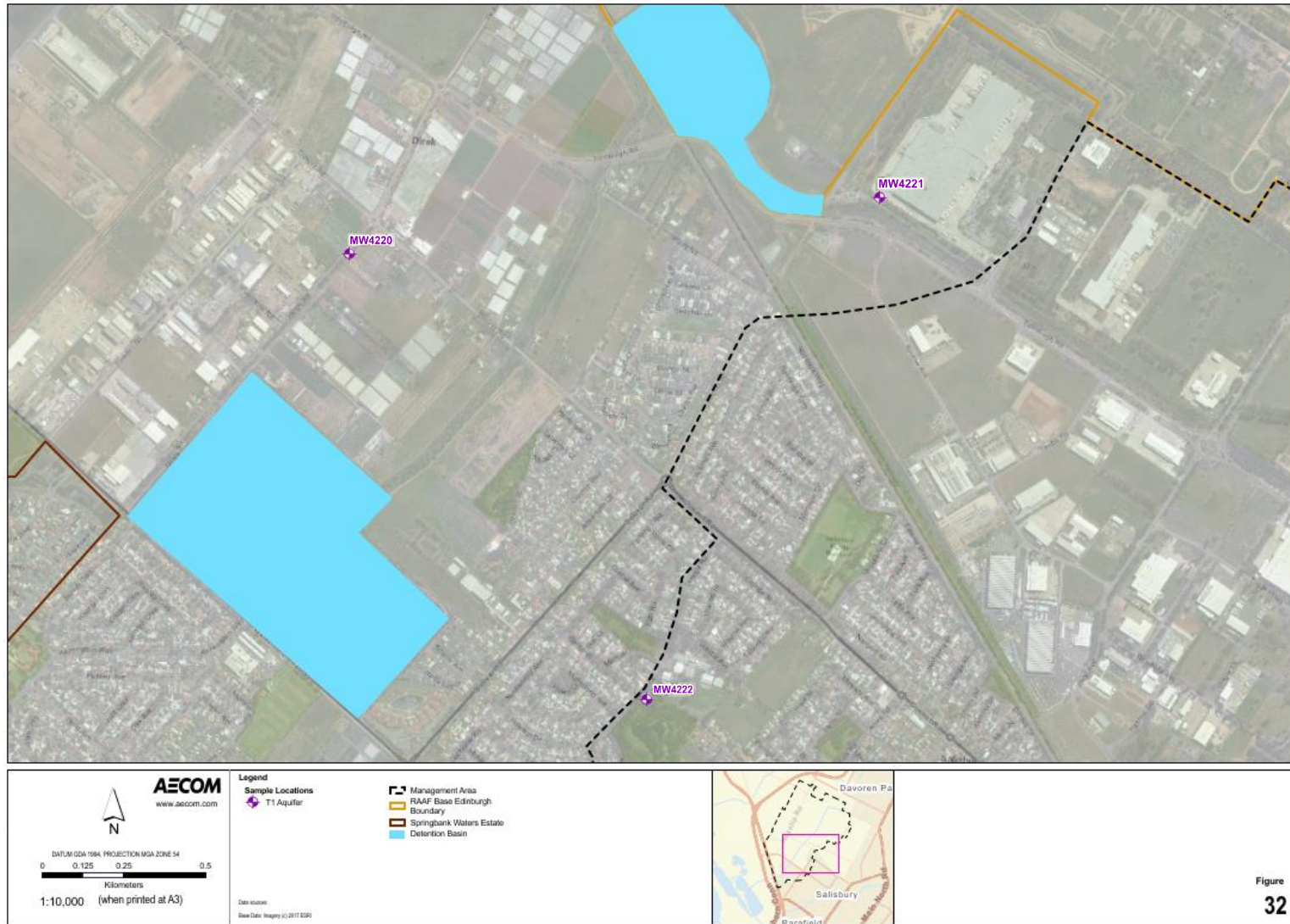


Figure
32

Figure 32 Sampled locations of T1 aquifer bores

7.1.10 Summary of PFAS in groundwater 2020 and 2021

Groundwater monitoring analytical results for both on- and off-base wells for PFOS, PFOA and sum PFOS and PFHxS are summarised in **Table 15** below.

Table 15 Summary of PFOS, PFOA and sum of PFOS and PFHxS concentrations in groundwater

Sampling event	No. of sample locations analysed	Compound	Concentration range (> LOR) (µg/L)	No. of sample locations with concentrations < LOR	No. of sample locations exceeding groundwater drinking water guideline (HEPA, 2020)
On-Base monitoring locations					
March 2020	59 of 60	PFOS	0.01 (MW2173) to 13,000 (MW2116)	3	47
		PFHxS	0.03 (MW2173 and MW2182) to 9,980 (MW2116)	7	48
		PFOA	0.02 (MW2285) to 9.49 (MW2358)	18	22
		PFHxS+PFOS	0.01 (MW2209) to 23,000 (MW2116)	1	51
July/Aug 2020	60 of 60	PFOS	0.01 (MW2135 and MW2139) to 13,200 (MW2116)	7	48
		PFHxS	0.02 (MW2134 and MW2394) to 10,200 (MW2116)	7	49
		PFOA	0.02 (MW2281 and MW2285) to 638 (MW2116)	17	24
		PFHxS+PFOS	0.01 (MW2135) to 23,400 (MW2116)	5	53
Jan/Feb 2021	59 of 60	PFOS	0.01 (MW2394) to 7,320 (MW2116)	8	46
		PFHxS	0.03 (MW2134) to 3,710 (MW2116)	8	46
		PFOA	0.01 (MW2411) to 219 (MW2116)	20	23
		PFHxS+PFOS	0.05 (MW2134) to 11,000 (MW2116)	7	50
July/Aug 2021	60 of 60	PFOS	0.05 (MW2182) to 6,860 (MW2116)	11	45
		PFHxS	0.02 (MW2173 and MW2184) to 2,700 (MW2116)	8	46
		PFOA	0.01 (MW2218 and MW2501) to 192 (MW2116)	20	21
		PFHxS+PFOS	0.02 (MW2173) to 9,560 (MW2116)	7	51
Off-Base monitoring locations					
March 2020	43 of 45	PFOS	0.01 (MW4021 and MW4079) to 15.7 (MW4068)	15	18
		PFHxS	0.03 (MW4079) to 7.84 (MW4015)	25	17

Sampling event	No. of sample locations analysed	Compound	Concentration range (> LOR) (µg/L)	No. of sample locations with concentrations < LOR	No. of sample locations exceeding groundwater drinking water guideline (HEPA, 2020)
		PFOA	0.01 (MW4045 and MW4075) to 0.34 (MW4068)	26	0
		PFHxS+PFOS	0.01 (MW4021) to 22.5 (MW4068)	15	18
July/Aug 2020	45 of 45	PFOS	0.01 (MW4022 and MW4064) to 9.50 (MW4035)	14	18
		PFHxS	0.03 (MW4061) to 8.25 (MW4015)	25	18
		PFOA	0.01 (MW4045, MW4052, MW4061, MW4076) to 0.32 (MW4015)	25	0
		PFHxS+PFOS	0.01 (MW4022 and MW4064) to 8.12 (MW4013)	14	19
Jan/Feb 2021	45 of 45	PFOS	0.01 (MW4052 and MW4071) to 11.5 (MW4035)	23	15
		PFHxS	0.05 (MW4079) to 4.67 (MW4035)	27	17
		PFOA	0.01 (MW4079 and MW4219) to 0.27 (MW4035)	29	0
		PFHxS+PFOS	0.01 (MW4052 and MW4071) to 16.2 (MW4035)	23	18
July/Aug 2021	42 of 45	PFOS	0.01 (MW4071) to 15.2 (MW4035)	24	15
		PFHxS	0.04 (MW4079) to 6.4 (MW4035)	25	16
		PFOA	0.01 (MW4066) to 0.36 (MW4035)	27	0
		PFHxS+PFOS	0.01 (MW4071) to 20.1 (MW4035)	23	18

7.1.11 Groundwater non-PFAS analytical results

In addition to PFAS, selected groundwater samples were analysed for the following geochemical properties in January/February 2021 as outlined in the SAQP (AECOM, 2020b):

- Major ions (sodium, calcium, magnesium and potassium) and anions (chlorine, sulphate, bicarbonate, carbonate)
- Total Suspended Solids (TSS); and
- Dissolved Organic Carbon (DOC).

All non-PFAS surface water analytical results for the sampling event conducted in 2021 are presented in **Table T3 (Appendix B)**.

Results for major ions for monitoring events in January/February 2021 indicate that the cation composition is dominated by sodium across samples on- and off-Base locations. The anion composition is dominated by chloride and bicarbonate in both on-Base and off-Base groundwater monitoring locations.

It should be noted that non-PFAS sampling parameters were removed from the OMP by direction from Defence as of 27 January 2021 and therefore are not reported on during the July/August 2021 sampling event.

7.1.12 Groundwater Elevations

Groundwater elevation contours from gauging results collected during the OMP monitoring are presented in **Figure A5.1 to Figure A5.8 (Appendix A)** for January/February and July/August 2021 respectively (**Appendix C**).

Gauging locations include all wells sampled (excluding wells with permanent headworks) and an additional eighteen gauge only locations supplementing the monitoring well network for groundwater elevation and flow direction interpretations. The gauge only locations include:

- Q1 on-Base locations: MW2118, MW2156, MW2163, MW2171
- Q1 off-Base locations: MW4006, MW4028, MW4029, MW4030, MW4043, MW4046, MW4047, MW4049
- Q2 on-Base locations: MW2160, MW2164, MW2199, MW2195
- Q2 off-Base locations: MW4031, MW4032

Groundwater elevations and contours for the monitoring events indicate that groundwater generally flows to the south-west across the site for all Quaternary aquifers, consistent with previous interpretations. Groundwater contouring also indicated that the Helps Road Drain influences groundwater flow.

Contours were not generated for the Q3 and Q4 aquifers due to limited data, however an inferred flow direction was generated with the available data and was consistent with historical interpretations. No contours were generated for the T1 aquifer for both events as there was insufficient data points.

Groundwater elevations appear to exhibit minor seasonal fluctuations at most monitoring locations, however, have generally remained stable over time. The greatest variations in groundwater elevation are observed in the Q3 and Q4 aquifers as shown in hydrographs below (**Figure 33 to Figure 39**). The hydrograph for the Q1 aquifer has been split over two graphs for on-Base locations and between on- and off-Base locations for both the Q1 and Q2 aquifers for display purposes (**Figure 33 and Figure 34**).

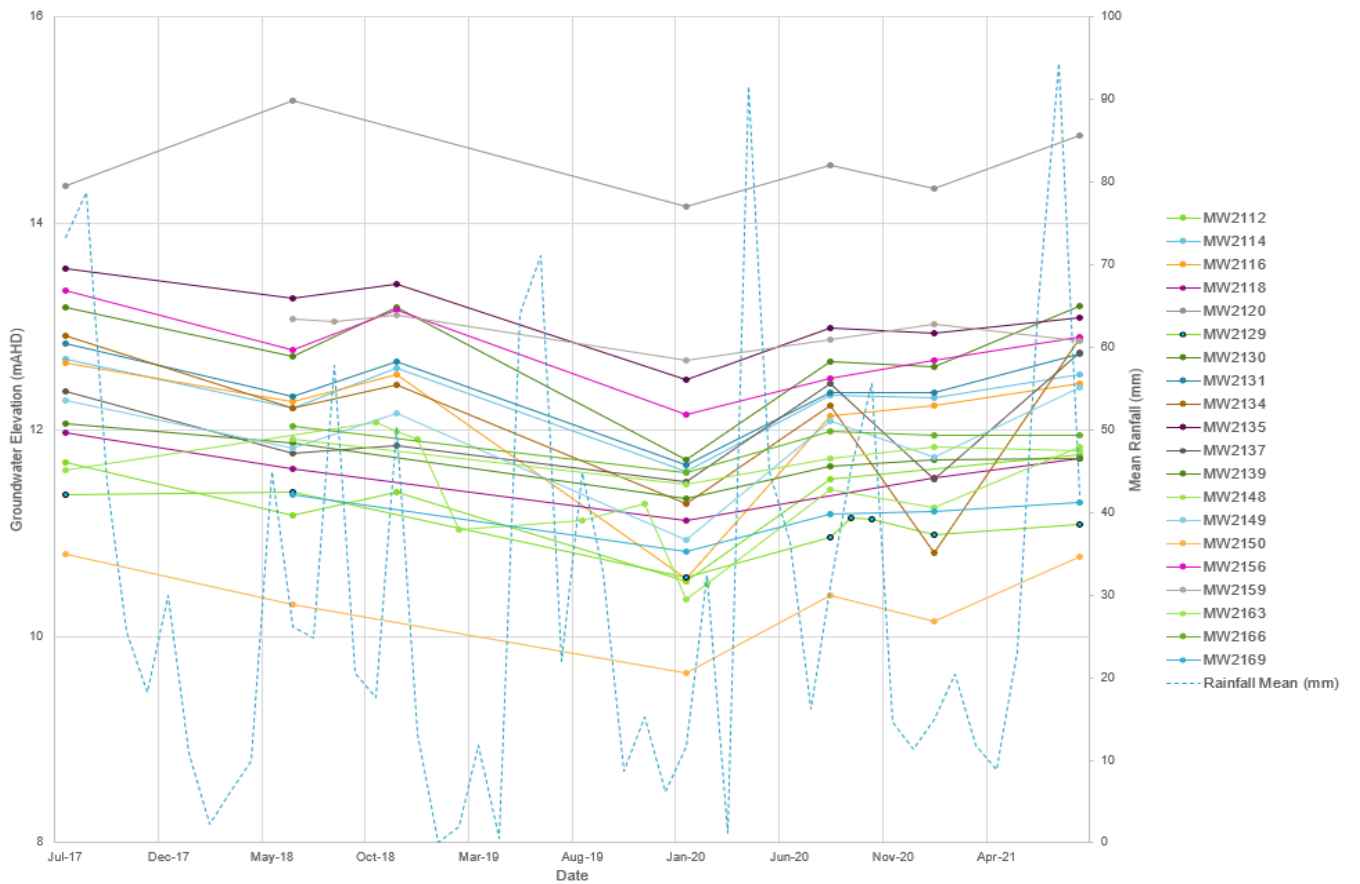


Figure 33 Hydrograph for Q1 on-Base gauging locations

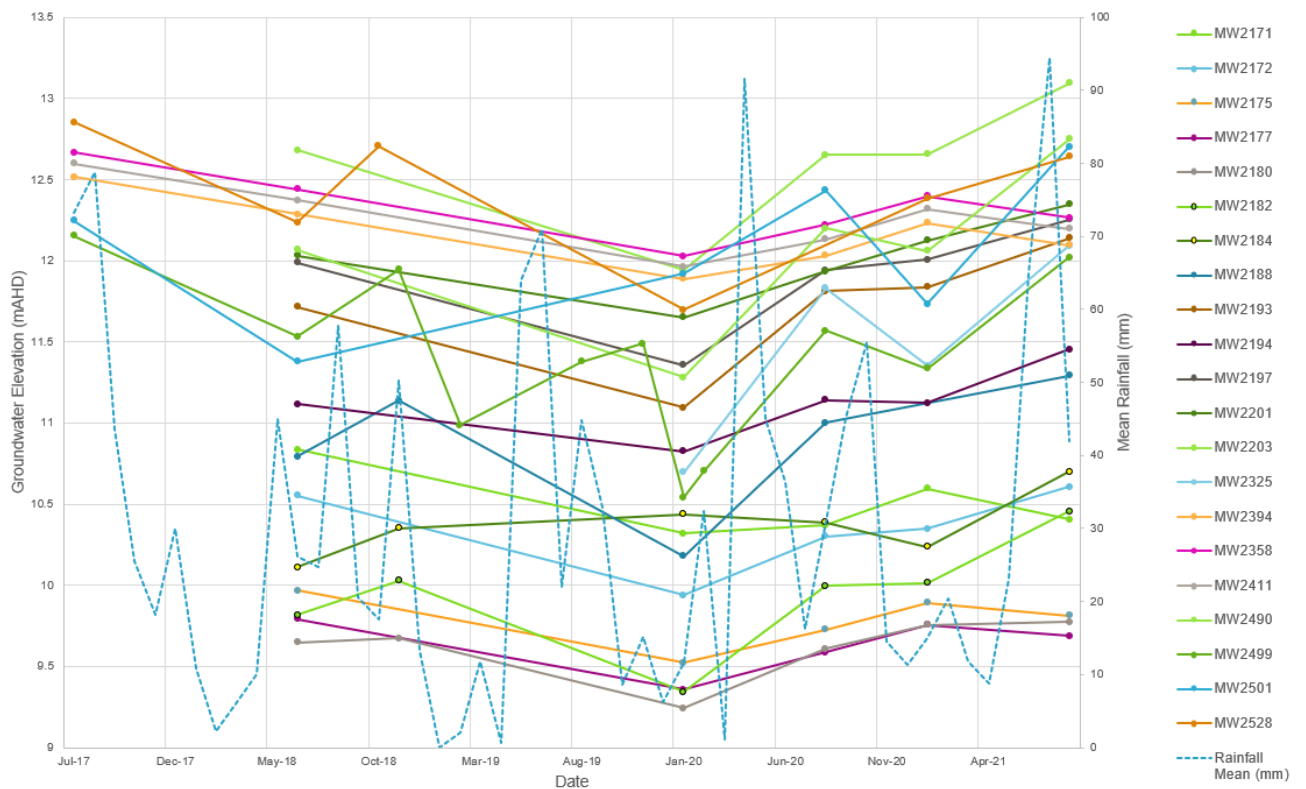


Figure 34 Hydrograph for Q1 on-Base gauging locations

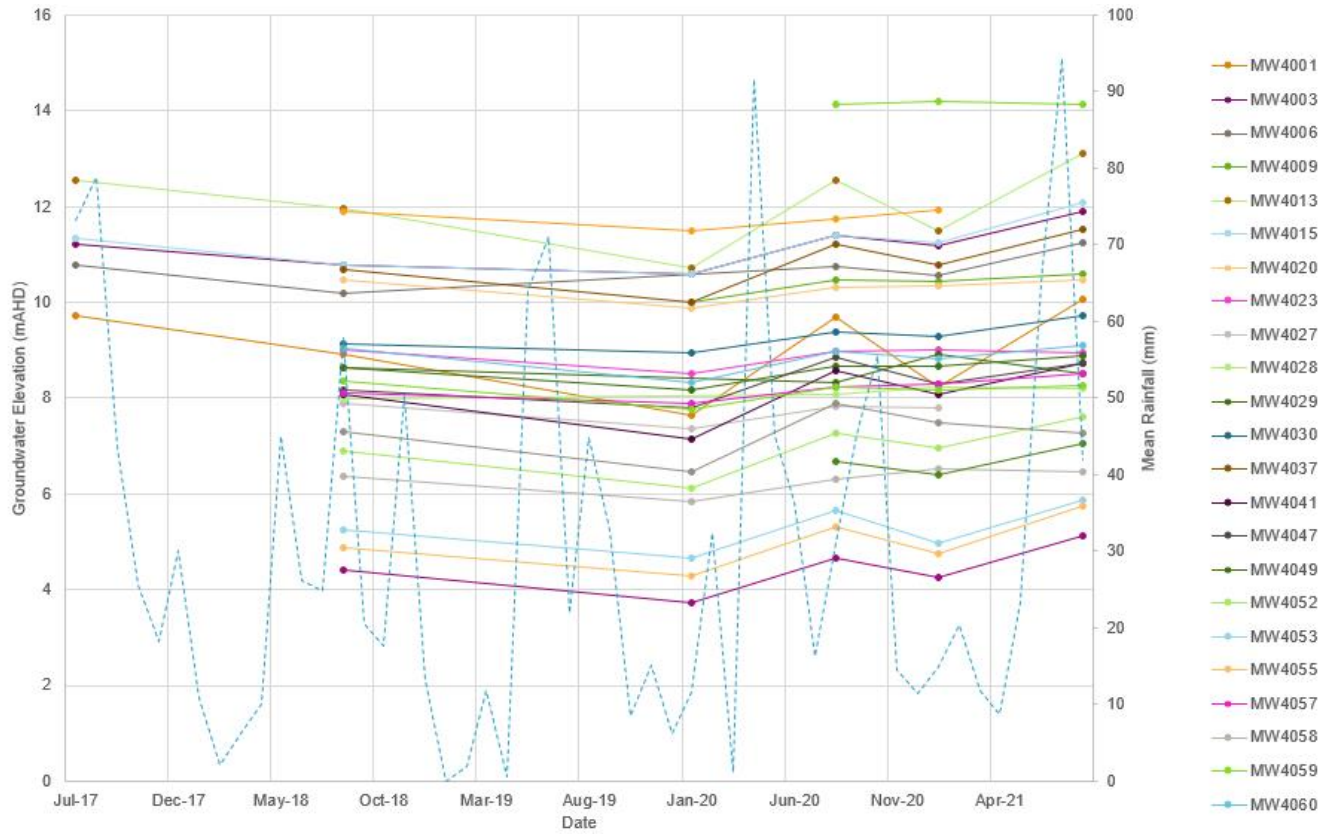


Figure 35 Hydrograph for Q1 off-Base gauging locations

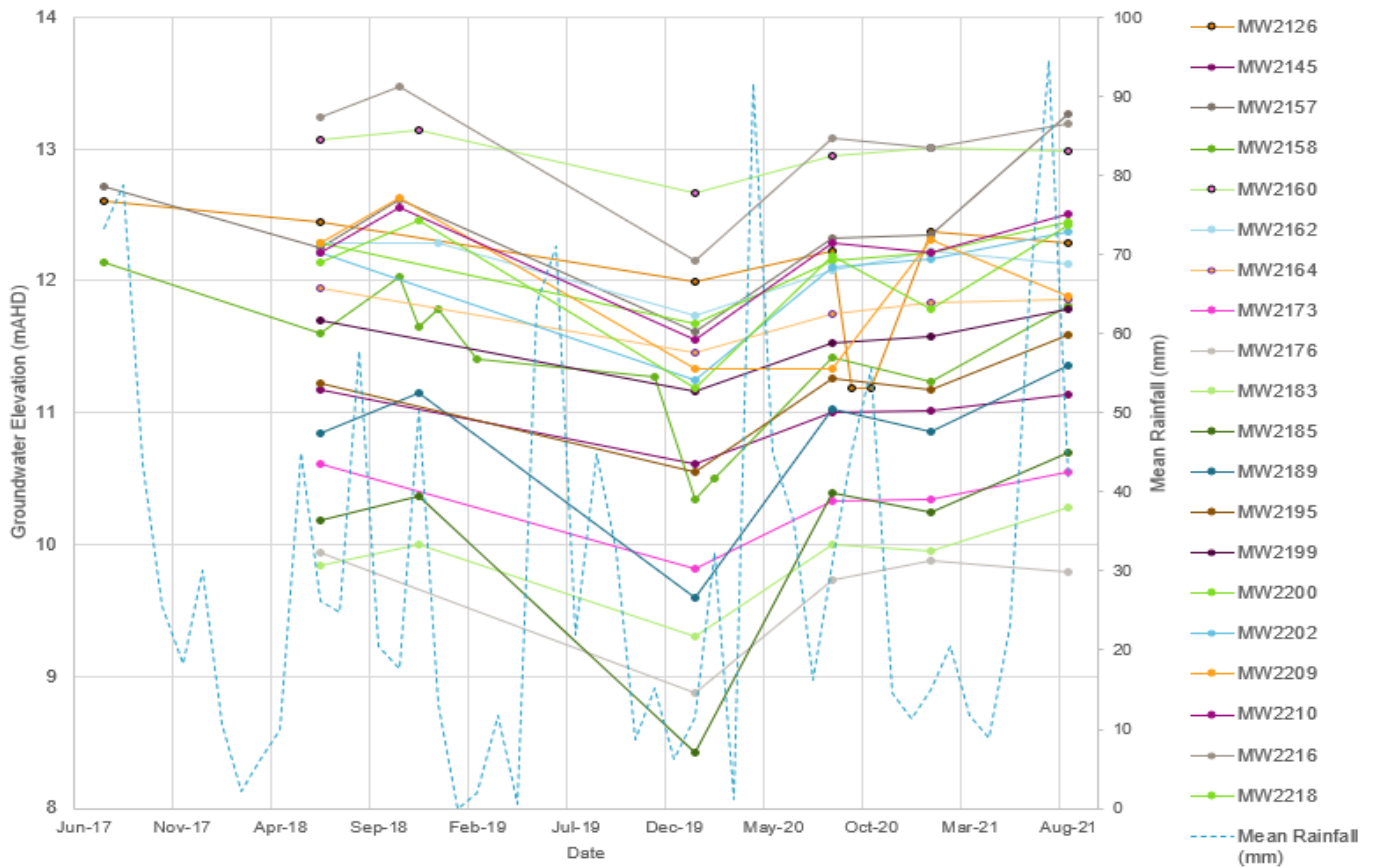


Figure 36 Hydrograph for Q2 on-Base gauging locations

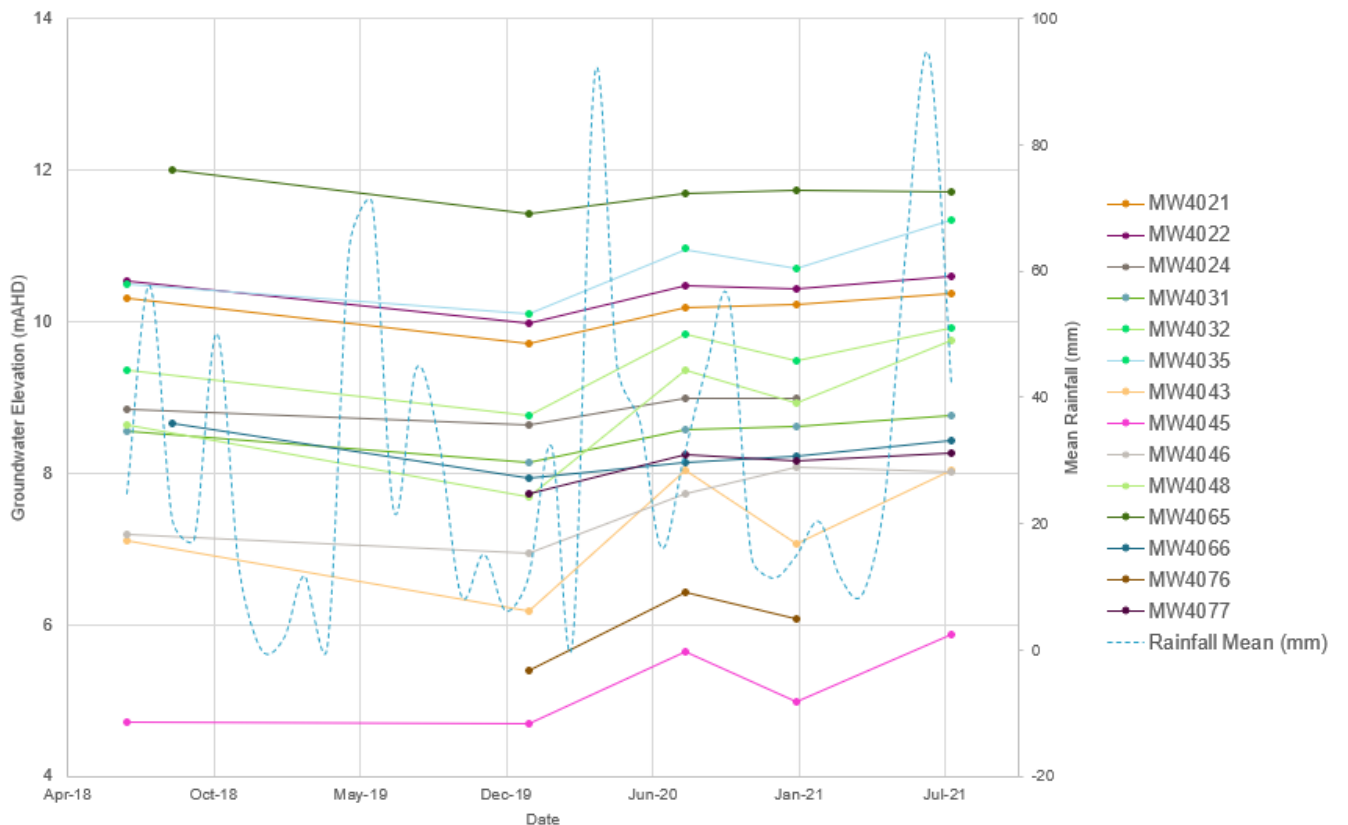


Figure 37 Hydrograph for Q2 off-Base gauging locations

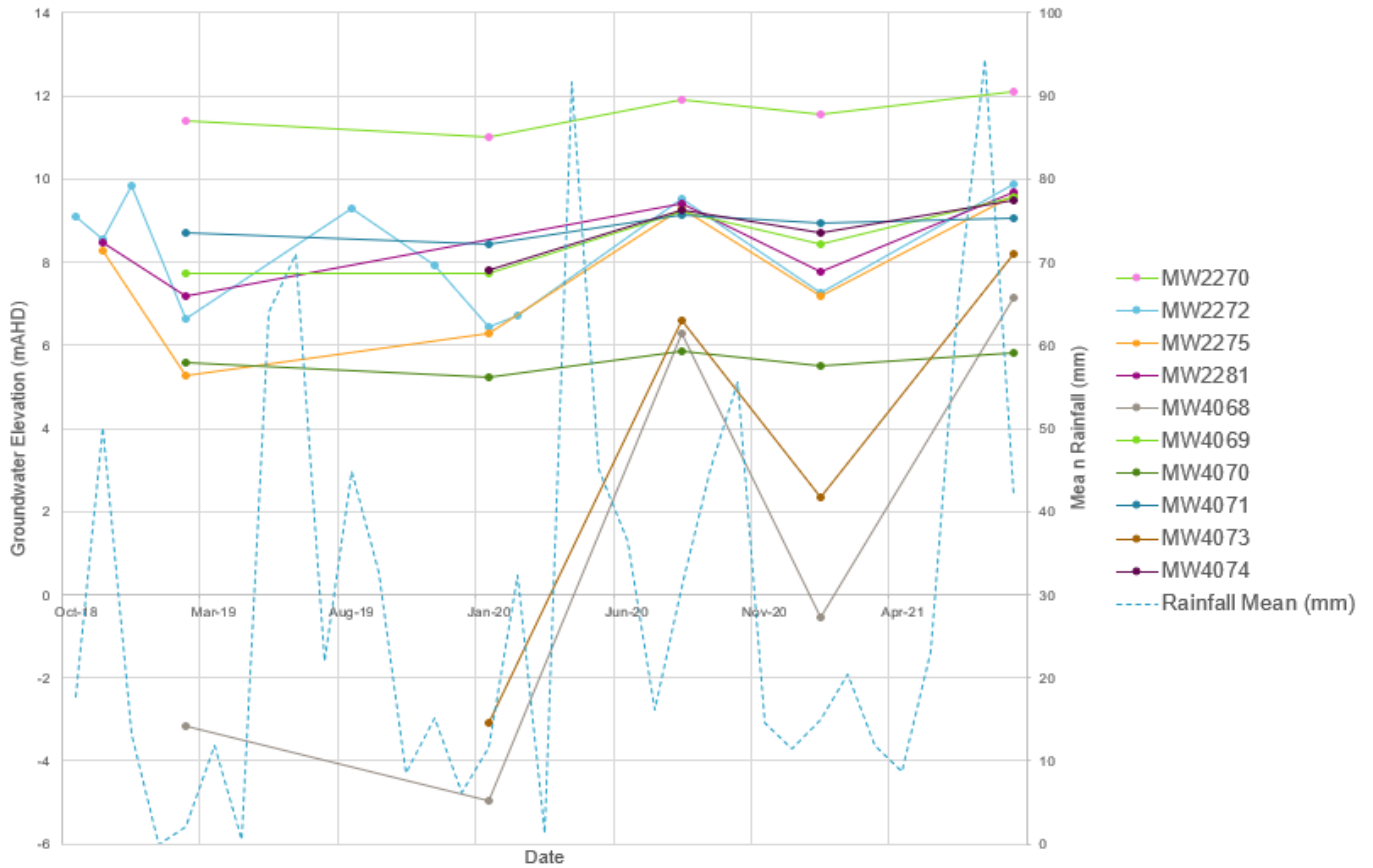


Figure 38 Hydrograph for on- and off-Base Q3 gauging locations

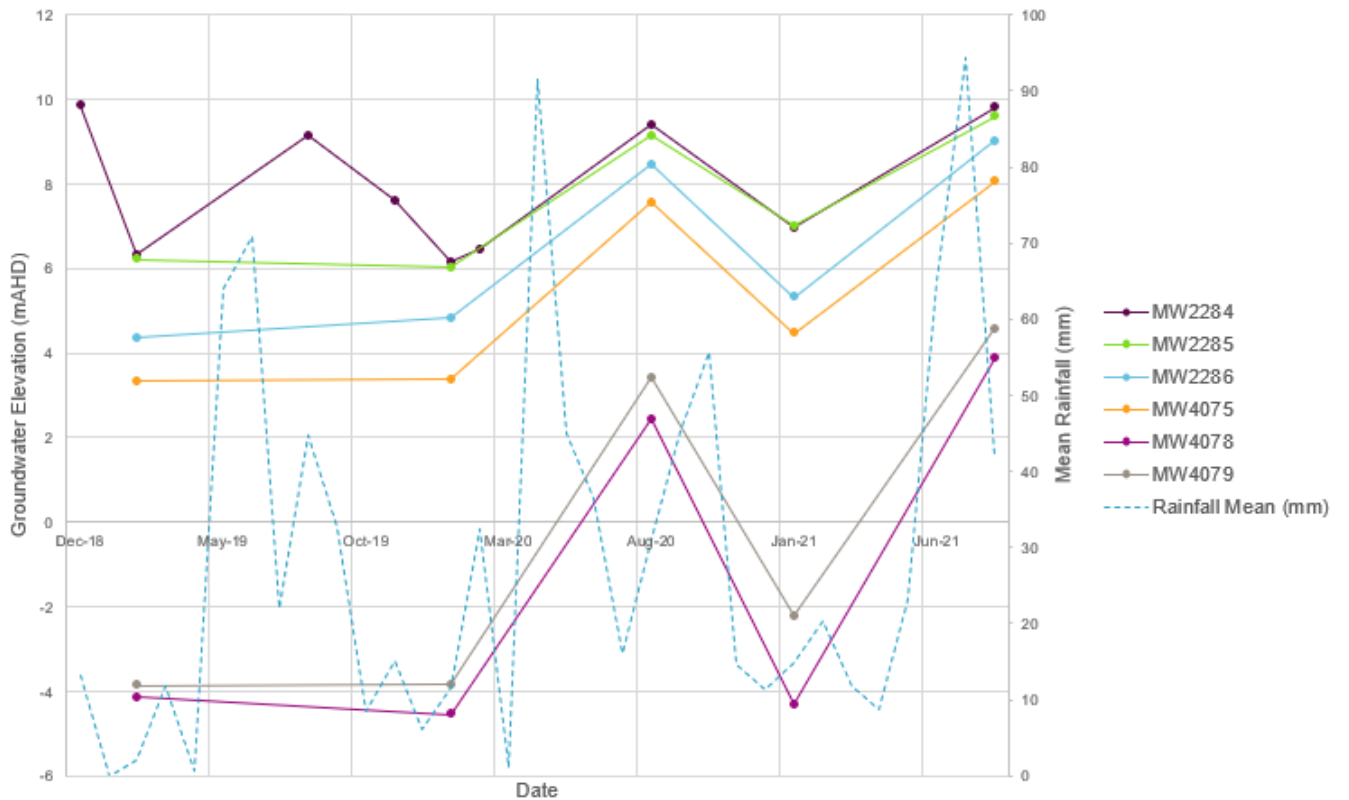


Figure 39 Hydrograph for on- and off-Base Q4 gauging location

7.1.13 Groundwater field parameters measurements

During each sampling event, groundwater quality parameter field measurements were recorded prior to collecting groundwater samples. Parameters are presented in each of the respective factual reports in **Appendix E**. The field parameter readings from the 2020 and 2021 sampling events are summarised in **Table 16** below.

Table 16 Groundwater field parameter ranges (min – max)

Aquifer	Parameter	January-August 2020	January–August 2021	Observations
Q1	DO (mg/L)	1.3 (MW4218) – 7.83 (MW2499)	0.91 (MW2182) – 7.81 (MW4020)	DO shows a generally consistent range between years, of the same magnitude for min. and max. values
	TDS (mg/L)	135 (MW4027) - 15,438 (MW4023)	380.3 (MW4027) – 20,381.4 (MW4023)	TDS values consistent between sampling years and lowest/highest values consistently occur at two locations
	pH	6.35 (MW4015) - 9.04 (MW4001)	6.16 (MW2137) – 9.76 (MW2148)	pH shows a generally consistent range between years (pH result for MW2149 in July 2020 of 12.30 appears to be an outlier and has been excluded).
	ORP (mV)	-260.7 (MW2411) – 193.2 (MW2194)	-227.5 (MW2394) – 239.7 (MW4057)	ORP shows a generally consistent range between years, of the same magnitude for min. and max. values
Q2	DO (mg/L)	1.26 (MW2173) – 12.37 (MW2200)	1.1 (MW2173) – 10.83 (MW2210)	DO shows a generally consistent range between years, of the same magnitude for min. and max. values. One location consistent in reporting the minimum value.
	TDS (mg/L)	64.5 (MW4066) – 20,108.4 (MW2176)	720.85 (MW4048) – 19,633.77 (MW2173)	Larger range difference reported for TDS in the Q2 aquifer than reported for the Q1, Q3.
	pH	6.40 (MW4066) – 12.37 (MW2200)	6.32 (MW4021) – 11.57 (MW2200)	pH shows a generally consistent range between years, of the same magnitude for min. and max. values
	ORP (mV)	-336.1 (MW2173) – 183.2 (MW4076)	-230.8 (MW2200) – 205.4 (MW4066)	ORP shows a generally consistent range between years, of the same magnitude for min. and max. values
Q3	DO (mg/L)	1.57 (MW2275) – 6.47 (MW4074)	1.68 (MW4069) – 6.66 (MW4074)	DO shows a generally consistent range between years, of the same

Aquifer	Parameter	January-August 2020	January-August 2021	Observations
				magnitude for min. and max. values
	TDS (mg/L)	1,504.2 (MW4070) – 9,094.6 (MW4073)	1,795.04 (MW4070) – 9,363.25 (MW4071)	ORP shows a generally consistent range between years, of the same magnitude for min. and max. values. One location consistent in reporting the minimum value.
	pH	6.63 (MW4074) – 12.17 (MW4068)	6.96 (MW2270) – 12.5 (MW2272)	pH shows a consistent range between years, of the same magnitude for min. and max. values.
	ORP (mV)	-241.4 (MW4071) – 165.3 (MW2275)	-256 (MW4071) – 219.8 (MW2281)	ORP shows a generally consistent range between years, of the same magnitude for min. and max. values.
Q4	DO (mg/L)	1.24 (MW2285) – 4.84 (MW4078)	2.07 (MW2284) – 7.43 (MW4079)	DO not evidently consistent between events, although reported at the same magnitude.
	TDS (mg/L)	78.1 (MW4079) – 12,032 (MW4078)	1,437.9 (MW4075) – 13,699.4 (MW4078)	Larger range difference reported for TDS in the Q4 aquifer than reported for the Q1, Q3.
	pH	7.02 (MW4078) – 12.51 (MW4079)	4.9 (MW4079) – 12.89 (MW4079)	pH shows a generally consistent range between years, of the same magnitude for min. and max. values.
	ORP (mV)	-269.8 (MW2285) – -175.9 (MW4078)	-274.2 (MW2286) – -41.3 (MW4079)	ORP shows a generally consistent range between years.
T1	DO (mg/L)	1.71 (MW22767) – 4.21 (MW21322)	2.41 (MW20327) – 4.33 (MW4220)	DO shows a generally consistent range between years, of the same magnitude for min. and max. values.
	TDS (mg/L)	761.9 (22767) – 2045.6 (21322)	630.8 (MW20327) – 1599.65 (MW4221)	TDS shows a generally consistent range between years, of the same magnitude for min. and max. values.
	pH	6.92 (MW20327) – 7.94 (MW20327)	6.14 (MW21322) – 8.17 (MW20327)	pH shows a generally consistent range between years, of the same magnitude for min. and max. values.
	ORP (mV)	-124.1 (21327) – 133.0 (MW20327)	-106.4 (MW20327) – 118.3 (MW21322)	ORP shows a generally consistent range between years, of the same

Aquifer	Parameter	January-August 2020	January–August 2021	Observations
				magnitude for min. and max. values.

7.2 Surface Water

Surface water information is presented as follows:

- Analytical results are presented in **Table T2 (Appendix B)** and monitoring activities are summarised in OMP Factual Reports provided in **Appendix C**.
- Analytical results are summarised in **Sections 7.2.1-7.2.4**.
- Monitoring locations are presented in **Figure A3 (Appendix A)** and concentration maps are presented in **Figure A6.1 and A6.2 (Appendix A)** for all OMP monitoring periods.

7.2.1 Upgradient (on- and off-Base) surface water PFAS results

Five surface water monitoring locations are located up hydraulic gradient, two locations (SW003 and SW028) are located on-Base and three locations (SW029, SW032 and SW033) located off-Base. Analytical results are summarised in **Table 17** and PFHxS+PFOS trends are illustrated in **Figure 40**. Results are summarised below:

- All sampled upgradient locations reported PFHxS+PFOS and PFOA concentrations below the adopted criteria (ecological and human health receptors) for both 2021 monitoring rounds.
- A decrease from the historical maximum was observed at SW029 and SW033 in both monitoring events in 2021.
- All locations reported PFOA below the laboratory LOR in both monitoring events in 2021.
- Concentrations of PFHxS+PFOS were reported below the laboratory LOR for all locations in the August 2021 monitoring round.
- All locations reported concentrations of PFOA and PFHxS within the historical range.

Table 17 Upgradient surface water PFAS Summary Results (µg/L)

Location ID	Analyte	Historical Range 2017		OMP Monitoring			
		Min	Max	April 2020	August 2020	February 2021	August 2021
SW003	PFHxS+PFOS	ND	0.01	ND	ND	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
SW028	PFHxS+PFOS	ND	0.01	ND	ND	0.01	ND
	PFOA	ND	ND	0.01	ND	ND	ND
SW029	PFHxS+PFOS	ND	0.01	0.20	ND	0.02	ND
	PFOA	ND	ND	0.01	ND	ND	ND
SW032	PFHxS+PFOS	ND	ND	ND	ND	ND	ND
	PFOA	ND	ND	ND	ND	ND	ND
SW033	PFHxS+PFOS	0.02	0.02	NA	ND	ND	ND
	PFOA	ND	ND	NA	ND	ND	ND

NA = Not Assessed

ND = Not detected above laboratory limits of reporting

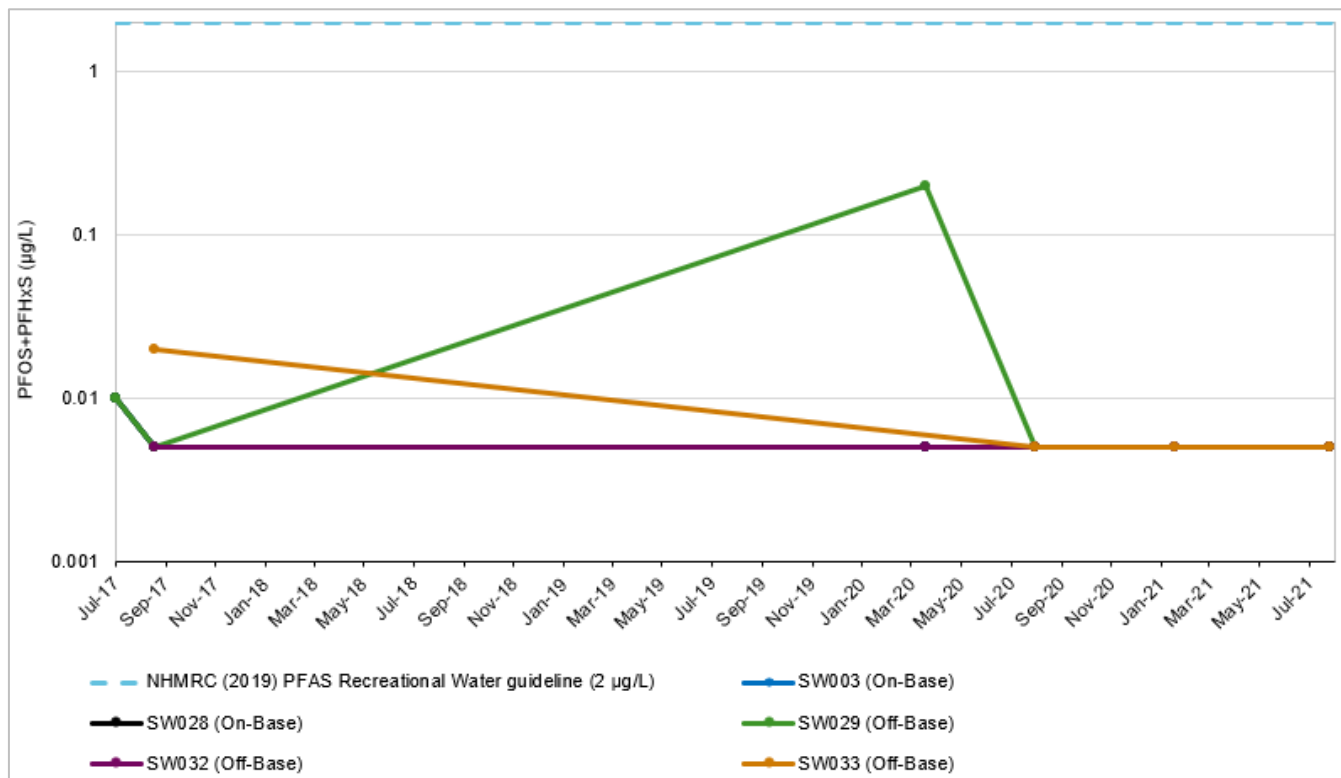


Figure 40 Upgradient surface water locations PFHxS+PFOS concentration trends

7.2.2 On-Base surface water PFAS results

Eight surface water locations, SW006, SW017, SW018, SW019, SW021, SW050, SW054 and SW037, capture the conditions of the surface water drainage network on-Base. Surface water location SW037 captures the conditions of water exiting the Base drainage network. Analytical results are summarised in **Table 18** and PFHxS+PFOS trends are illustrated in **Figure 41**. Results are summarised below:

- SW037 was not able to be sampled in the 2021 monitoring rounds as the location had insufficient water for a sample.
- All sampled on-Base locations reported PFHxS+PFOS and PFOA concentrations below the adopted human health guideline for both 2021 monitoring rounds.
- Concentrations of PFOS were reported above the adopted ecological criteria at SW006, however did not represent a new exceedance.
- The highest concentration to date of PFHxS+PFOS was reported at SW017 in February 2021; but reported below the adopted human health criteria. PFOS exceeded the ecological criteria for the first time in February 2021.
- The highest concentration of PFOA was reported at SW017 in February 2021, but reported below all adopted criteria.
- A first-time detection of PFOA was reported at SW018 in February 2021.
- A new exceedance of the PFAS NEMP 95% Species Protection value of 0.13 µg/L for PFOS was reported in January/February 2021 at SW017.

For the more impacted location SW019, concentrations in 2021 remained above the adopted ecological criteria but were reported less than corresponding seasonal concentrations in 2020, and substantially less than the historical range. The remaining surface water locations are generally within or close to historical ranges.

Table 18 On-Base surface water PFAS Summary Results (µg/L)

Location ID	Analyte	Historical Range (2017)		OMP Monitoring			
		Min	Max	April 2020	August 2020	February 2021	August 2021
SW006	PFHxS+PFOS	0.05	0.07	1.77	0.15	0.87	0.54
	PFOA	ND	ND	0.03	ND	0.03	0.01
SW017	PFHxS+PFOS	0.02	0.03	0.17	0.04	0.3	ND
	PFOA	ND	ND	0.01	ND	0.02 ¹	ND
SW018	PFHxS+PFOS	0.03	0.03	NA	0.33	0.97 ¹	0.02
	PFOA	ND	ND	NA	ND	0.03 ²	ND
SW019	PFHxS+PFOS	15	148	5.74	1.78	1.44	0.49
	PFOA	0.82	3.3	0.31	0.06	0.08	0.02
SW021	PFHxS+PFOS	0.02	0.03	0.03	0.02	0.04 ¹	0.02
	PFOA	ND	ND	0.01	ND	ND	ND
SW037	PFHxS+PFOS	0.07	0.12	NA	0.03	NA	NA
	PFOA	ND	ND	NA	ND	NA	NA
SW050	PFHxS+PFOS	0.13	0.21	NA	ND	ND	0.06
	PFOA	ND	ND	NA	ND	ND	ND
SW054	PFHxS+PFOS	0.18	0.24	0.12	0.01	ND	0.04
	PFOA	ND	ND	ND	ND	ND	ND

ND = Not detected above laboratory limits of reporting

NA = Not analysed

¹ New maximum value

² First-time detection

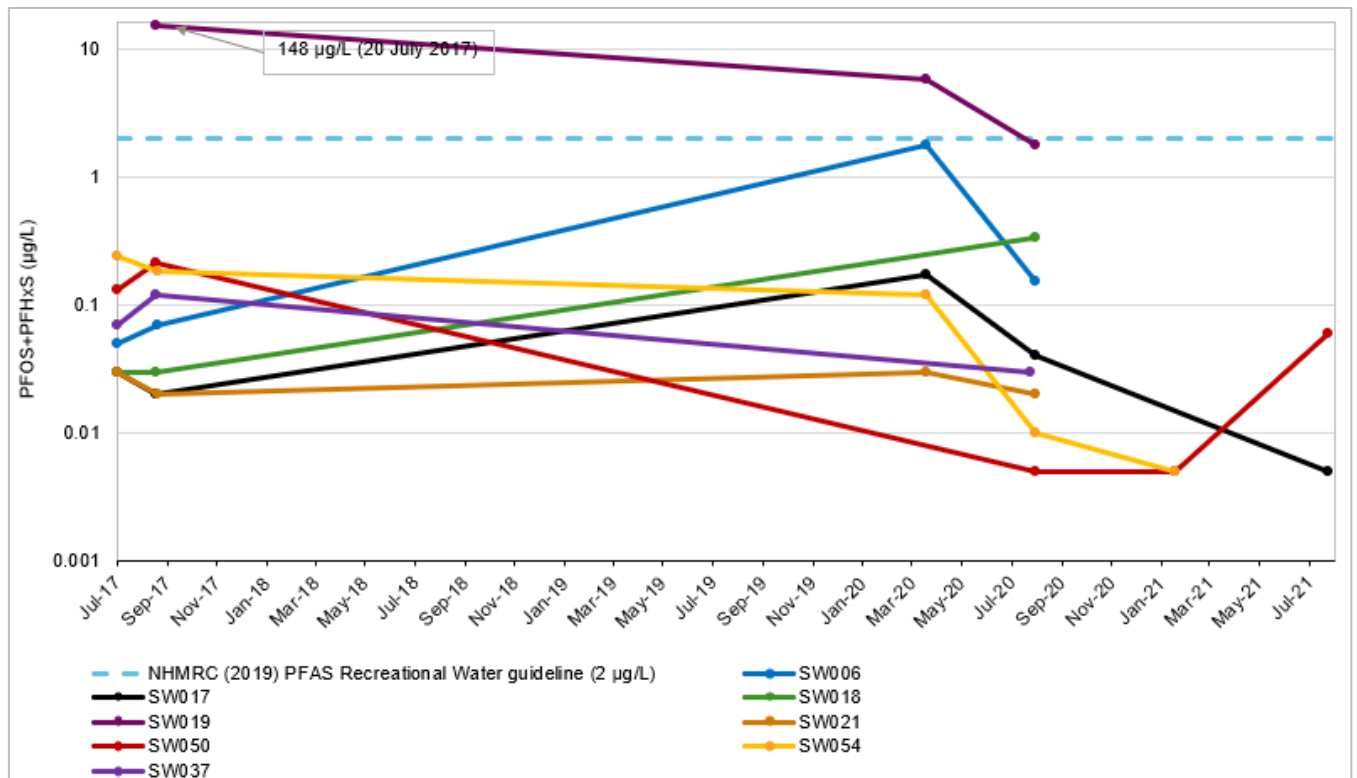


Figure 41 On-Base surface water PFHxS+PFOS concentration trends

7.2.3 Helps Road Drain (off-Base) surface water PFAS results

Five surface water locations SW009, SW010, SW011, SW012 and SW062, capture the conditions of the surface water in the Helps Road Drain off-Base. Analytical results are summarised in **Table 19** and PFHxS+PFOS trends are illustrated in **Figure 42**. Results are summarised below:

- All sampled Helps Road Drain (off-Base) locations reported PFHxS+PFOS and PFOA concentrations below adopted guidelines for both 2021 monitoring rounds.
- The highest concentration to date of PFHxS+PFOS and PFOA were reported at SW012 in February 2021, but remained below the adopted criteria. The detection of PFOA at SW012 represented a first-time detection of this analyte at this location.
- All results for the August 2021 monitoring round were below the LOR for PFOA.
- It is noted that concentrations of PFHxS+PFOS and PFOA were generally reported at similar or lower concentrations in 2021 than in 2020 for the respective summer and winter monitoring rounds.

Table 19 Helps Road Drain (off-Base) PFAS Summary Results (µg/L)

Location ID	Analyte	Historical Range (2017-2018)		OMP Monitoring			
		Min	Max	April 2020	August 2020	February 2021	August 2021
SW009	PFHxS+PFOS	0.1	0.16	0.13	0.04	0.02	0.07
	PFOA	ND	ND	0.01	ND	ND	ND
SW010	PFHxS+PFOS	0.1	0.38	0.36	0.15	0.11	0.12
	PFOA	ND	0.08	0.03	ND	0.01	ND
SW011	PFHxS+PFOS	0.19	0.02	0.21	NA	ND	0.06
	PFOA	ND	ND	ND	NA	ND	ND
SW012	PFHxS+PFOS	0.1	0.13	0.10	0.15	0.17	0.03
	PFOA	ND	ND	ND	ND	0.02 ¹	ND
SW062	PFHxS+PFOS	0.05	0.15	0.15	0.02	0.06	0.04
	PFOA	ND	ND	0.01	ND	ND	ND

ND = Not detected above laboratory limits of reporting

NA = Not analysed

¹ First-time detection

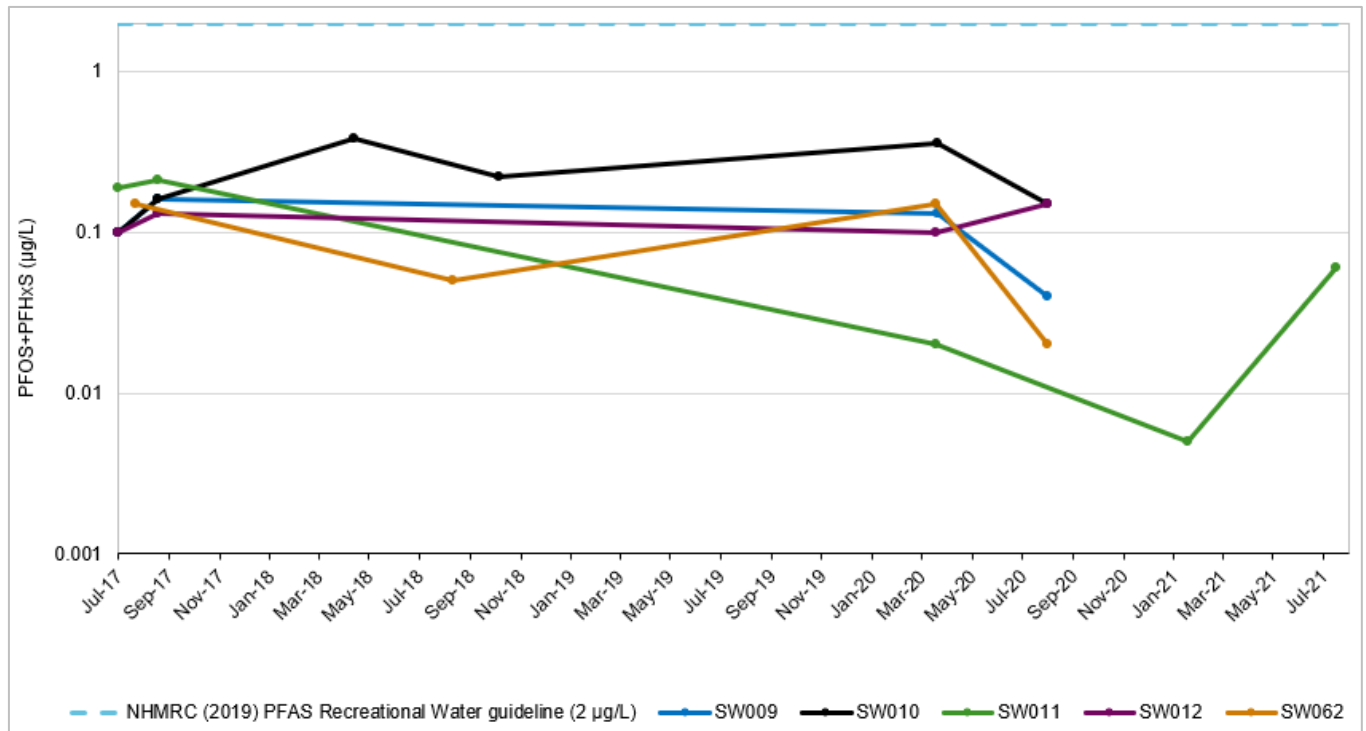


Figure 42 Helps Road Drain (off-Base) surface water PFHxS+PFOS concentration trends

7.2.4 Kaurna Park Wetland (off-Base) surface water PFAS results

Three surface water locations, SW058, SW059 and SW078, capture the conditions of the surface water in the Kaurna Park Wetland (off-Base). Analytical results are summarised in **Table 20** and PFHxS+PFOS trends are illustrated in **Figure 43**. Results are summarised below:

- All sampled Kaurna Park Wetland (off-Base) locations reported PFHxS+PFOS and PFOA concentrations below the adopted guidelines for both 2021 monitoring rounds.
- Concentrations of PFOS at SW059 exceeded the adopted ecological criteria in February 2021, however, did not represent a new exceedance.
- All results for both 2021 monitoring rounds were below the laboratory LOR for PFOA, with the exception of the February 2021 results at SW058 and SW059. The detection of PFOA at SW059 represents a first-time detection of this analyte at this location.
- With the exception of SW059, concentrations of PFHxS+PFOS and PFOA were generally reported at higher concentrations in 2020 than in 2021 for the respective summer and winter monitoring rounds.

Table 20 Kaurna Park Wetland (off-Base) PFAS Summary Results (µg/L)

Location ID	Analyte	Historical Range (2017-2018)		OMP Monitoring			
		Min	Max	April 2020	August 2020	February 2021	August 2021
SW058	PFHxS+PFOS	0.13	0.27	0.34	0.15	0.12	0.04
	PFOA	ND	0.08	0.03	ND	0.01	ND
SW059	PFHxS+PFOS	ND	0.26	ND	ND	0.27 ¹	0.02
	PFOA	ND	ND	ND	ND	0.02 ²	ND
SW078	PFHxS+PFOS	0.01	0.01	0.02	0.02	ND	0.06 ¹
	PFOA	ND	ND	ND	ND	ND	ND

ND = Not detected above laboratory limits of reporting

¹ New maximum value

² First-time detection

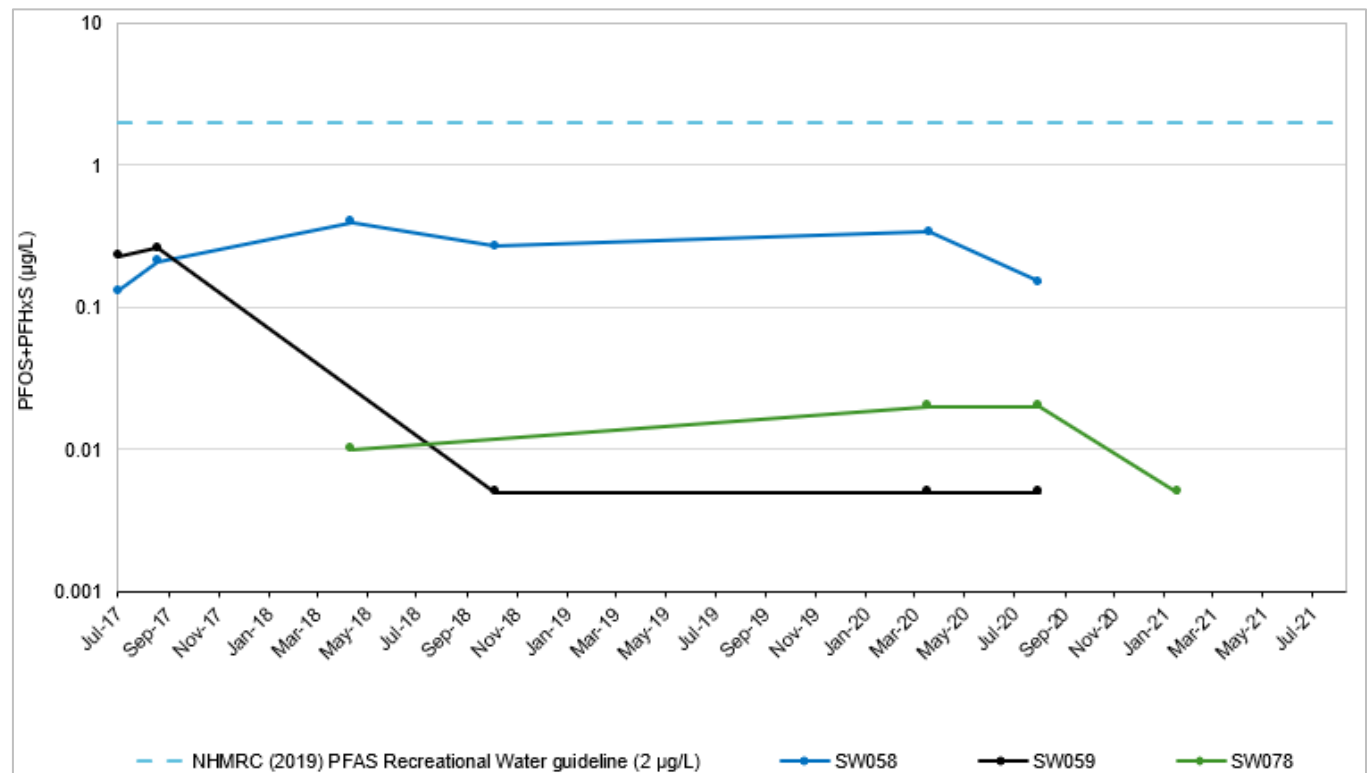


Figure 43 Kaurna Park Wetlands surface water PFHxS+PFOS concentration trends

7.2.5 Summary of PFAS in surface water 2020 and 2021

Surface water monitoring analytical results for both on- and off-base for PFOS, PFOA and sum PFOS and PFHxS are summarised in **Table 21** below.

Table 21 Summary of PFOS, PFOA and sum of PFOS and PFHxS concentrations in surface water

Sampling event	No. of sample locations analysed	Compound	Concentration range (> LOR) (µg/L)	No. of sample locations with concentrations < LOR	No. of sample locations exceeding recreational water guideline (HEPA, 2020)	No. of sample locations exceeding freshwater 95% species protection guideline (HEPA, 2020)
On-Base monitoring locations						
April 2020	7 of 10	PFOS	0.03 (SW021) to 4.04 (SW019)	2	1	4
		PFOA	0.01 (SW017, SW021, SW028) to 0.31 (SW019)	2	0	0
		PFHxS+PFOS	0.03 (SW021) to 5.74 (SW019)	2	1	NA
August 2020	10 of 10	PFOS	0.01 (SW054) to 1.53 (SW019)	3	0	2
		PFOA	0.06 (SW019)	9	0	0
		PFHxS+PFOS	0.01 (SW054) to 1.78 (SW019)	3	0	NA
February 2021	9 of 10	PFOS	0.01 (SW028, SW050, SW054) to 0.94 (SW019)	1	0	4
		PFOA	0.02 (SW017) to 0.08 (SW019)	5	0	0
		PFHxS+PFOS	0.01 (SW028) to 1.44 (SW019)	3	0	NA
August 2021	9 of 10	PFOS	0.02 (SW018) to 0.48 (SW006)	3	NA	1
		PFOA	0.01 (SW006) to 0.02 (SW019)	7	0	0
		PFHxS+PFOS	0.02 (SW018) to 0.49 (SW019)	3	0	NA
Off-Base monitoring locations						
April 2020	10 of 11	PFOS	0.02 (SW011 and SW078) to 0.26 (SW010)	2	0	2
		PFOA	0.03 (SW010, SW058)	5	0	0
		PFHxS+PFOS	0.02 (SW011 and SW078) to 0.36 (SW010)	2	0	NA
August 2020	10 of 11	PFOS	0.02 (SW062, SW078) to 0.15 (SW010, SW058)	4	0	2
		PFOA	-	10	0	0

Sampling event	No. of sample locations analysed	Compound	Concentration range (> LOR) (µg/L)	No. of sample locations with concentrations < LOR	No. of sample locations exceeding recreational water guideline (HEPA, 2020)	No. of sample locations exceeding freshwater 95% species protection guideline (HEPA, 2020)
		PFHxS+PFOS	0.02 (SW062, SW078) to 0.15 (SW010, SW012, SW058)	4	0	NA
February 2021	11 of 11	PFOS	0.01 (SW078) to 0.18 (SW059)	2	0	1
		PFOA	0.01 (SW010 and SW058) to 0.02 (SW012 and SW059)	7	0	0
		PFHxS+PFOS	0.01 (SW078) to 0.27 (SW059)	3	0	NA
August 2021	11 of 11	PFOS	0.02 (SW059) to 0.12 (SW010)	3	0	0
		PFOA	-	11	0	0
		PFHxS+PFOS	0.02 (SW059) to 0.12 (SW010)	3	0	NA

NA = Not applicable (no applicable guideline)

7.2.6 Surface water non-PFAS analytical results

In addition to PFAS, selected groundwater samples were analysed for the following geochemical properties as outlined in the SAQP (AECOM, 2020b):

- Major ions (sodium, calcium, magnesium and potassium) and anions (chlorine, sulphate, bicarbonate, carbonate)
- Total Suspended Solids (TSS); and
- Dissolved Organic Carbon (DOC).

All non-PFAS surface water analytical results for the sampling event conducted in January/February 2021 is presented in **Table T4 (Appendix B)**.

Results for major ions for monitoring events in January/February 2021 indicate that the cation composition is dominated by sodium and sulphate and anion composition is dominated by bicarbonate in all surface water sampling locations.

It should be noted that non-PFAS sampling parameters were removed from the OMP by direction from Defence as of 27 January 2021 and therefore are not reported on during the April 2021 sampling event.

7.2.7 Surface water field parameters measurements

Surface water quality parameter field measurements were recorded at the time of collecting samples. Parameters are presented in each of the respective factual reports in **Appendix C**.

The range of stabilised readings from the 2020 and 2021 monitoring events are provided below.

Table 22 Surface water field parameter ranges for the 2020 and 2021 monitoring rounds (minimum to maximum)

Parameter	March - August 2020	January - August 2021	Observations
DO (mg/L)	0.65 (SW011) – 9.3 (SW012)	0.48 (SW029) – 12.98 (SW029)	DO is generally consistent between events
TDS (mg/L)	67.8(SW037) – 924.6 (SW011)	23.4 (SW011) – 433.7 (SW011)	TDS appears to have been reported at lower values in 2021
pH	6.21 (SW003) – 8.48 (SW032)	5.39 (SW028) – 8.84 (SW078)	pH is generally consistent between events
ORP (mV)	-33.7 (SW012) – 182.9(SW010)	-10.3 (SW003) – 345.5 (SW054)	ORP appears to have been reported at higher values in 2021

8.0 Interpretive Analysis

8.1 Groundwater

8.1.1 On-Base Groundwater

On-Base groundwater conditions of PFAS impact are generally consistent with historical results and with the identified plume (JBS&G, 2018). The highest concentrations of PFAS identified on-Base are located near source area P11 (MW2116 and MW2203).

While the majority of wells reported PFHxS+PFOS and PFOA concentrations within historical ranges, a number of locations reported the highest concentrations to date in February or August 2021. Fluctuating concentrations were apparent across the on-Base locations. There were no new exceedances of the adopted criteria for PFHxS+PFOS or PFOA at on-Base groundwater sampling locations in 2021.

Mann-Kendall statistical analysis was undertaken on monitoring wells with more than six data points, with at least three summer and winter sampling events each, to identify any initial overall increasing or decreasing trends in PFOA and/or PFHxS+PFOS. Due to the limited data set, i.e. less than eight to 10 data points, any increasing or decreasing trends identified with a confidence factor of greater than 95% are indicative of potential trends to be assessed with further data collection. Locations selected for Mann-Kendall analysis are shown in **Appendix E** and results are shown in **Table 23**. Locations with potential or probably increasing or decreasing trends are depicted on **Figure 4.3, Appendix A**.

Table 23 Mann-Kendall analysis for on-Base locations

Location	Analyte	Potential increasing trend (>95% confidence)	Probably increasing trend (<95% and ≥90% confidence)	Potential decreasing Trend (>95% confidence)	Probably decreasing (<95% and ≥90% confidence)
Source area P4	PFHxS+PFOS	-	-	MW2358 (Q1)	-
	PFOA	-	-	MW2358 (Q1)	-
Source area P9 and P15A/B, P11, P16 and P21	PFHxS+PFOS	MW2270 (Q3), MW2272 (Q3), MW2284 (Q4)		MW2112 (Q1), MW2120 (Q1), MW2203 (Q1)	-
	PFOA	MW2272 (Q3), MW2284 (Q4)	-	MW2112 (Q1), MW2120 (Q1) MW2203 (Q1)	MW2200 (Q2),
Source areas P1, P3A, P3B and P27	PFHxS+PFOS	MW2114 (Q1)	-	-	MW2130 (Q1), MW2157 (Q2)
	PFOA	MW2114 (Q1)	-	-	-
Southern, western and northern boundary	PFHxS+PFOS	MW2185 (Q2)	MW2183 (Q2)	MW2172 (Q1)	-
	PFOA	MW2185 (Q2)	-	-	-

The remaining on-Base locations selected for Mann-Kendall analysis indicated a stable trend or no trend, as shown in **Appendix E**.

Concentrations of PFHxS+PFOS at on-Base groundwater monitoring locations show minor fluctuation with seasonal changes between summer and winter, however, no overall seasonal influence on concentrations of PFHxS+PFOS is apparent, as shown in **Appendix F**. Selected wells were potentially indicative of seasonal responses; at MW2120, concentrations of PFHxS+PFOS correspond to changes in standing water level, while the inverse is evident at MW2284 and MW2272, increases in PFHxS+PFOS coincide with decreasing groundwater elevation. Other locations that may also exhibit seasonal influence on PFAS concentrations, for example locations MW2148 and MW2194 show increases in groundwater elevation generally corresponding with a reduction in PFHxS+PFOS

concentrations. Groundwater elevations and concentrations of PFHxS+PFOS for selected monitoring locations are shown in **Appendix F**. These wells showing potential seasonal variation in PFAS concentrations represent the Q1 (MW2120, MW2148 and MW2149), Q3 (MW2272) and Q4 (MW2284) aquifers. As such a relationship is only apparent in a few select wells and the mechanism for the relationship between seasonal and concentration data is unknown, it is not conclusive that the observed fluctuations are attributable to seasonal influences. Additional data collected in future monitoring events will be reviewed and if seasonal responses are apparent, where appropriate, Mann-Kendall tests will be performed on seasonally filtered data.

Concentration trends for locations with new maximum concentrations reported in the 2021 monitoring rounds but which did not meet the threshold criteria for Mann-Kendall analysis, i.e. six data points across summer and winter events, should be reviewed following the 2022 monitoring events to assess if increasing trends are evident. From the 2021 monitoring rounds, only one on-Base location, MW2210 (Q2), reported a new maximum concentration of PFHxS+PFOS but did not meet the criteria for Mann-Kendall analysis.

Apparent increasing trends both at source areas and at downgradient boundary locations suggest PFAS may still be mobilising to groundwater beneath the site at some locations, with groundwater transport potentially resulting in increased concentrations at the site boundaries.

Mann-Kendall analysis for PFHxS+PFOS at MW2270 (Q3) indicated an increasing trend for PFHxS+PFOS. While concentrations reported during the OMP have increased from historical results at this location, the results reported for the duration of the OMP appear to be stable. Ongoing monitoring of this location and further statistical analysis is required to confirm trends at this location.

Monitoring locations MW2272 (Q3) and MW2284 (Q4) were identified as having an increasing trend for PFHxS+PFOS by Mann-Kendall analysis. These wells are located within the P9 source area and are adjacent to extraction wells related to the Enviropacific groundwater remediation works within this area. The extraction wells target the Q2 aquifer and groundwater elevation logging data from 2019 to 2020 showed that extraction activity from the Q2 aquifer did not generate drawdown in the Q3 aquifer (AECOM, 2020a). There was no groundwater elevation data collected for the Q4 aquifer; it is not apparent that pumping activities are directly affecting the Q3 and Q4 aquifers.

Data collected to date from MW2272 has indicated pH ranging from approximately 10 to 12 and major ions reported for this location are elevated for calcium and hydroxide alkalinity (**Table T3, Appendix B**). The remaining Q3 wells in the network with major ion data available (MW2270, MW2281 and MW4069) generally reported calcium, hydroxide alkalinity at an order of magnitude less than MW2272 and reported a pH range of 7 to 9. These results may be indicative of grout contamination, i.e. failure of the well annulus seal, such that increasing trends for PFAS at this location may indicate that impacted Q2 groundwater is percolating into the deeper aquifers. PFAS concentrations in downgradient Q3 and Q4 monitoring locations (i.e. MW2281 and MW2286) are generally stable (or have no trend) and as such, the increasing statistical trends noted at MW2272 and MW2284 appear to be localised, however, does not preclude the potential for migration downgradient in the future to boundary and off-site locations.

Wells within the sampling network that also reported an elevated pH that have major ion data available include Q4 monitoring locations MW2286, MW2284, MW4075 and MW4079 and Q2 location MW2200. Q4 locations MW2286, MW4075, MW4079 and Q2 location MW2200 also reported elevated calcium concentrations and hydroxide alkalinity was elevated at MW2286, MW4079 and MW2200, suggesting that these wells may also be affected by grout contamination via a failed well annulus.

Remaining locations that exhibit elevated pH values consistently over the duration of the program that do not have major ion data available may also be indicative of grout contamination.

It is noted that using a no-purge sampling methodology, i.e., HydraSleeves, does not remove any significant volume from the bore at the time of sampling. The re-development of these wells should be considered prior to the next round of sampling to validate the well and aquifer conditions.

Further data collection is required to validate these trends. The results are generally consistent with previous observations and do not suggest a change to the overall understanding of the nature or distribution of PFAS impacts beneath the Base or associated risks.

It is noted that eastern location, MW2218 (Q2) reported two orders of magnitude greater than previous results, from below the laboratory LOR in 2018 to being reported above the adopted guideline in the

2020 monitoring rounds. The 2021 monitoring results remained above the adopted guideline but were four to ten times lower than the highest 2020 result.

8.1.2 Off-Base Groundwater

PFAS concentrations observed at monitoring wells at off-Base locations were generally consistent with historical results and were generally lower than those observed on-Base, consistent with the evidence for a central PFAS plume.

Exceedances of the PFAS NEMP Human Health Drinking Water (0.07µg/L) guideline for PFHxS+PFOS at off-Base locations were generally consistent in magnitude and location with historical exceedances. No new exceedances of the adopted criteria were reported for groundwater sampling locations off-Base in 2021.

Mann-Kendall analysis was undertaken on monitoring wells with more than six data points, representative of summer and winter conditions, to identify any initial overall increasing or decreasing trends in PFOA and PFHxS+PFOS. Due to the limited data set, i.e. less than eight to 10 data points, any increasing or decreasing trends identified with a confidence factor of greater than 95% are indicative of potential trends to be assessed concurrently with further data collection. Mann-Kendall analysis is shown in **Appendix E** and results are shown in **Table 20** below.

Table 24 Off-Base Mann-Kendall analysis results

Location	Analyte	Potential decreasing trend (>95% confidence)	Probably decreasing trend (<95% and ≥90% confidence)
Southern, western and northern boundary	PFHxS+PFOS	MW4013 (Q1)	-
Helps Road drain	PFHxS+PFOS	MW4048 (Q2), MW4045 (Q2), MW4053 (Q1)	-
	PFOA	-	MW4048 (Q2), MW4053 (Q1)
Off-Base lateral extent	PFHxS+PFOS	MW4052 (Q1)	
	PFOA	-	
Proximity to licensed groundwater users	PFHxS+PFOS	-	MW4069 (Q3)

Concentrations of PFHxS+PFOS in groundwater monitoring locations, listed in **Table 24**, show some minor fluctuation with seasonal changes, however, such changes do not appear to have an overall influence on concentrations of PFHxS+PFOS. Groundwater elevations and concentrations of PFHxS+PFOS for monitoring locations in **Table 24** are shown in **Appendix F**. Additional data collected in future monitoring events will be reviewed and if seasonal responses are apparent, where appropriate, Mann-Kendall tests will be performed on seasonally filtered data.

The remaining off-site wells indicated a stable trend or no trend. None of the selected off-Base groundwater sampling locations have indicated an increasing trend for PFHxS+PFOS or PFOA.

It is noted that furthest down-gradient locations, including MW4055 (Q1), MW4045 (Q2), MW4076 (Q2), MW4070 (Q3), have reported detections of PFHxS+PFOS above the laboratory LOR such that impacts are not delineated by the monitoring well network, although statistical analysis indicates that decreasing trends of PFAS concentrations are occurring at MW4045 (Q2) and at co-located well MW4053 (Q1). Should increasing trends be observed in future at the furthest down-gradient locations, this may warrant the addition of delineation wells to the network south west of these locations.

It is noted that off-Base locations MW4068 and MW4073 show the greatest variation in groundwater elevation within the Q3 monitoring well network. Groundwater elevations at these locations appear to have some seasonal influence, however, may also be influenced by the extraction of groundwater by nearby groundwater users. Monitoring location MW4073 is identified as having proximity to a licensed groundwater user (groundwater bore 6628-27223), while operational irrigation bores are in use within

approximately 300m of MW4068, as shown in the registered groundwater bore search from the WaterConnect database (maintained by the Department for Environment and Water), **Appendix G**. It is also noted that MW4068 has historically reported the highest concentrations of PFAS and the highest value for pH within the Q3 monitoring well network. PFAS concentrations at MW4068 do not appear to be seasonally influenced.

8.2 Surface Water

8.2.1 On-Base Surface Water

The PFHxS+PFOS and PFOA concentrations reported for on-Base surface water locations were consistent with the historical results and were below the NHMRC (2019) PFAS Recreational Water guideline (2 µg/L and 10 µg/L) for both 2021 monitoring rounds. The HEPA (2020) PFAS NEMP Freshwater 95% Species Protection guideline was exceeded for the first time in February 2021 for PFOS at SW017 but the reported concentration was below the laboratory LOR in August 2021.

First-time detections of PFOA above the LOR were reported in February 2021 at SW018 but were below the adopted criteria. There were no first-time detections of PFOA or PFHxS+PFOS in August 2021. On-Base location SW018 is located within the Helps Road drain with proximity to and downstream of source area P16 and P11. All surface water sampling locations within the on-Base portion of the Helps Road drain reported PFOA above the laboratory LOR in February 2021, with the exception of SW003 which is located upstream from source areas P16 and P11. These results are consistent with previous findings.

Mann-Kendall analysis was undertaken to identify trends in PFOA or PFHxS+PFOS. The outcomes from the analysis identified potential decreasing trends at SW019 for PFHxS+PFOS and PFOA and at SW054 for PFHxS+PFOS. All remaining on-Base surface water locations selected for Mann-Kendall analysis were reported as stable or had or no trend. Outputs for the Mann-Kendall analysis for surface water are presented in **Appendix E**.

The results suggest these monitoring locations are adequate to monitor PFAS in surface water on-Base areas. The identification of potential trends where exceedances and first-time occurrences of PFAS analytes occur should be reviewed with additional data in future reporting under the current OMP.

8.2.2 Off-Base Surface Water

The PFHxS+PFOS concentrations reported for off-Base surface water locations were generally consistent with historical results and were in all cases below the NHMRC (2019) PFAS Recreational Water guideline (2 µg/L). All concentrations for off-Base locations were also below the HEPA (2020) Freshwater 95% Species Protection guideline value for PFOS and PFOA (0.13 µg/L and 220 µg/L).

Surface water monitoring locations off-Base reported results generally within the historical range.

First-time detections of PFOA were reported in February 2021 at SW012 and SW059.

Off-Base surface water location SW012 is directly linked to the on-site drainage network via the drainage pathway exiting the Base. As detections of PFOA were reported at upstream on-Base locations SW017, SW018 and SW006 in February 2021, these results are likely to indicate migration of PFAS through the drainage network to this off-Base location.

Surface water location SW059 is located in the Kaurna Park Wetlands and interconnected with surface water locations SW010 and SW058 which both also reported detections of PFOA in February 2021.

Results for all other locations were generally within the historical range and suggest that off-Base surface water conditions are generally stable. This is supported by Mann-Kendall analysis which indicated that off-Base PFHxS+PFOS concentrations at surface water sampling locations with sufficient data for statistical analysis are stable or have no trend.

The February 2021 results for PFHxS+PFOS and PFOA were generally higher than those reported for the August 2021 event. This is likely related to dilution and attributable to the higher rainfall observed during the August 2021 sampling event.

The results suggest these monitoring locations are adequate to monitor PFAS in surface water across the off-Base areas. The identification of potential trends in particular where exceedances or first-time

occurrences of PFAS analytes occur should be reviewed with additional data in future reporting under the current OMP.

9.0 Conceptual Site Model

The CSM was developed during the investigation and human health risk assessment stages (JBS&G, 2018, JBS&G, 2019a, JBS&G, 2019b) and summarised in the PMAP (Defence, 2019). The CSM summarises the linkages between sources, exposure pathways and receptors (SPR) as presented in **Table 25** below. The SPR linkages summarised are considered complete and/or potentially complete.

Table 25 Summary of conceptual site model source-pathway-receptor linkages

Sources	Pathways	Receptors
<u>Primary source areas:</u> <ul style="list-style-type: none"> • P1 • P2. • P3A and P3B • P4* • P8 • P9 • P10* • P11 • P15A and P15B* • P16* • P23. • P27 	<u>Exposure to PFAS in soil and sediment or surface water and groundwater via the mobilisation of dissolved PFAS from soil and/or sediment (or concrete in P9 and P11) via the following:</u> <u>Human health on-Base</u> <ul style="list-style-type: none"> • Direct contact or incidental exposure to soil (including sediment within the AFFF waste water evaporation pond) and surface water contamination. <u>Human health off-Base</u> <ul style="list-style-type: none"> • Consumption of edible aquatic biota (i.e. fish) caught from the Kaurna Park Wetland. • Direct contact or incidental exposure during irrigation or use of PFAS contaminated Quaternary Aquifer groundwater for domestic activities, recreational activities, or commercial activities by unlicensed or unregistered bore users. <u>Ecological</u> <ul style="list-style-type: none"> • Direct contact with impacted surface water in the Kaurna Park Wetland. • Ingestion of impacted surface water in the Kaurna Park Wetland (and within Helps Road Drain). • Ingestion of flora and fauna affected by Base-derived PFAS contamination (bioaccumulation). 	<u>Human health</u> <ul style="list-style-type: none"> • Users of Quaternary Aquifer groundwater sourced downgradient of the Base. • Humans consuming edible biota (i.e. fish) caught from the Kaurna Park Wetland and downstream locations in Helps Road Drain. • Intrusive maintenance workers and construction workers working at the Base. • Defence personnel and contractors (e.g. the EMOS Contractor) working at the Base. • Visitors to the Base. <u>Ecological</u> <ul style="list-style-type: none"> • Terrestrial and aquatic fauna that may inhabit or be using the Kaurna Park Wetland (e.g. migratory birds).

* PFAS concentrations in soil reported above the adopted human health screening criteria applicable to commercial/industrial land use (i.e. >20 mg/kg for the sum of PFHxS and PFOS).

The understanding of on-Base source areas for PFAS is further outlined in the PMAP (Defence, 2019) and the source areas are shown in **Figure 1.3 (Appendix A)**. The pathways for PFAS exposure and risks to human health and ecological receptors presented in the PMAP (Defence, 2019) and summarised above are considered to be relevant and data presented in this report does not suggest any significant changes to these mechanisms or risks.

The concentration range for groundwater and surface water monitoring locations for the 2021 monitoring rounds are illustrated in **Figures A4.1 and Figure A4.2 and Figures A6.1 and Figure A6.2 (Appendix A)**. The cross-section of the CSM is illustrated in **Figure A7.1 and Figure 7.2 (Appendix A)**.

The analytical results arising from the monitoring documented in this report do not suggest a change to the overall understanding of the nature or distribution of PFAS impacts beneath the Base or associated risks.

The observation of potential increasing concentration trends at source area locations MW2114 (Q1), MW2272 (Q3), MW2284 (Q4) and at on-Base boundary locations MW2183 (Q2) (probable increasing trend) and MW2185 (Q2) is consistent with the CSM and no changes to the pathways or receptor risks outlined in the CSM are required.

Future monitoring will continue to contribute to an evaluation of any potential changes to the CSM understanding.

10.0 Discussion

10.1 Risk Profile

Surface water and groundwater data collected during the OMP do not suggest a change in the risk profile for on- and off-Base human health receptors associated with exposure to PFAS in groundwater and surface water.

As noted above, the data evaluated in this report does not indicate changes to the nature and extent of PFAS in groundwater and surface water which alter the CSM.

In the majority of cases, the nature and extent of PFAS concentrations in groundwater fall within historical ranges. Potential increasing trends at on-Base source area locations MW2114 (Q1), MW2272 (Q3) and MW2284 (Q4) and at on-Base boundary locations MW2183 (Q2) (probable increasing trend) and MW2185 (Q2) indicate that mobilisation of PFAS to groundwater is occurring on-Base. However, all off-Base locations that qualified for statistical analysis reported potential decreasing trends, stable concentrations or no trend, and statistical analysis performed on locations with proximity to identified users indicated that PFAS concentrations are stable or have no trend or were probably decreasing (at MW4069 (Q3)).

The nature and extent of PFAS in groundwater off-Base generally reflects the conditions historically observed and there are no reported changes to the PFAS concentration at downstream locations which alter the overall human health or ecological risk.

Surface water concentrations at on- and off-base locations have remained generally consistent over time and within the historical range. The outcomes from Mann-Kendall statistical analysis identified potential decreasing trends at on-Base locations SW019 for PFHxS+PFOS and PFOA and at SW054 for PFHxS+PFOS. All remaining on- and off-Base surface water locations selected for Mann-Kendall analysis were reported as stable or had no trend. While preliminary statistical analysis indicates that PFAS concentrations are decreasing or are stable or have no trend, first-time detections and new exceedances of PFAS analytes have been reported at both on- and off-Base surface water sampling locations for the duration of the OMP to date.

It is noted that while concentrations of PFOS at surface water location SW019 remained above the adopted ecological receptor criteria in 2021, the concentrations of PFAS reported at this location, notably for PFOS and PFHxS, are reported up to three orders of magnitude less than historical concentrations reported in 2017. Surface water location SW054 also reported a decrease in PFAS concentrations up to one magnitude less than those reported historically. These results, however, do not correspond with changes in PFAS concentrations down gradient and do not change the overall risk profile outside of the immediate vicinity of these locations.

On-going evaluation to be completed through the current OMP will consolidate results and validate statistical analysis at on-Base and off-Base locations. Further monitoring is required to validate locations with limited data to determine potential trends.

10.2 Assessment of current OMP

There have been no findings presented in this report which trigger a review of the OMP. The PMAP triggers for the OMP, actions taken and recommendations are shown in **Table 26**.

Table 26 Summary of PMAP triggers and OMP results

Trigger	Comment	Actions and recommendations
First-time detection of PFAS in groundwater down gradient of the identified PFAS plume (consistent with site conceptual site model).	No first-time detections of PFAS in groundwater downgradient of the identified PFAS plume were reported for the 2021 monitoring rounds.	Nil
First-time detection of PFAS in groundwater cross or upgradient to the identified PFAS plume (inconsistent with site CSM).	No first-time detections of PFAS in groundwater cross or upgradient to the identified PFAS plume were recorded for the 2021 monitoring events.	Nil
New exceedance of human health recreational guidelines in surface water off-Base (Helps Road Drain and Kurna Park)	No new exceedances of guidelines were recorded in surface water off-Base (Helps Road Drain and Kurna Park) in the 2021 monitoring rounds.	Nil
New exceedance of the drinking water guideline in groundwater.	There were no new exceedances of the drinking water guideline in groundwater in the 2021 monitoring rounds.	Nil
New exceedance of the drinking water screening criteria in groundwater within the specific Quaternary Aquifer units adjacent to registered extractive users of groundwater: 1. Q2 GW2173; GW2145 and GW2267 for Q2 6628-16416; 6628-2686; 6628-14215 and 6628-2818. 2. Q3 GW2283 for 6628-27223. 3. Q4 GW2290 for 6628-3782.	1. No new exceedances of guidelines were recorded at MW2173 (formerly GW2173), MW2145 (formerly GW2145) and MW4065 (formerly GW2267) in 2021. 2. No new exceedances of guidelines were recorded at MW4073 (formerly GW2283) in 2021. 3. No new exceedances of guidelines were recorded at MW4078 (formerly GW2290) in 2021.	Nil
First-time detection of PFAS in groundwater from the private Q2 bore ID 6628-15586.	No PFAS analytes were reported above the laboratory LOR at MW4223 (ID 6628-15586) in the 2021 monitoring rounds.	Nil

Trigger	Comment	Actions and recommendations
Increasing PFAS trends	<p>Potential increasing trends as indicated by Mann-Kendall statistical analysis were observed at on-Base source area locations MW2114, MW2272 and MW2284 and on-Base boundary locations MW2183 and MW2185, as outlined in Section 8.1.1. These increasing PFAS trends do not warrant a change to the current CSM or risk profile, as outlined in Section 9.1 and Section 9.2.</p>	<p>Further collection of data in upcoming monitoring rounds to capture sufficient data to validate and perform meaningful statistical assessments.</p>
Decreasing PFAS trends	<p>Potential decreasing trends, as indicated by Mann-Kendall statistical analysis were observed at on-Base locations MW2112, MW2120, MW2172, MW2203 and MW2358 and at off-Base locations MW4013, MW4053, MW4052, MW4048 and MW4045, as outlined in Section 8.1.1 – 8.1.2.</p> <p>Potential decreasing trends were also noted at on-Base surface water locations SW019 for PFHxS+PFOS and PFOA and at SW054 for PFHxS+PFOS, as outlined in Section 8.2.2.</p> <p>These decreasing PFAS trends for groundwater and surface water do not warrant a change to the current CSM or risk profile.</p>	<p>Further collection of data in upcoming monitoring rounds to capture sufficient data to validate and perform meaningful statistical assessments.</p>

11.0 Conclusion

Groundwater and surface water monitoring were completed between January and August 2021 in accordance with the SAQP (AECOM, 2021c, AECOM, 2020b), **Appendix D**.

The monitoring conducted over the current period is considered to have met the objectives of the SAQP, **Appendix D**, and the overall ongoing monitoring plan. The monitoring network is considered generally appropriate and sufficient for the program objectives, with the following observations:

- Furthest down-gradient locations, including MW4055 (Q1), MW4045 (Q2), MW4076 (Q2) and MW4070 (Q3), have reported detections of PFHxS+PFOS above the laboratory LOR and are not delineated by the monitoring well network. However, statistical analysis indicates that potential decreasing trends of PFAS concentrations are present at MW4045 (Q2) and at co-located well MW4053 (Q1). Potential future increasing trends at the furthest down-gradient locations may prompt the addition of delineation wells to the network southwest of these locations.

The highest concentrations of PFAS within the groundwater monitoring network are associated with PFAS source areas on-Base and this is consistent with the identified PFAS plume (Defence, 2019). PFAS concentrations continue to fluctuate at a number of groundwater monitoring locations; however, potential decreasing trends, as indicated by Mann-Kendall trend analysis, suggest that PFAS concentrations at off-site locations are decreasing.

With exception to increasing concentrations in Q3 and Q4 in the vicinity of Source Area P9, the reported PFAS results from the 2021 monitoring rounds do not suggest a change to the overall understanding of the nature of PFAS impacts beneath the Base.

No changes to the CSM are noted and no changes to the risk profile are recommended.

12.0 References

- AECOM Australia Pty Ltd (AECOM) (2021a). *Sampling Event Factual Report – January and February 2021*. prepared for Department of Defence, 12 October 2021.
- AECOM Australia Pty Ltd (AECOM) (2021b). *Sampling Event Factual Report, July and August 2021*. prepared for Department of Defence, 02 November 2021.
- AECOM Australia Pty Ltd (AECOM) (2021c). *Sampling and Analysis Quality Plan - RAAF Base Edinburgh*. prepared for Department of Defence, 25 June 2021.
- AECOM Australia Pty Ltd (AECOM) (2020a). *Technical Memorandum 26 – Aquifer Summary Report*. Prepared for Department of Defence 7 December 2020.
- AECOM Australia Pty Ltd (AECOM) (2020b). *Sampling and Analysis Quality Plan - RAAF Base Edinburgh*. prepared for Department of Defence, 20 May 2020.
- Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ), 2000. *Australian and New Zealand guidelines for fresh and marine water quality*.
- Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ), 2000. *Australian guidelines for water quality monitoring and reporting*.
- Bureau of Meteorology, 2021. *RAAF Base Edinburgh Climate Statistics*, accessed 15.11.2021.
- Department for Environment and Water, 2021, WaterConnect, Groundwater Data Online Database, Department for Environment and Water, Government of South Australia, viewed 15.11.2021, www.waterconnect.sa.gov.au
- Department of Defence (Defence) (2021). *OMP Annual Interpretive Report Guidance*
- Department of Defence (Defence) (2019). *PFAS Management Area Plan - RAAF Base Edinburgh*
- Department of Defence (Defence) (2016). *Routine Environment Water Quality Monitoring Manual*.
- Department of Defence (Defence) (July 2018, Amended August 2019). *Defence Contamination Management Manual*.
- Department of the Environment and Energy (DoEE) (2018). *PFAS National Environmental Management Plan (PFAS NEMP)*.
- Department of Health (DoH) (2017). *Health Based Guidance Values for PFAS for use in site investigations in Australia. April 2017*
- Heads of Environment Protection Authorities (HEPA) Australia and New Zealand 2018. *PFAS National Environmental Management Plan*. January 2018.
- Heads of EPAs Australia and New Zealand (HEPA) (2020). *PFAS National Environmental Management Plan Version 2.0 (PFAS NEMP 2.0)*.
- JBS&G (2018), RAAF Base Edinburgh Environmental Investigation of PFAS, Detailed Site Investigation, prepared for Department of Defence, 52234/117,720, 11 December 2018. JBS&G (2019a). RAAF Base Edinburgh Environmental Investigation of PFAS, Detailed Site Investigation Addendum Report (Rev 0), JBS&G Australia Pty Ltd, July 2019.
- JBS&G, (2019b). RAAF Base Edinburgh Environmental Investigation of PFAS, Human Health Risk Assessment (HHRA) and Preliminary Ecological Risk Assessment (PERA) (Rev 0), July 2019.
- National Environment Protection (Assessment of Site Contamination) Measure (NEPM ASC) 1999
- National Health and Medical Research Council (NHMRC) (2019). *Guidance on PFAS in Recreational Water*. August 2019.

National Health and Medical Research Council (NHMRC) (2016). *Australian Drinking Water Guidelines (ADWG)*

Appendix A




Figures

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

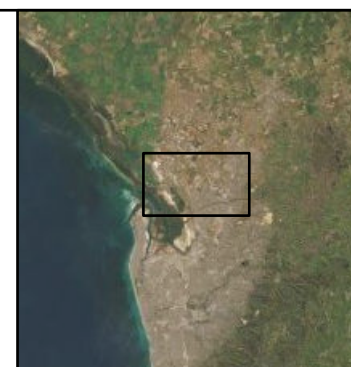
Legend

-  Refined Investigation Area
-  RAAF Base Edinburgh Boundary
-  Kurna Park Wetland

DATUM GDA 1994, PROJECTION MGA ZONE 54



1:45,000 (when printed at A3)



Data sources:
Base Data: Imagery (c) 2017 ESRI

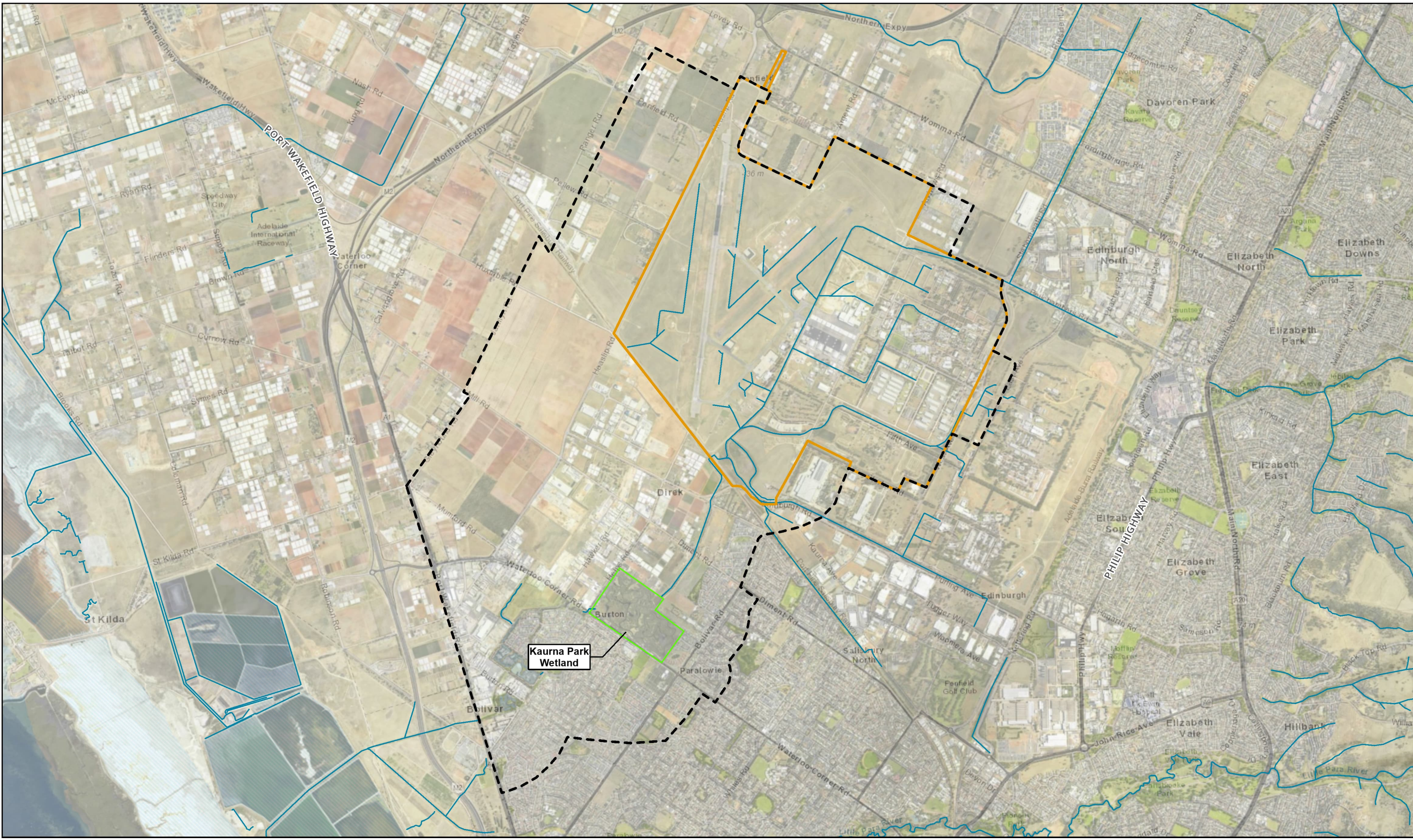
**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING
MONITORING PROGRAM**

REFINED INVESTIGATION AREA

PROJECT ID 60612561
CREATED BY FLETTN
LAST MODIFIED FLETTN21 DEC 2021
VERSION: 1

**Figure
1.1**

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 0.5 1 2
Kilometres
1:38,000 (when printed at A3)

Legend

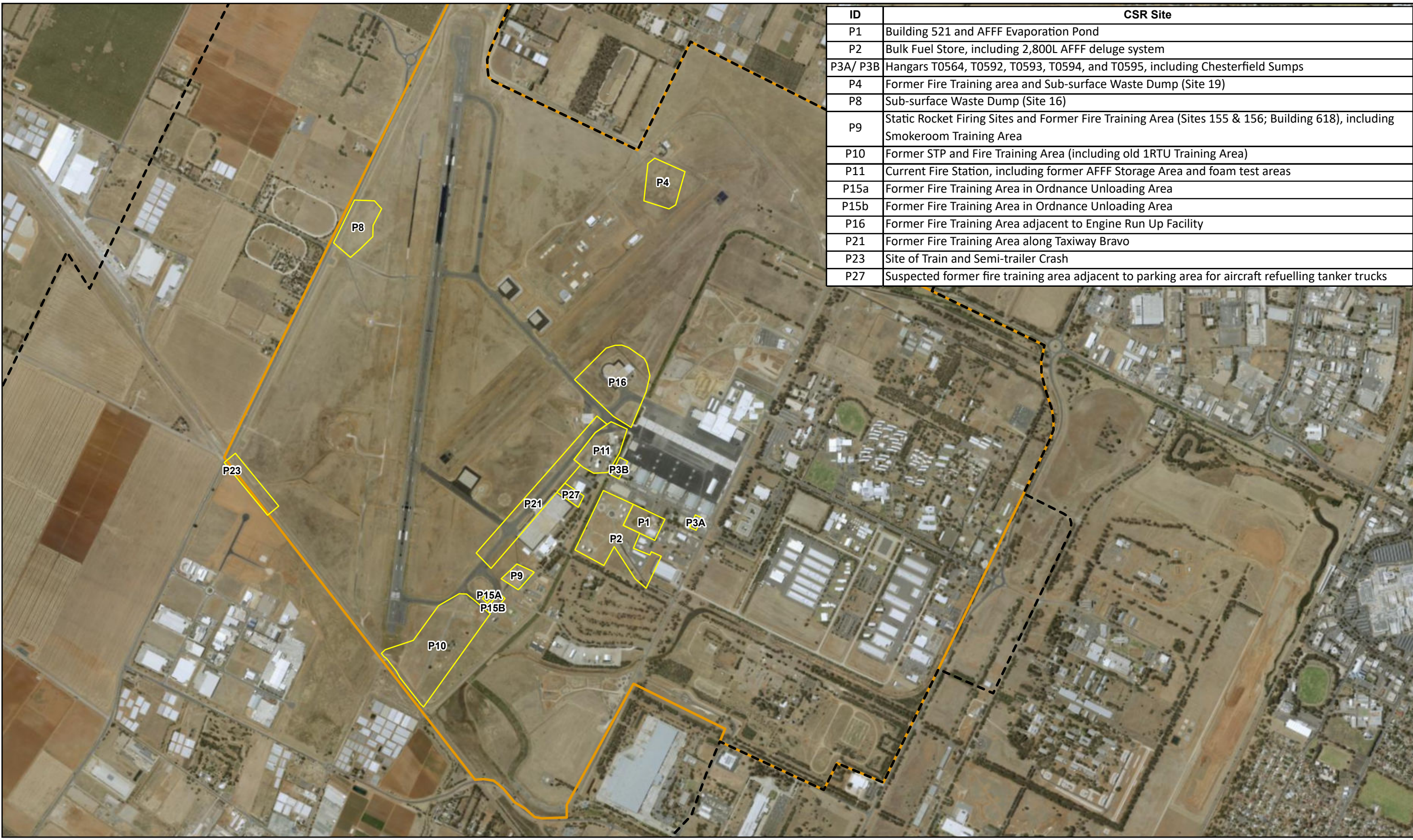
- RAAF Base Edinburgh Boundary
- Kaurna Park Wetland
- Management Area
- Drainage Pathways



**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING
MONITORING PROGRAM**

MANAGEMENT AREA

<p><small>Data sources:</small></p> <p><small>Base Data: Imagery (c) 2017 ESRI</small></p>	<p>PROJECT ID: 60612561 CREATED BY: HOUGHTONR LAST MODIFIED: HOUGHTONR09 JUN 2022 VERSION: 1</p>
<p>Figure 1.2</p>	



ID	CSR Site
P1	Building 521 and AFFF Evaporation Pond
P2	Bulk Fuel Store, including 2,800L AFFF deluge system
P3A/ P3B	Hangars T0564, T0592, T0593, T0594, and T0595, including Chesterfield Sumps
P4	Former Fire Training area and Sub-surface Waste Dump (Site 19)
P8	Sub-surface Waste Dump (Site 16)
P9	Static Rocket Firing Sites and Former Fire Training Area (Sites 155 & 156; Building 618), including Smokeroom Training Area
P10	Former STP and Fire Training Area (including old 1RTU Training Area)
P11	Current Fire Station, including former AFFF Storage Area and foam test areas
P15a	Former Fire Training Area in Ordnance Unloading Area
P15b	Former Fire Training Area in Ordnance Unloading Area
P16	Former Fire Training Area adjacent to Engine Run Up Facility
P21	Former Fire Training Area along Taxiway Bravo
P23	Site of Train and Semi-trailer Crash
P27	Suspected former fire training area adjacent to parking area for aircraft refuelling tanker trucks

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.

AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 0.25 0.5 1
Kilometres
1:18,000 (when printed at A3)

Legend

PFAS Source Area

RAAF Base Edinburgh Boundary

Management Area

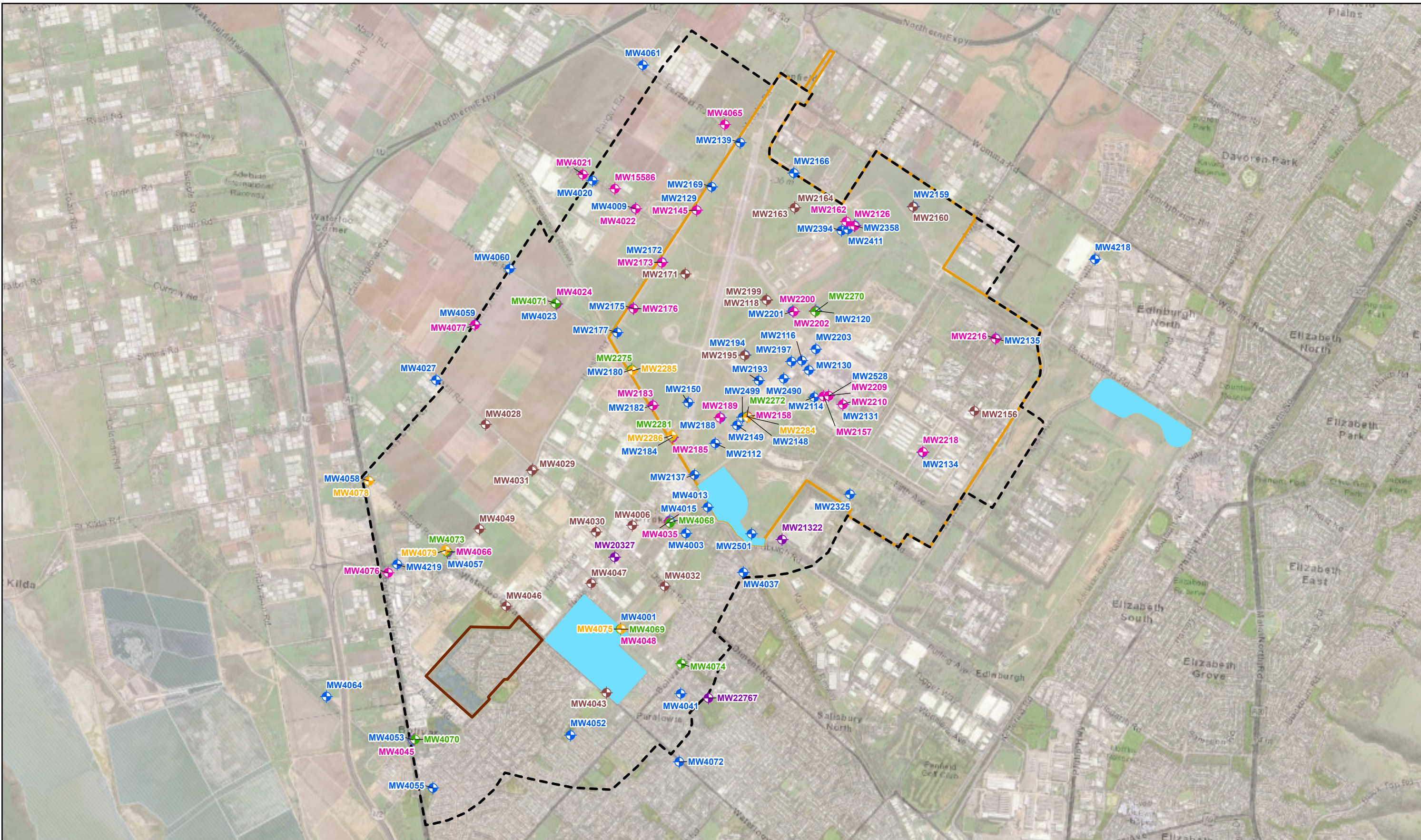
**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM**

INFERRED PFAS SOURCE AREAS

PROJECT ID: 60612561 CREATED BY: FLETTN LAST MODIFIED: FLETTN 21 DEC 2021 VERSION: 1	Figure 1.3
---	--

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, omissions, or inaccuracies in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 0.425 0.85 1.7
Kilometres

1:35,000 (when printed at A3)

Legend

- Gauging Locations Only
- Sample Locations**
- Q1 Aquifer
- Q2 Aquifer
- Q3 Aquifer
- Q4 Aquifer
- T1 Aquifer
- Management Area
- RAAF Base Edinburgh Boundary
- Springbank Waters Estate
- Detention Basin
- Drainage Pathways

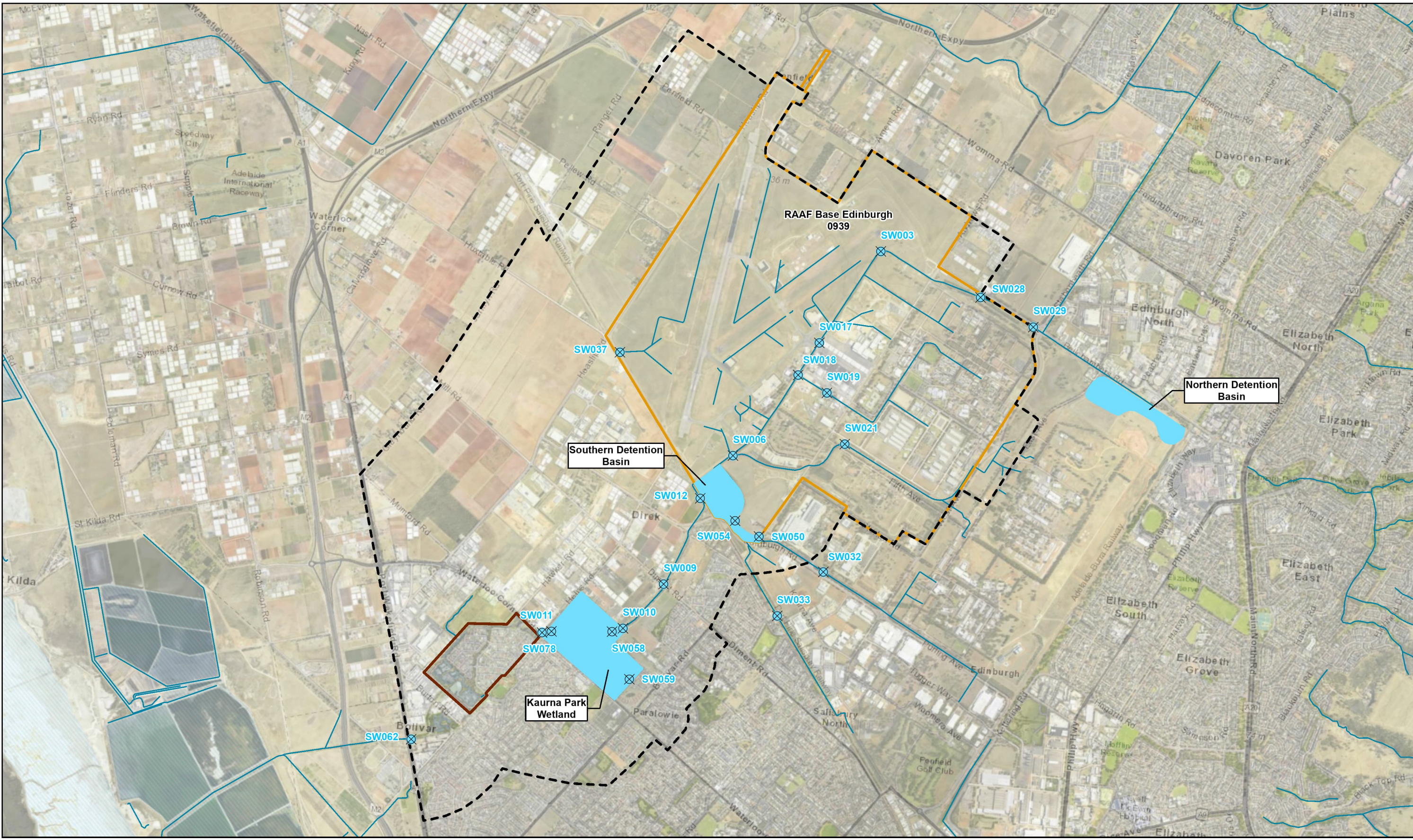
**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM**

GROUNDWATER SAMPLE LOCATIONS

PROJECT ID: 60612561	Figure
CREATED BY: KAL.DU	2
LAST MODIFIED: KAL.DU 26 FEB 2021	
VERSION: 1	

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 0.5 1 2
Kilometres
1:35,000 (when printed at A3)

Legend

- Surface Water Sample Locations
- Drainage Pathways
- Management Area
- RAAF Base Edinburgh Boundary
- Springbank Waters Estate
- Detention Basin

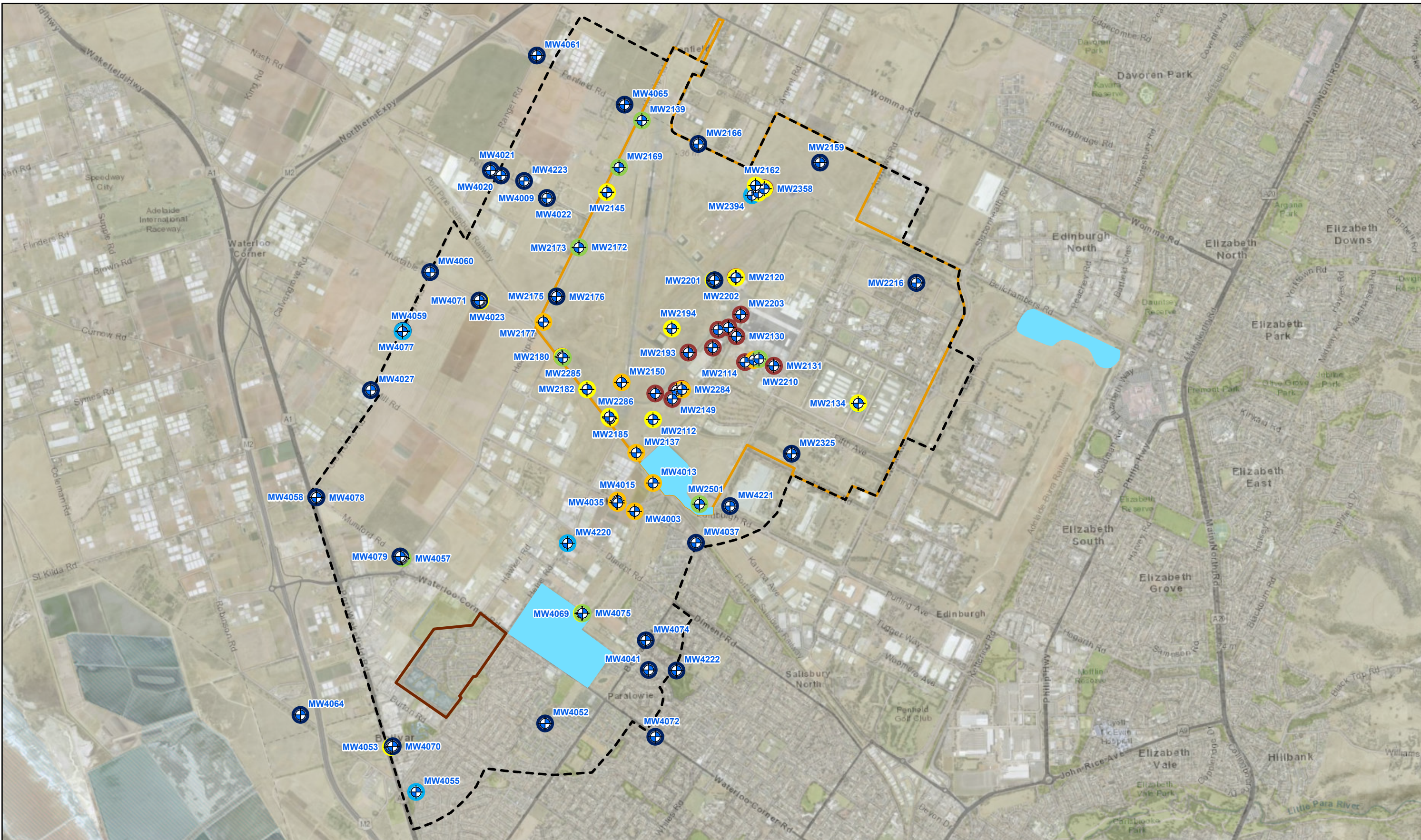
**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING
MONITORING PROGRAM**

SURFACE WATER SAMPLE LOCATIONS

PROJECT ID	60612561	Figure 3
CREATED BY	JD	
LAST MODIFIED	houghtonr09 Jun 2022	
VERSION:	1	

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54
0 250 500 1,000 1,500
Metres
1:35,000 (when printed at A3)

- Legend**
- Sample Locations
 - Management Area
 - RAAF Base Edinburgh Boundary
 - Springbank Waters Estate
 - Detention Basin

Concentrations	
	>70 µg/L
	7 to <70 µg/L
	0.7 to <7 µg/L
	0.07 to <0.7 µg/L
	LOR to <0.07 µg/L
	Below LOR

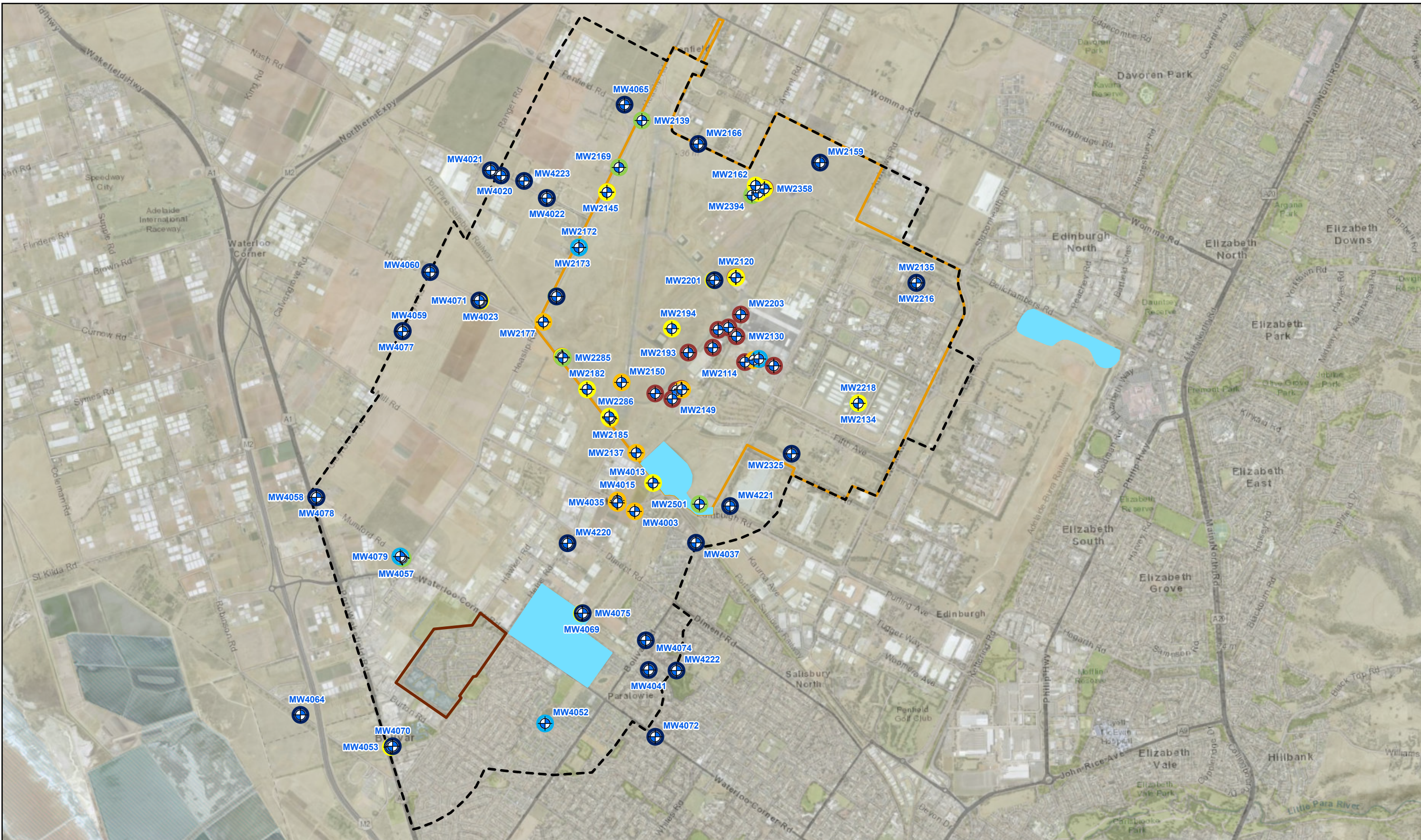
**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM
PFHXS+PFOS Concentration
for groundwater locations
January 2021**

PROJECT ID 60612561
CREATED BY FLETTN
LAST MODIFIED FLETTN 21 DEC 2021
VERSION: 1

**Figure
4.1**

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54
0 250 500 1,000 1,500
Metres
1:35,000 (when printed at A3)

- Legend**
- Sample Locations
 - Management Area
 - RAAF Base Edinburgh Boundary
 - Springbank Waters Estate
 - Detention Basin

Concentrations	
	>70 µg/L
	7 to <70 µg/L
	0.7 to <0.7 µg/L
	0.07 to <0.07 µg/L
	Below LOR

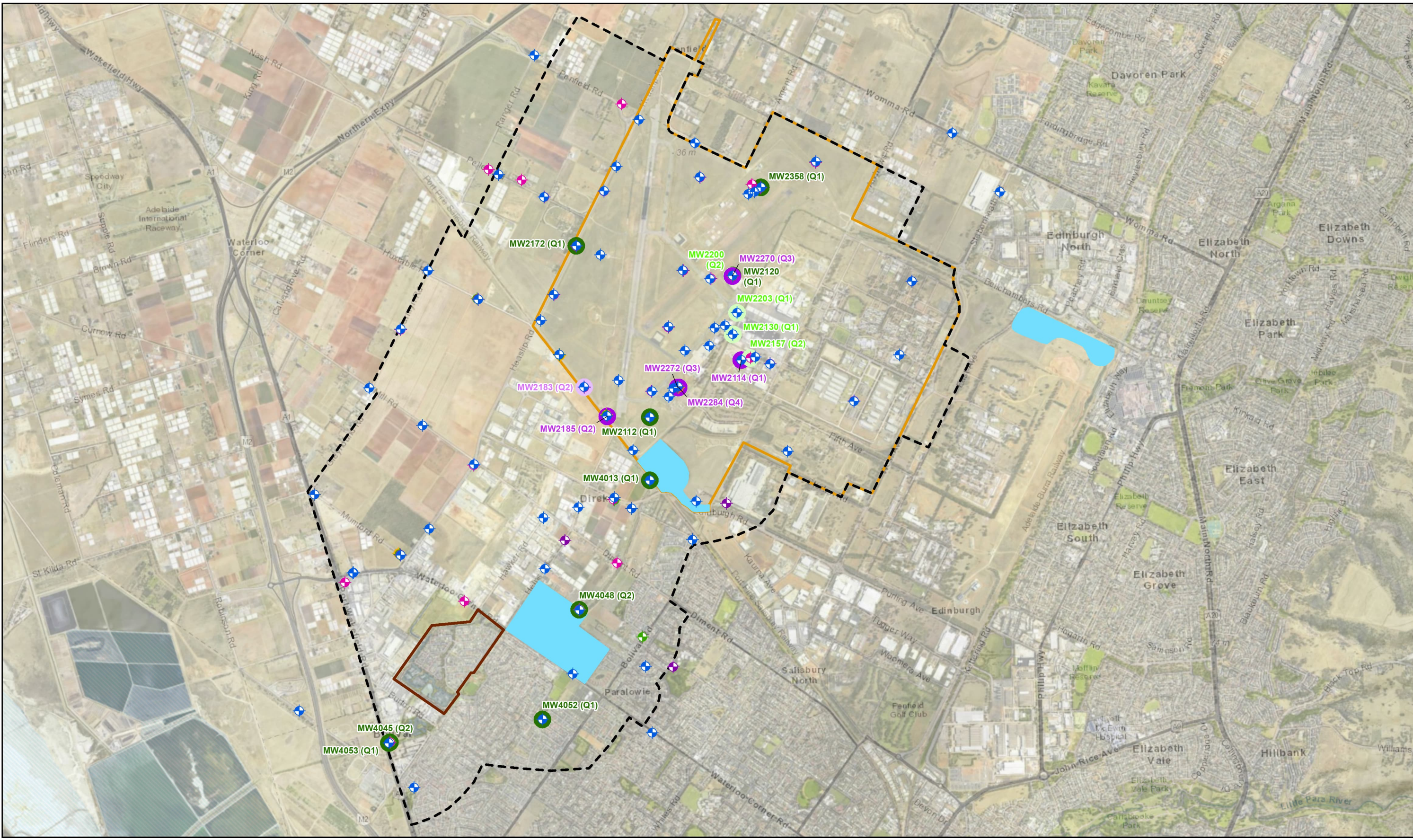
**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM
PFHXS+PFOS Concentration
for groundwater locations
July/August 2021**

PROJECT ID 60612561
CREATED BY FLETTN
LAST MODIFIED FLETTN 21 DEC 2021
VERSION: 1

**Figure
4.2**

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 250 500 1,000 1,500
Metres

1:35,000 (when printed at A3)

Legend

Sample Locations

- Q1 Aquifer
- Q2 Aquifer
- Q3 Aquifer
- Q4 Aquifer
- T1 Aquifer

Management Area

- Management Area
- RAAF Base Edinburgh Boundary

Springbank Waters Estate

- Springbank Waters Estate

Detention Basin

- Detention Basin

PFHxS + PFOS Trend

- Decreasing
- Increasing
- Probably Decreasing
- Probably Increasing

**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM**

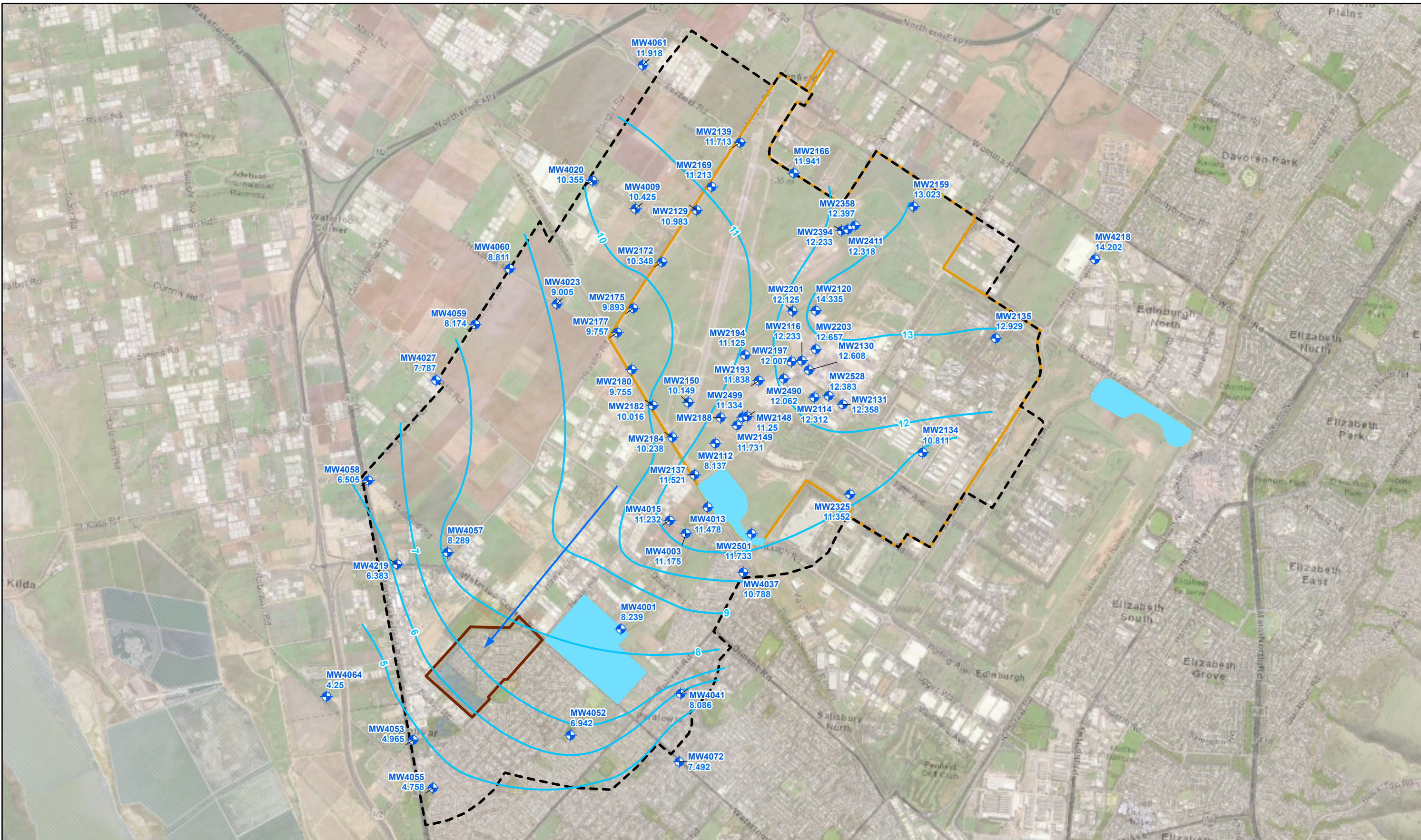
**Locations with increasing PFHxS+PFOS
concentration trends (Mann-Kendall)**

PROJECT ID 60612561
CREATED BY HOUGHTONR
LAST MODIFIED HOUGHTONR 15 JUN 2022
VERSION: 1

**Figure
4.3**

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 0.425 0.85 1.7
Kilometres

1:35,000 (when printed at A3)

Legend

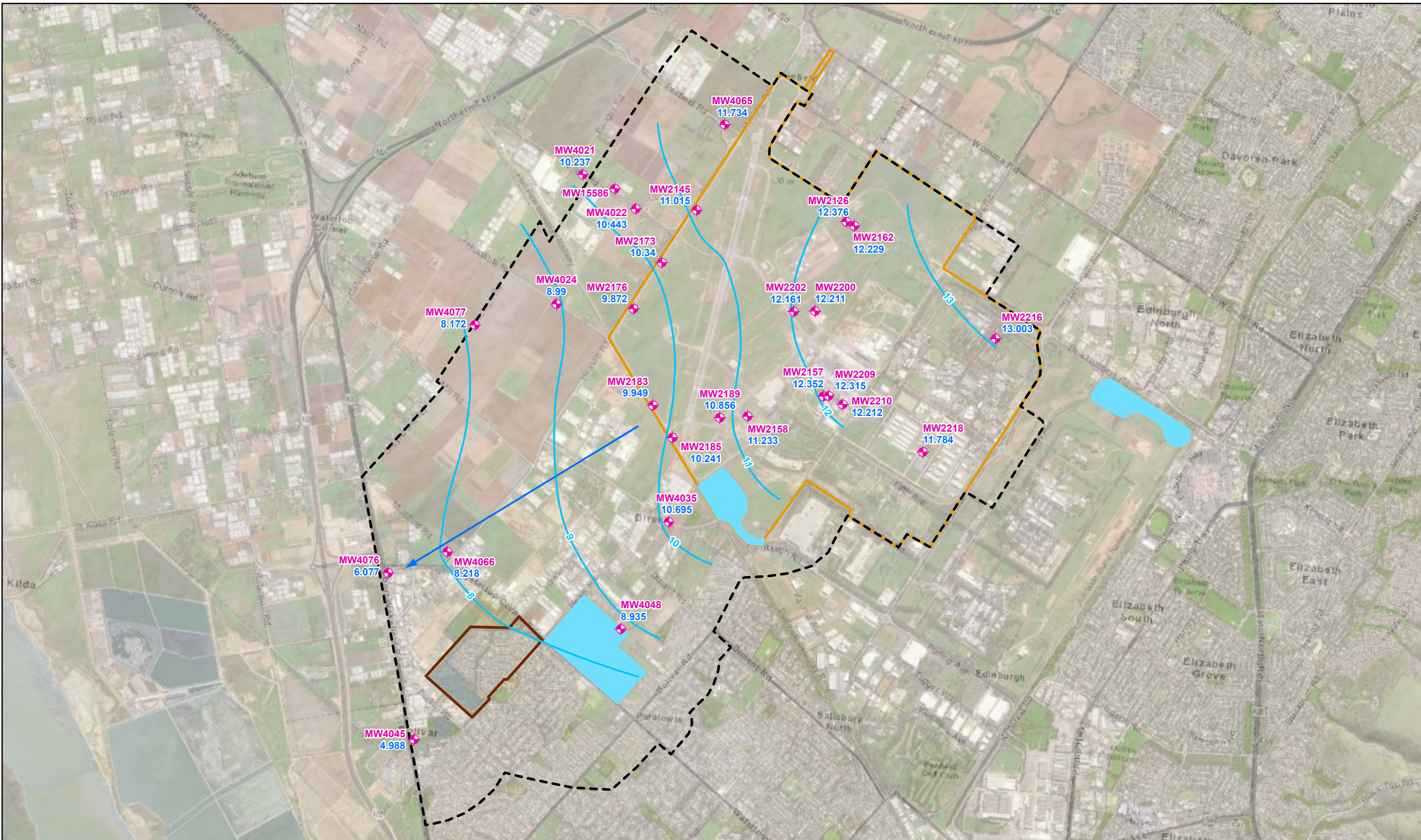
- Q1 Aquifer
- 175.44 Groundwater Elevation (mAHd)
- Inferred Groundwater Contour
- Inferred Groundwater Flow Direction
- Management Area
- RAAF Base Edinburgh Boundary
- Springbank Waters Estate
- Detention Basin

**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM
Inferred Groundwater Elevation
Q1 Monitoring Wells
January - February 2021**

PROJECT ID: 60612561	Figure
CREATED BY: KALDU	5.1
LAST MODIFIED: KALDU 02 MAR 2021	
VERSION: 1	

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, omissions, or inaccuracies in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 0.425 0.85 1.7
Kilometres

1:35,000 (when printed at A3)

Legend

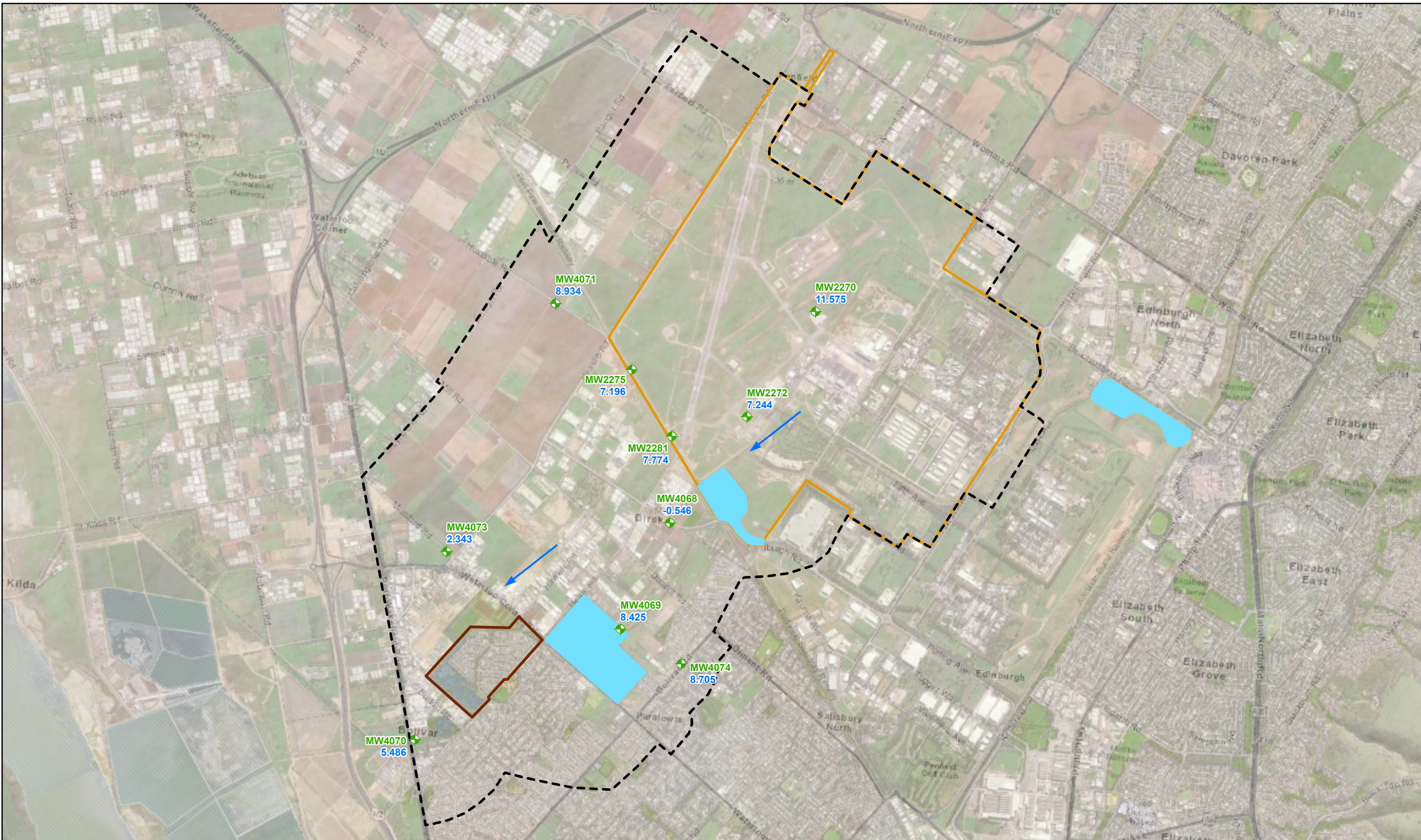
- ◆ Q2 Aquifer
- 175.44 Groundwater Elevation (mAHd)
- Inferred Groundwater Contour
- Inferred Groundwater Flow Direction
- Management Area
- RAAF Base Edinburgh Boundary
- Springbank Waters Estate
- Detention Basin

**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM
Inferred Groundwater Elevation
Q2 Monitoring Wells
January - February 2021**

PROJECT ID 60612561	Figure
CREATED BY KAI.DU	5.2
LAST MODIFIED KAI.DU 05 MAR 2021	
VERSION: 1	

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, omissions, or inaccuracies in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 0.425 0.85 1.7
Kilometres

1:35,000 (when printed at A3)

Legend

- ◆ Q3 Aquifer
- 175.44 Groundwater Elevation (mAHD)
- Inferred Groundwater Flow Direction

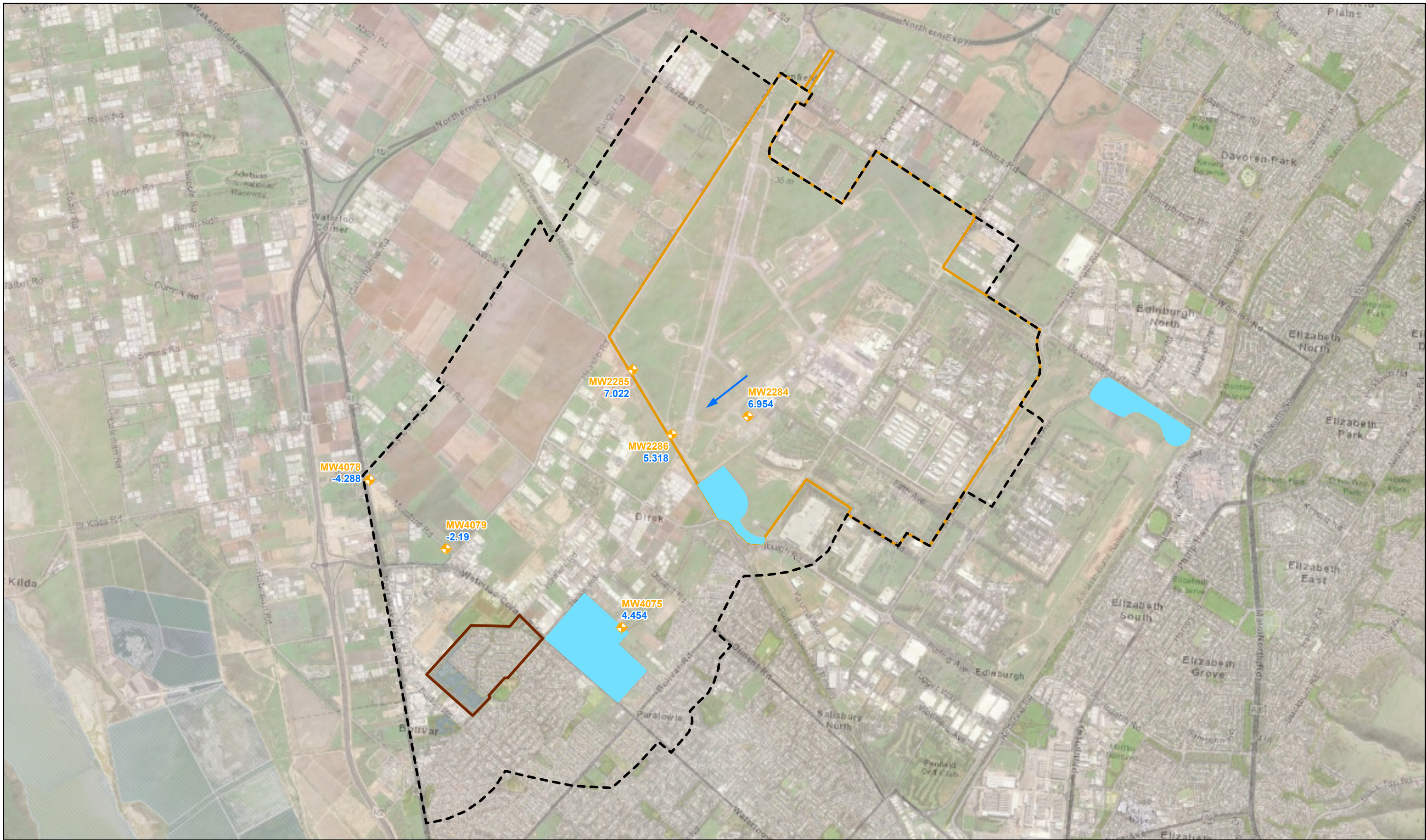
- Management Area
- RAAF Base Edinburgh Boundary
- Springbank Waters Estate
- Detention Basin

**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM
Inferred Groundwater Elevation
Q3 Monitoring Wells
January - February 2021**

PROJECT ID: 60612561	Figure
CREATED BY: KAI.DU	5.3
LAST MODIFIED: KAI.DU 05 MAR 2021	
VERSION: 1	

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, omissions, or inaccuracies in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 0.425 0.85 1.7
Kilometres

1:35,000 (when printed at A3)

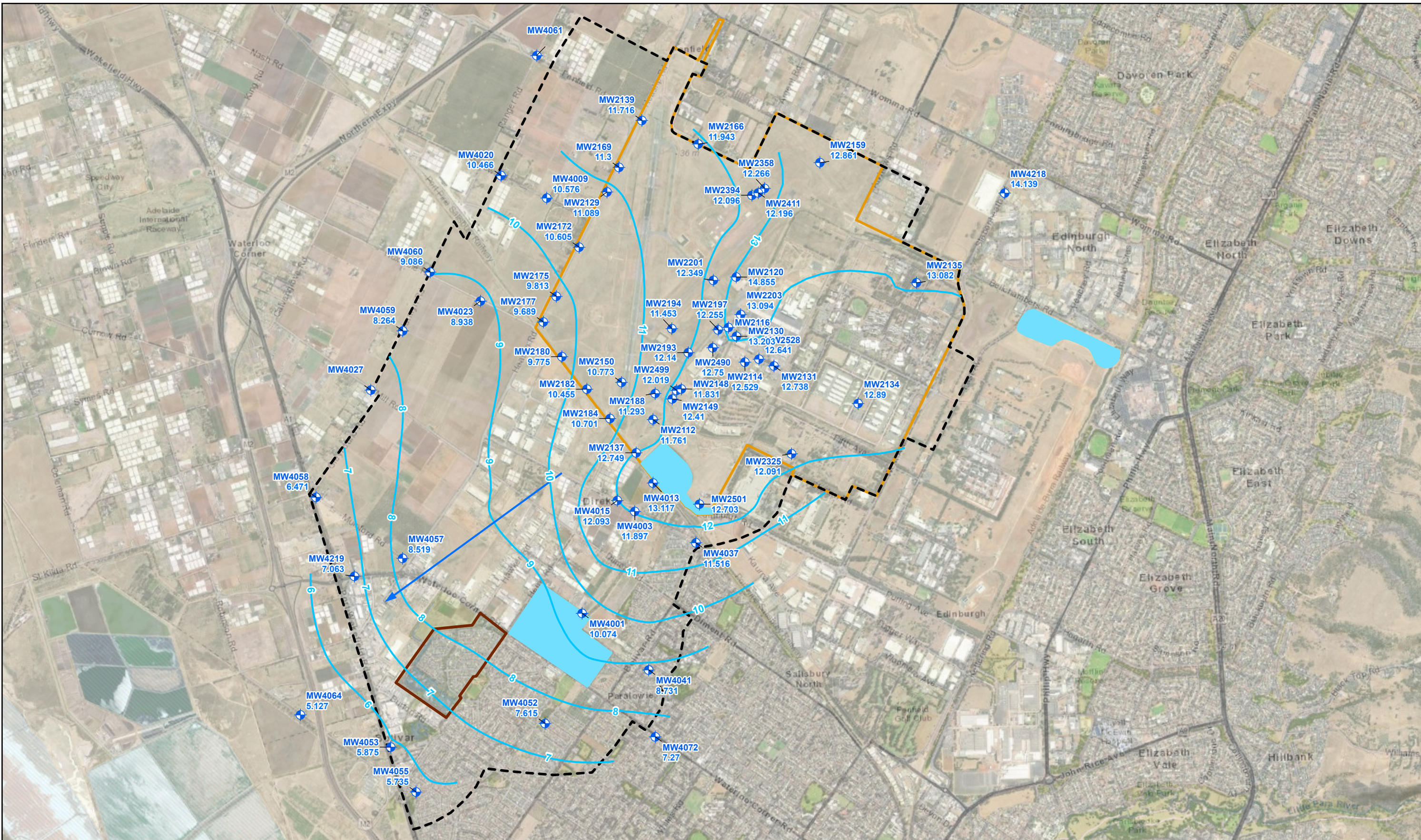
- Legend**
- Q4 Aquifer
 - 175.44 Groundwater Elevation (mAHd)
 - Inferred Groundwater Flow Direction
 - Management Area
 - RAAF Base Edinburgh Boundary
 - Springbank Waters Estate
 - Detention Basin

**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM
Inferred Groundwater Elevation
Q4 Monitoring Wells
January - February 2021**

PROJECT ID	60612561	Figure 5.4
CREATED BY	KAI.DU	
LAST MODIFIED	KAI.DU 02 MAR 2021	
VERSION:	1	

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 250 500 1,000 1,500
Metres

1:35,000 (when printed at A3)

Legend

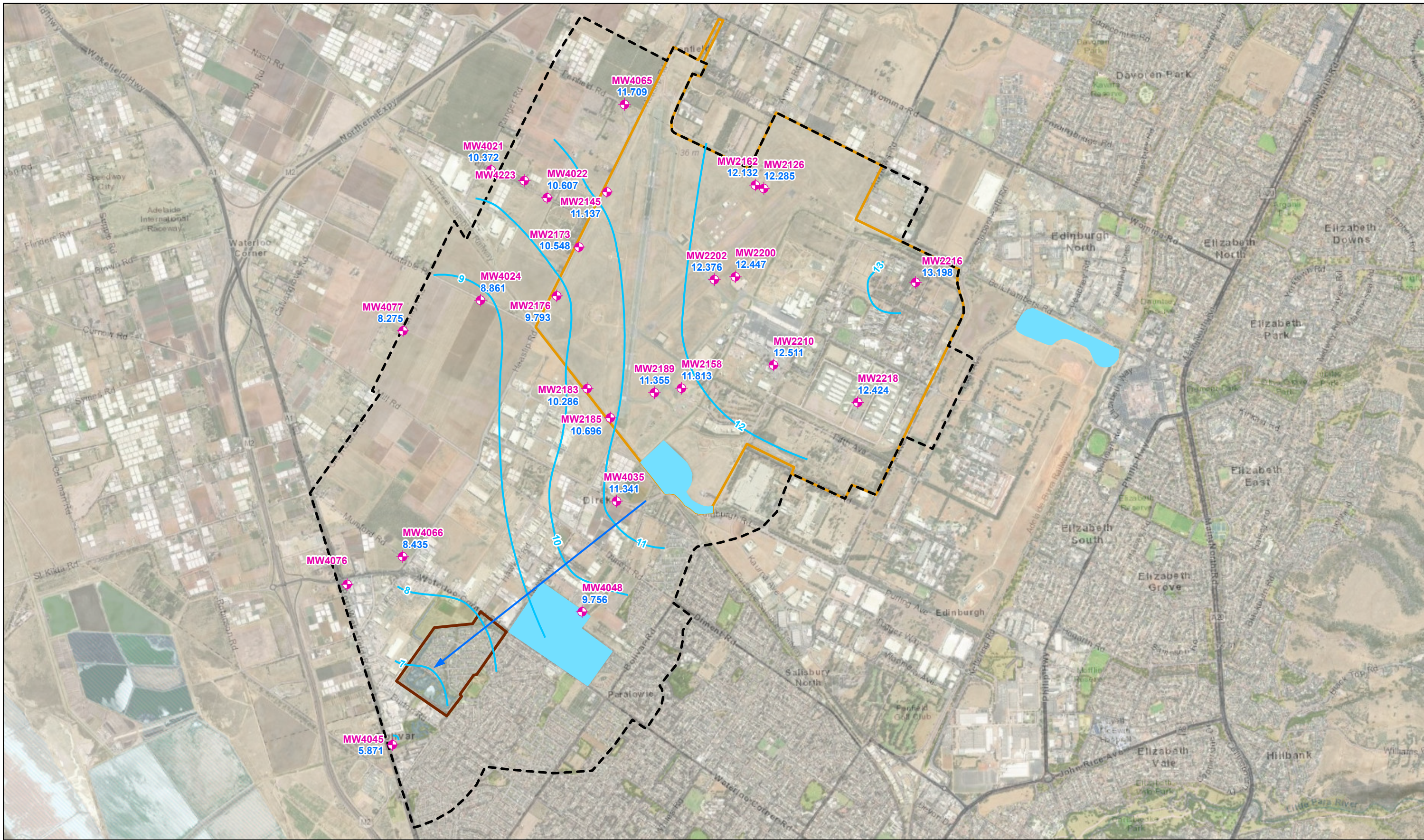
- ◆ Q1 Aquifer
- 175-44 Groundwater Elevation (mAHD)
- Inferred Groundwater Contour
- Inferred Groundwater Flow Direction
- Management Area
- RAAF Base Edinburgh Boundary
- Springbank Waters Estate
- Detention Basin

**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM
Inferred Groundwater Elevation
Q1 Monitoring Wells
July - August 2021**

PROJECT ID: 60612561	Figure
CREATED BY: FLETTN	5.5
LAST MODIFIED: FLETTN 28 SEP 2021	
VERSION: 1	

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 250 500 1,000 1,500
Metres

1:35,000 (when printed at A3)

Legend

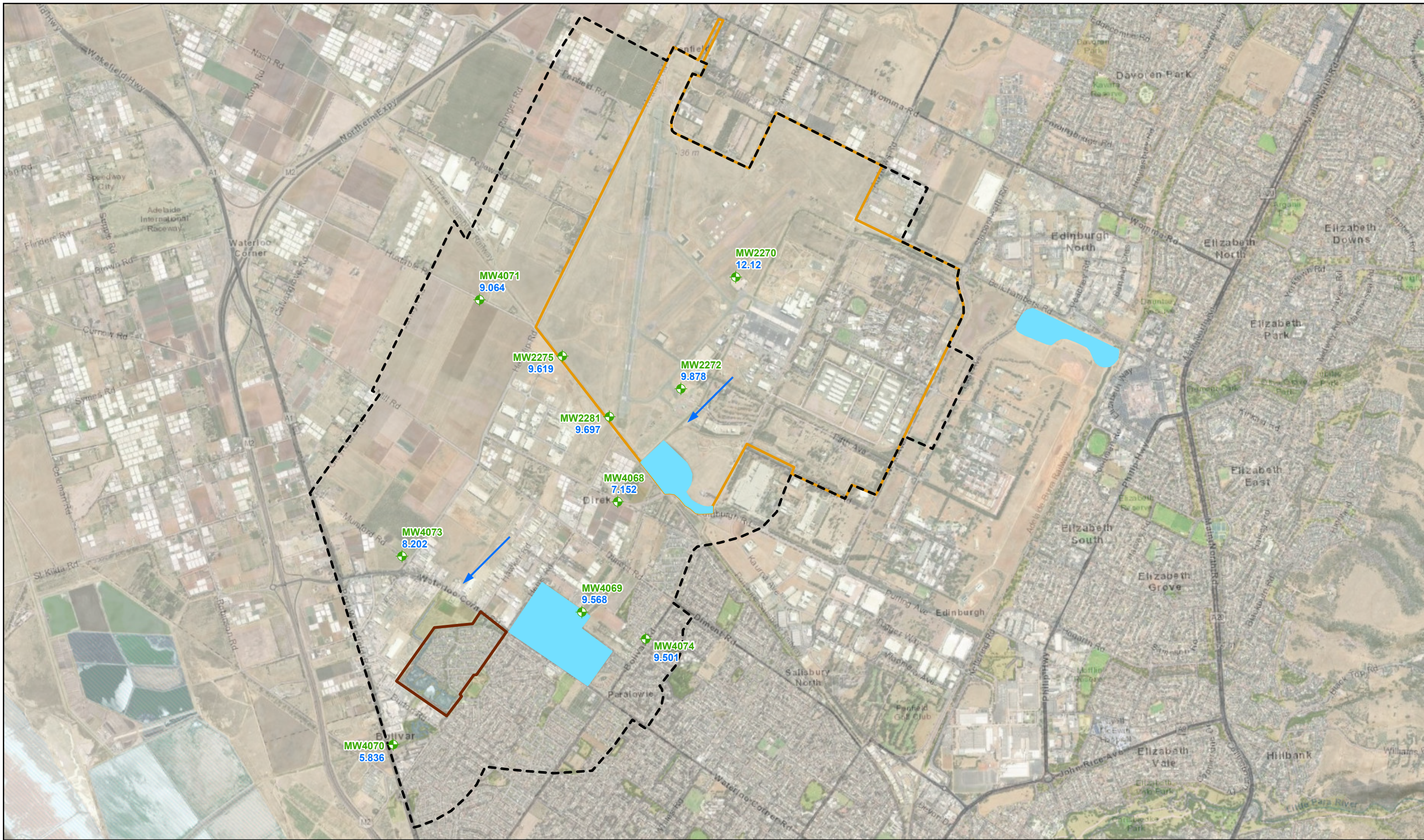
- ◆ Q2 Aquifer
- 175.44 Groundwater Elevation (mAHd)
- Management Area
- RAAF Base Edinburgh Boundary
- Springbank Waters Estate
- Detention Basin
- Inferred Groundwater Contour
- ➔ Inferred Groundwater Flow Direction

**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM
Inferred Groundwater Elevation
Q2 Monitoring Wells
July-August 2021**

PROJECT ID: 60612561	Figure
CREATED BY: FLETTN	5.6
LAST MODIFIED: FLETTN 28 SEP 2021	
VERSION: 1	

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 250 500 1,000 1,500
Metres

1:35,000 (when printed at A3)

Legend

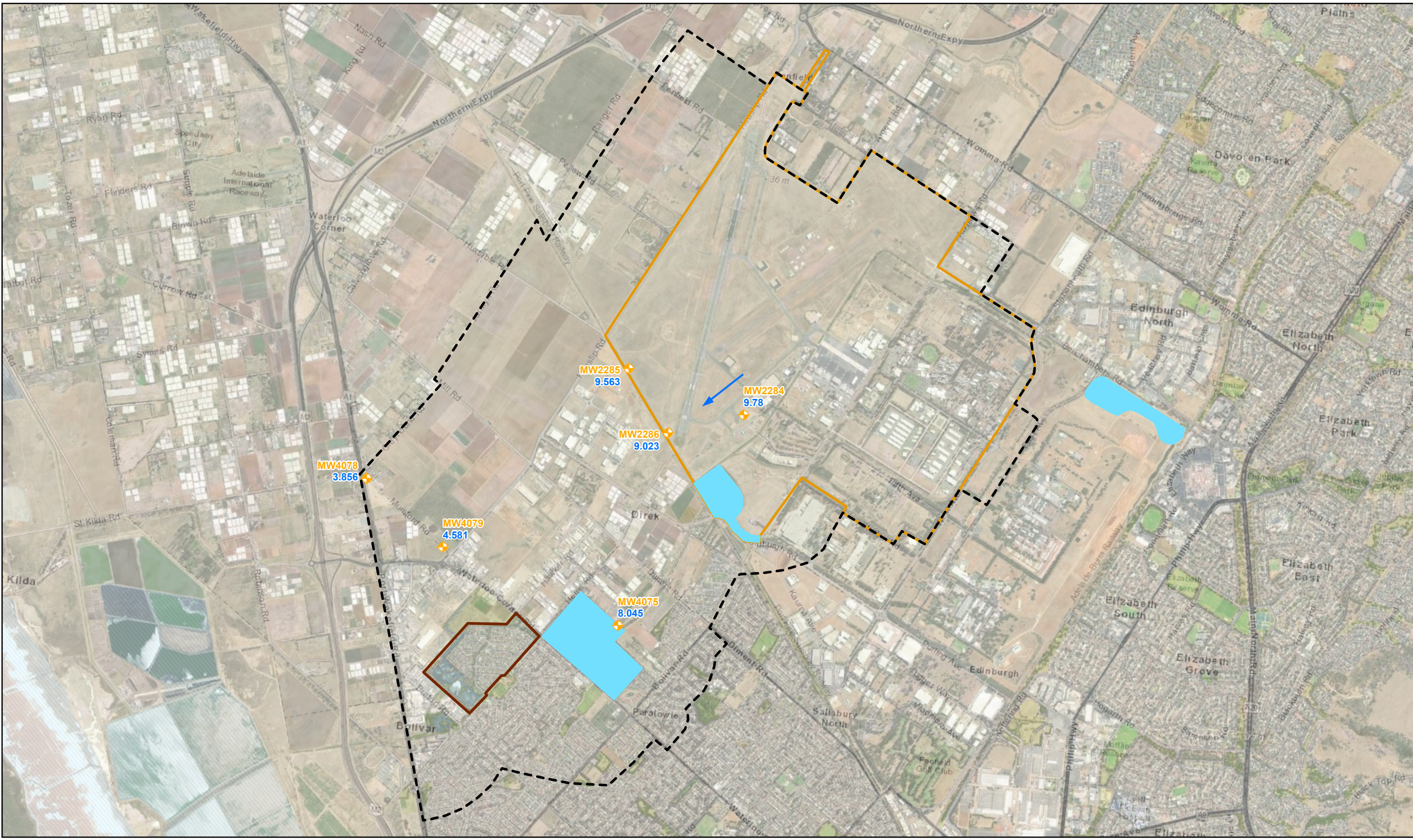
- ◆ Q3 Aquifer
- 175.44 Groundwater Elevation (mAHD)
- ➔ Inferred Groundwater Flow Direction
- Management Area
- RAAF Base Edinburgh Boundary
- Springbank Waters Estate
- Detention Basin

**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM
Inferred Groundwater Elevation
Q3 Monitoring Wells
July-August 2021**

PROJECT ID	60612561	Figure 5.7
CREATED BY	FLETTN	
LAST MODIFIED	FLETTN 28 SEP 2021	
VERSION:	1	

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 0.425 0.85 1.7
Kilometres

1:35,000 (when printed at A3)

Legend

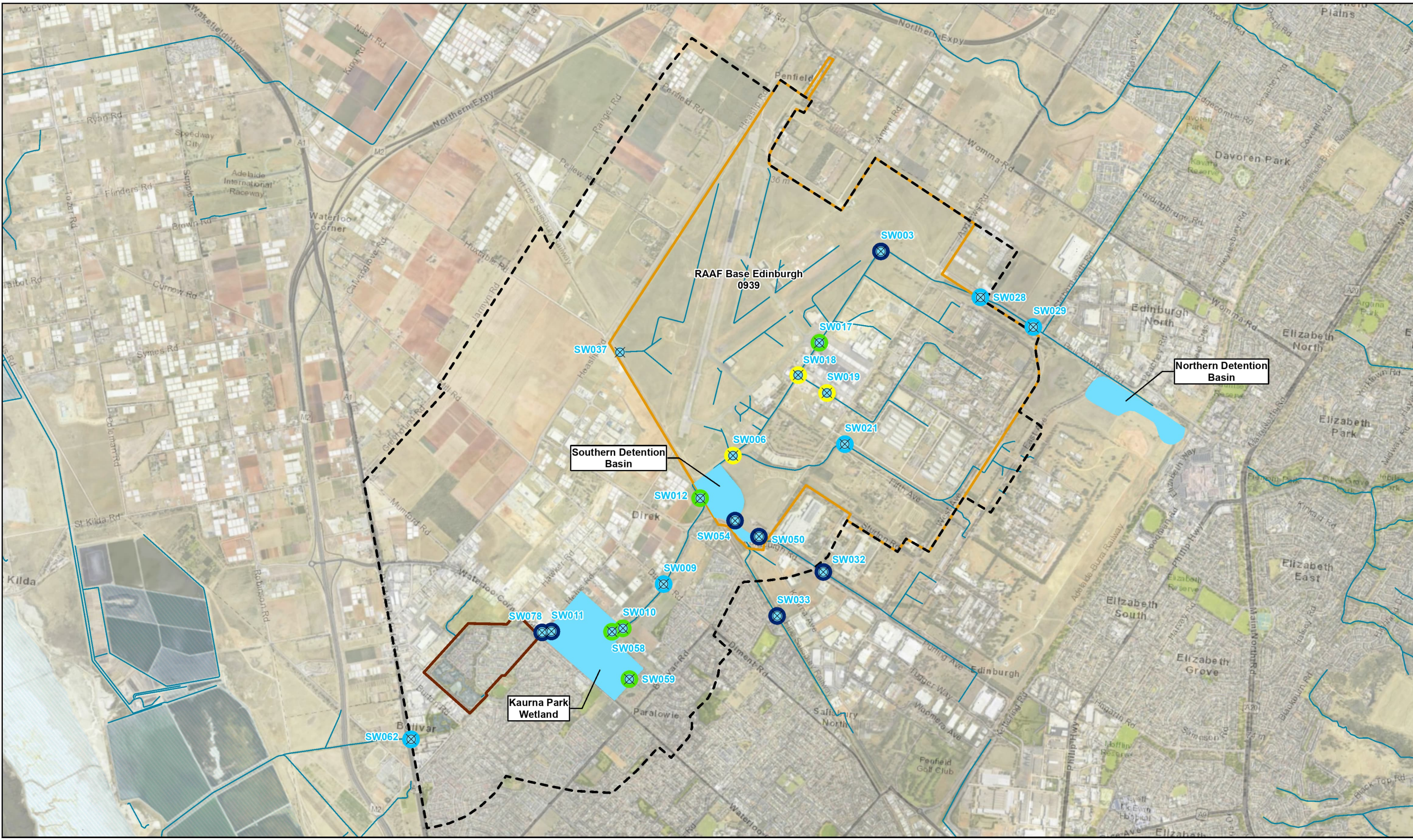
- Q4 Aquifer
- 175.44 Groundwater Elevation (mAHd)
- Inferred Groundwater Flow Direction
- Management Area
- RAAF Base Edinburgh Boundary
- Springbank Waters Estate
- Detention Basin

**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM
Inferred Groundwater Elevation
Q4 Monitoring Wells
July-August 2021**

PROJECT ID: 60612561	Figure
CREATED BY: KAI.DU	5.8
LAST MODIFIED: KAI.DU 02 SEP 2021	
VERSION: 1	

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, omissions, or inaccuracies in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 0.5 1 2
Kilometres

1:35,000 (when printed at A3)

Legend

- Surface Water Sample Locations
- Management Area
- RAAF Base Edinburgh Boundary
- Springbank Waters Estate
- Detention Basin
- Drainage Lines

Concentrations	
	>70 µg/L
	7 to <70 µg/L
	0.7 to <0.7 µg/L
	0.07 to <0.07 µg/L
	LOR to <0.07 µg/L
	Below LOR

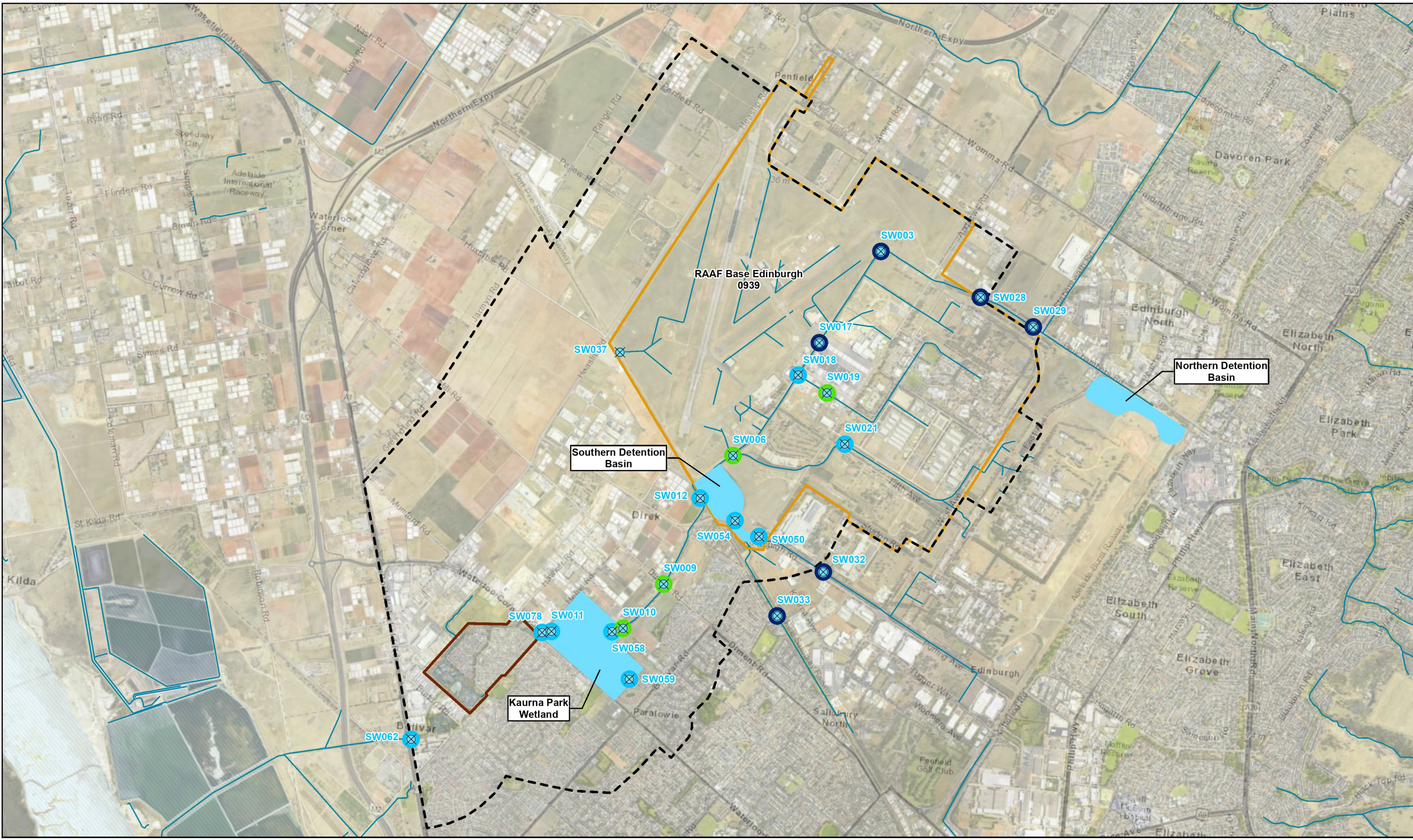
**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING
MONITORING PROGRAM
PFHXS+PFOS CONCENTRATION FOR
SURFACE WATER LOCATIONS FEBRUARY 2021**

PROJECT ID 60612561
CREATED BY JD
LAST MODIFIED houghtonr 18 Aug 2022
VERSION: 1

Figure
6.1

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, omissions, or inaccuracies in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 0.5 1 2
Kilometres

1:35,000 (when printed at A3)

Legend

- Surface Water Sample Locations
- Management Area
- RAAF Base Edinburgh Boundary
- Springbank Waters Estate
- Detention Basin
- Drainage Lines

Concentrations	
	>70 µg/L
	7 to <70 µg/L
	0.7 to <7 µg/L
	0.07 to <0.7 µg/L
	LOR to <0.07 µg/L
	Below LOR

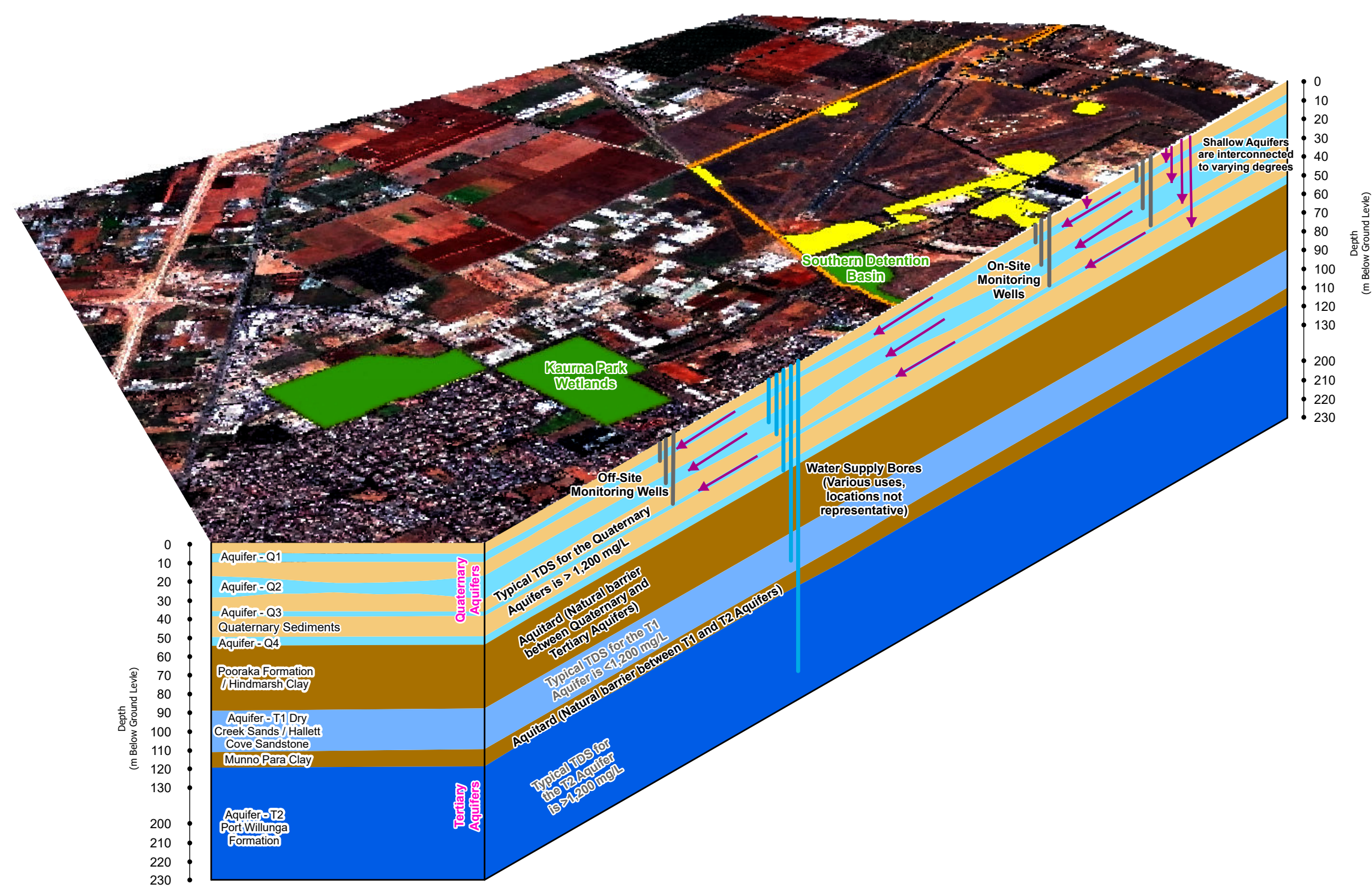
**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING
MONITORING PROGRAM
PFHXS+PFOS CONCENTRATION FOR
SURFACE WATER LOCATIONS AUGUST 2021**

PROJECT ID 60612561
CREATED BY JD
LAST MODIFIED houghtonr 18 Aug 2022
VERSION: 1

Figure
6.2

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



PROJECT ID 60612561
 CREATED BY FLETTN
 APPROVED BY K.TREGLOWN
 LAST MODIFIED 20 DEC 2021

AECOM
 www.aecom.com

Data sources: Landgate SLIP © Imagery: DWER - Government of Western Australia - Department of Water and Environmental Regulation (Contaminated Sites Database)
 Base Data: (c) Based on information provided by and with the permission of the Western Australian Land Information Authority trading as Landgate (2010), Geoscience Australia, Streetpro

Map Document: G:\GIS_Projects\60612561_RAAF_Northern Territory\02_MXD\CSM\Edinburgh_CSM\Edinburgh_CSM.aprx(FlettN)

LEGEND

- Refined Investigation Area
- Site Boundary
- PFAS Migration to Groundwater
- Monitoring Wells
- Water Supply Bores
- PFAS Source Areas

Aquifer

- Aquifer Q1 - Q4
- T1
- T2

Regional Geology

- Clays
- Clays, Silts, Sands

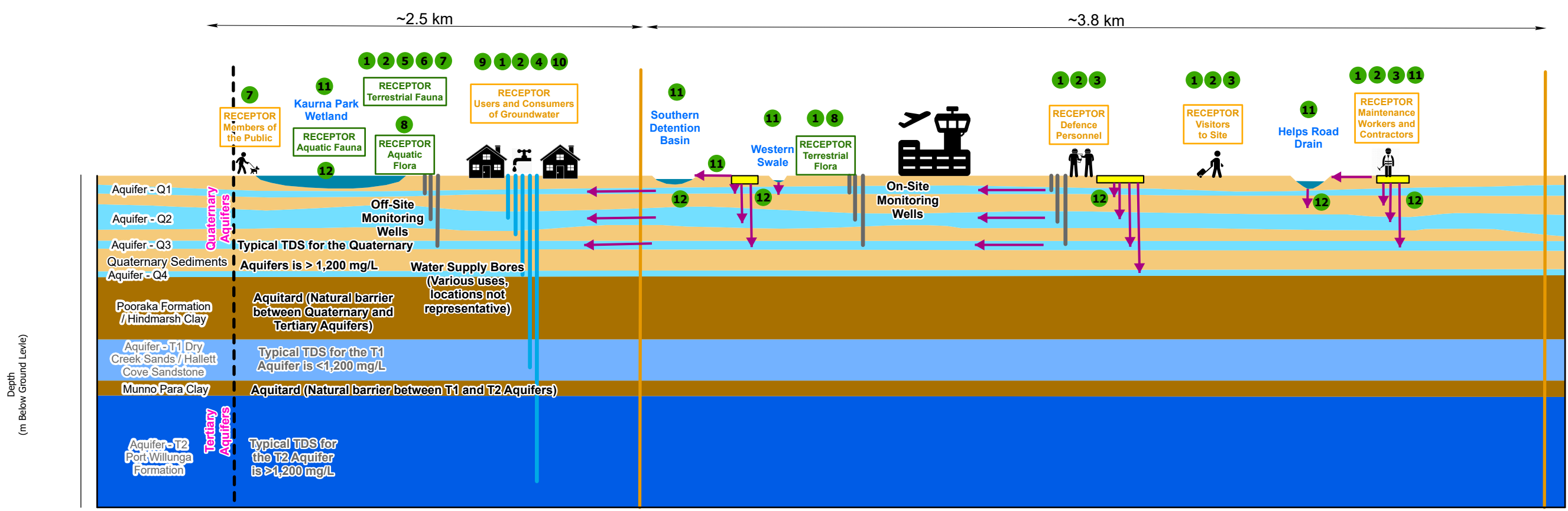
CONCEPTUAL SITE MODEL (THREE DIMENSIONAL CROSS SECTION) SITE SETTING AND HYDROGEOLOGICAL

DEPARTMENT OF DEFENCE

PFAS ONGOING MONITORING PROGRAM

Figure **7.1**

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



PROJECT ID 60612561
 CREATED BY FLETTN
 APPROVED BY K.TREGLOWN
 LAST MODIFIED 20 DEC 2021

AECOM
 www.aecom.com

Data sources: Landgate SLIP © Imagery: DWER - Government of Western Australia- Department of Water and Environmental Regulation (Contaminated Sites Database)
 Base Data: (c) Based on information provided by and with the permission of the Western Australian Land Information Authority trading as Landgate (2010), Geoscience Australia, Streetpro

- LEGEND**
- Exposure Pathways**
- ① Direct Contact
 - ② Incidental Ingestion
 - ③ Inhalation (dust)
 - ④ Direct Consumption of Groundwater and Local Produce
 - ⑤ Ingestion of Impacted Surface Water
 - ⑥ Consumption of Impacted Flora
 - ⑦ Consumption of Impacted Fauna
 - ⑧ Uptake of PFAS From Affected Media
 - ⑨ Consumption of Produce Irrigated With PFAS Contaminated Groundwater
 - ⑩ Consumption of Livestock, Milk, Eggs Where PFAS Contaminated Groundwater Has Been Used for Stock Water Supply
 - ⑪ Overland Transport of Particulate and Dissolved PFAS
 - ⑫ Leaching of Dissolved PFAS
- Other Symbols:**
- - - Refined Investigation Area
 - Site Boundary
 - ↔ PFAS Migration to Groundwater
 - Monitoring Wells
 - Water Supply Bores
 - PFAS Source Areas
- Aquifer**
- Aquifer Q1 - Q4
 - T1
 - T2
- Regional Geology**
- Clays
 - Clays, Silts, Sands

CONCEPTUAL SITE MODEL (TWO DIMENSIONAL CROSS SECTION) SITE SETTING AND HYDROGEOLOGICAL

DEPARTMENT OF DEFENCE

PFAS ONGOING MONITORING PROGRAM

Figure 7.2

Appendix B

Analytical Tables

Table T1 Groundwater Historic PFAS Analytical Results

Table with columns for PFAS compounds (Perfluorobutane sulfonic acid, Perfluoropentane sulfonic acid, etc.) and rows for various locations and dates. Includes a section for 'PFAS NEMP 2020 Human Health Drinking Water' with a 'LOR' row and a summary row. Below is a detailed table with columns for Location Code, Field ID, Date, Lab Report Number, and 32 PFAS compounds, plus Sum of PFAS and PFOS.

Table T1 Groundwater Historic PFAS Analytical Results

					PFAS																																				
Location Code	Field ID	Date	Lab Report Number	µg/L	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorodecane sulfonic acid (PFDA)	Perfluorododecane sulfonic acid (PFDDA)	Perfluorotetradecane sulfonic acid (PFTDA)	Perfluorohexadecane sulfonic acid (PFHxA)	Perfluorooctadecane sulfonic acid (PFHxO)	Perfluorooctanoic acid (PFHOA)	Perfluorodecanoic acid (PFDOA)	Perfluorododecanoic acid (PFDDOA)	Perfluorotetradecanoic acid (PFTDOA)	Perfluorohexadecanoic acid (PFHxDOA)	Perfluorooctadecanoic acid (PFHxDOA)	2,3-Difluorotetramethane sulfonic acid (2,3-DFTS)	2,3-Difluoropentamethane sulfonic acid (2,3-DFTS)	2,3-Difluorohexamethane sulfonic acid (2,3-DFTS)	2,3-Difluorooctamethane sulfonic acid (2,3-DFTS)	2,3-Difluorodecanamethane sulfonic acid (2,3-DFTS)	Perfluorooxalane sulfonamide (PFOSA)	N-Methylperfluorooctane sulfonamide (MFOXA)	N-Methylperfluorodecane sulfonamide (MFDOSA)	N-Methylperfluorododecane sulfonamide (MFDOSA)	N-Ethylperfluorooctane sulfonamide (EFOXA)	N-Ethylperfluorodecane sulfonamide (EDOSA)	N-Ethylperfluorododecane sulfonamide (EDOSA)	Sum of PFHxS and PFOS	Sum of PFAS								
LOP				0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01				
PFAS NEMP 2020 Human Health Drinking Water				0.07	0.07	0.07	0.07	0.07	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.07	0.07			
MW2411	0939_GW0321_5_170718	18/07/2017	555016	0.14	0.09	0.37	0.02	3.6	<0.01	0.2	0.07	0.02	0.02	<0.01	<0.01	<0.01	<0.01	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	3.97	4.59			

Table T1 Groundwater Historic PFAS Analytical Results

Table with columns for Location Code, Field ID, Date, Lab Report Number, and 48 PFAS compounds. The compounds listed include Perfluorobutane sulfonic acid (PFBS), Perfluoropentane sulfonic acid (PFPS), Perfluorohexane sulfonic acid (PFHxS), Perfluoroheptane sulfonic acid (PFHpS), Perfluorooctane sulfonic acid (PFOS), Perfluorononane sulfonic acid (PFNS), Perfluorodecane sulfonic acid (PFDS), Perfluoroundecane sulfonic acid (PFDA), Perfluorododecane sulfonic acid (PFDDA), Perfluorotridecane sulfonic acid (PFTrDA), Perfluorotetradecane sulfonic acid (PFTeDA), Perfluoropentadecane sulfonic acid (PFPeDA), Perfluorohexadecane sulfonic acid (PFHxDA), Perfluorooctadecane sulfonic acid (PFODxA), Perfluorooctadecane sulfonic acid (PFODxA), 4,4'-Difluoroethane sulfonic acid (4,4'-DFES), 4,4'-Difluorotoluene sulfonic acid (4,4'-DFTS), 4,4'-Difluorobenzene sulfonic acid (4,4'-DFBS), 1,1,1-Trifluoro-2,2,2-trifluoroethane sulfonic acid (1,1,1,2,2,2-FTS), 1,1,1-Trifluoro-2,2,2-trifluoroethane sulfonic acid (1,1,1,2,2,2-FTS), N-Ethylperfluorooctane sulfonamide (N-EthylPFOS), N-Ethylperfluorodecane sulfonamide (N-EthylPFDS), N-Ethylperfluorododecane sulfonamide (N-EthylPFDDA), N-Ethylperfluorotetradecane sulfonamide (N-EthylPFTrDA), N-Ethylperfluoropentadecane sulfonamide (N-EthylPFPeDA), N-Ethylperfluorohexadecane sulfonamide (N-EthylPFHxDA), N-Ethylperfluorooctadecane sulfonamide (N-EthylPFODxA), and Sum of PFHxS and PFOS, Sum of PFAS.

Table T3 - Groundwater non-PFAS Analytical Results

					Major Ions														DOC	
Carbonate Alkalinity (as CaCO3)	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Anions Total	Cations Total	Chloride	Fluoride	Ionic Balance	Sulphate as SO4 - Turbidimetric (filtered)	Total Suspended Solids	Calcium (filtered)	Magnesium (filtered)	Potassium (filtered)	Sodium (filtered)	Dissolved Organic Carbon					
mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	mg/L	mg/L	%	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L					
LOR	1	1	1	1	0.01	0.01	0.1	0.1	0.01	1	5	0.005	0.005	0.05	0.05	1				
Location Code	Field ID	Aquifer	Date	Lab Report Number																
MW2120	0939_MW2120_200323	Q1	23/03/2020	ES2010099	49	237	<1	286	10.8	9.03	151	-	9.06	41	917	40	29	15	98	3
MW2270	0939_MW2270_200323	Q3	23/03/2020	ES2010099	<1	353	<1	353	102	93.3	2,930	-	4.42	588	216	254	245	35	1,370	2
MW2270	0939_MW2270_200720	Q3	20/07/2020	EM2012633	<1	348	<1	348	110	100	3,200	0.6	4.44	599	368	297	278	35	1,420	4
MW2270	0939_MW2270_210111	Q3	11/01/2021	EM2100359	<1	347	<1	347	109	90	3,140	0.5	9.56	647	942	226	240	25	1,340	2
MW2272	0939_MW2272_200325	Q3	25/03/2020	ES2010468	118	<1	897	1,020	51.5	43.6	963	0.3	8.32	191	20	154	<1	238	686	23
MW2272	0939_MW2272_200721	Q3	21/07/2020	EM2012633	98	<1	923	1,020	51	51.5	1,010	0.3	0.5	102	21	152	<1	253	861	25
MW2272	0939_MW2272_210112	Q3	12/01/2021	EM2100359	76	<1	1,030	1,100	53	41.5	1,030	0.3	12.2	95	203	103	<1	238	696	27
MW2281	0939_MW2281_200323	Q3	23/03/2020	ES2010099	400	77	<1	478	67.5	49.4	1,730	-	15.5	440	47	6	<1	419	882	15
MW2281	0939_MW2281_200720	Q3	20/07/2020	EM2012633	78	85	<1	163	106	97.3	3,310	0.2	4.14	436	130	139	403	127	1,240	2
MW2281	0939_MW2281_210111	Q3	11/01/2021	EM2100359	<1	385	<1	385	115	95.2	3,360	0.4	9.3	591	<5	310	305	29	1,240	<1
MW2284	0939_MW2284_200325	Q4	25/03/2020	ES2010468	142	<1	42	184	44.6	39.8	1,200	0.3	5.59	338	163	35	<1	265	720	22
MW2284	0939_MW2284_200721	Q4	21/07/2020	EM2012633	96	<1	18	114	45.4	49.8	1,290	0.1	4.61	323	578	11	6	266	964	16
MW2284	0939_MW2284_210112	Q4	12/01/2021	EM2100359	702	121	<1	824	61.5	54.2	1,340	0.3	6.35	348	3,260	2	176	187	800	18
MW2286	0939_MW2286_200323	Q4	23/03/2020	ES2010099	901	<1	405	1,300	54.8	48.1	1,020	-	6.56	4	306	432	<1	98	552	10
MW2286	0939_MW2286_200720	Q4	20/07/2020	EM2012633	79	<1	948	1,030	49.5	52.6	1,020	0.2	3	9	480	411	<1	71	696	14
MW2286	0939_MW2286_210111	Q4	11/01/2021	EM2100359	77	<1	461	537	38	26.1	941	0.2	18.6	36	332	133	<1	25	433	4
MW4069	0939_MW4069_200325	Q3	25/03/2020	ES2010468	<1	309	<1	309	25.2	21.9	596	2.5	7	106	420	38	43	16	369	1
MW4069	0939_MW4069_200722	Q3	22/07/2020	EM2012841	24	323	<1	347	20.8	19.4	441	2.5	3.59	69	60	25	32	17	346	7
MW4069	0939_MW4069_210113	Q3	13/01/2021	EM2100517	<1	323	<1	323	27.6	23.5	698	1.8	8.11	71	1,520	36	46	16	402	8
MW4075	0939_MW4075_200325	Q4	25/03/2020	ES2010468	67	<1	320	386	20.9	19.1	436	0.3	4.6	43	1,050	175	<1	30	220	46
MW4075	0939_MW4075_200722	Q4	22/07/2020	EM2012841	56	3	<1	59	19.5	17.1	627	0.2	6.65	31	4,260	103	1	18	262	30
MW4075	0939_MW4075_210113	Q4	13/01/2021	EM2100517	37	2	<1	39	18.5	15.4	605	0.1	9.16	33	5,940	68	11	20	244	18
MW4079	0939_MW4079_200326	Q4	26/03/2020	ES2010684	91	<1	1,810	1,900	82	77.7	1,550	0.3	2.67	15	1,660	565	<1	185	1,030	9
MW4079	0939_MW4079_200723	Q4	23/07/2020	EM2012841	117	<1	1,560	1,680	74.2	83.6	1,430	0.2	6	13	49	663	<1	140	1,080	18
MW4079	0939_MW4079_210114	Q4	14/01/2021	EM2100517	97	<1	1,900	2,000	80.2	68.2	1,420	0.1	8.1	10	169	534	<1	150	867	19

Legend:

LOR: Limit of reporting
 mg/L: milligrams per litre
 meq/L: milliequivalent per litre

Table T4 - Surface Water Historic non-PFAS Analytical Results

				Major Ions															DOC	
Location Code	Field ID	Date	Lab Report Number	Carbonate Alkalinity (as CaCO ₃)	Alkalinity (Bicarbonate as CaCO ₃)	Alkalinity (Hydroxide) as CaCO ₃	Alkalinity (total) as CaCO ₃	Anions Total	Cations Total	Chloride	Fluoride	Ionic Balance	Sulphate as SO ₄ - Turbidimetric (filtered)	TDS	Total Suspended Solids	Calcium (filtered)	Magnesium (filtered)	Potassium (filtered)	Sodium (filtered)	Dissolved Organic Carbon
				mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	mg/L	mg/L	%	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
LOR				1	1	1	1	0.01	0.01	1	0.1	0.01	1	10	5	1	1	1	1	1
SW003	0939_SW003_200406	6/04/2020	ES2012050	<1	57	<1	57	2.58	2.83	26	-	-	34	-	<5	28	6	6	18	10
SW003	0939_SW003_200819	19/08/2020	EM2014416	<1	52	<1	52	1.59	1.14	16	<0.1	-	5	118	<5	8	2	4	11	6
SW003	0939_SW003_210205	5/02/2021	EM2101800	<1	107	<1	107	3.93	3.45	51	0.1	-	17	231	<5	30	6	13	26	15
SW009	0939_SW009_200407	7/04/2020	ES2012050	<1	62	<1	62	2.12	2.1	21	-	-	14	-	8	21	4	6	13	17
SW009	0939_SW009_200819	19/08/2020	EM2014416	<1	60	<1	60	1.65	1.2	13	<0.1	-	4	115	6	10	2	4	10	11
SW009	0939_SW009_210205	5/02/2021	EM2101800	<1	41	<1	41	1.2	1.14	12	<0.1	-	2	106	37	9	2	7	8	20
SW018	0939_SW018_200819	19/08/2020	EM2014416	<1	82	<1	82	2.3	1.82	16	0.1	-	10	180	12	16	3	5	15	8
SW018	0939_SW018_210205	5/02/2021	EM2101800	<1	60	<1	60	2.05	1.7	22	0.2	-	11	105	<5	13	3	6	15	11
SW037	0939_SW037_200819	19/08/2020	EM2014416	<1	44	<1	44	1.14	0.68	7	<0.1	-	3	66	<5	4	<1	5	8	6
SW050	0939_SW050_200819	19/08/2020	EM2014416	<1	52	<1	52	1.4	0.78	10	<0.1	-	4	112	<5	5	1	4	8	9
SW050	0939_SW050_210205	5/02/2021	EM2101800	<1	38	<1	38	1.1	0.9	9	<0.1	-	4	56	<5	6	2	5	7	13
SW058	0939_SW058_200819	19/08/2020	EM2014416	<1	69	<1	69	1.88	1.32	14	0.1	-	5	126	10	11	2	5	11	9
SW058	0939_SW058_200407	7/04/2020	ES2012050	<1	153	<1	153	4.35	4.27	34	-	0.9	16	-	28	40	9	9	30	13
SW058	0939_SW058_210205	5/02/2021	EM2101800	<1	70	<1	70	2.38	1.93	29	0.2	-	8	151	47	13	3	8	19	19

Legend:

LOR: Limit of reporting
 mg/L: milligrams per litre
 meq/L: milliequivalent per litre

Appendix C

Factual Reports

Prepared for
Department of Defence Directorate
of PFAS Remediation Environment
and Engineering Branch
ABN: 68706814312

AECOM

Sampling Event Factual Report, January and February 2021

PFAS OMP - RAAF Base Edinburgh

12-Oct-2021
PFAS Ongoing Monitoring Program

Sampling Event Factual Report, January and February 2021

PFAS OMP - RAAF Base Edinburgh

Client: Department of Defence Directorate of PFAS Remediation Environment and Engineering Branch

ABN: 68706814312

Prepared by

AECOM Australia Pty Ltd

Level 3, 9 Cavenagh Street, Darwin NT 0800, GPO Box 3175, Darwin NT 0801, Australia

T +61 8 8942 6200 F +61 8 8942 6299 www.aecom.com

ABN 20 093 846 925

12-Oct-2021

Job No.: 60612561

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 AS/NZS4801 and OHSAS18001.

Quality Information

Document Sampling Event Factual Report, January and February 2021

Ref 60612561_0939_EDN_RP_20211012_Rev0.docx

Date 12-Oct-2021

Prepared by Georgia Matthews

Reviewed by David Steele

Revision History


Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
A	09-Mar-2021	Draft for review	Carina Jakobi Project Manager	
B	28-Sep-2021	Revision for Review	James Guzman Principal Environmental Scientist	
0	12-Oct-2021	Final	James Guzman Principal Environmental Scientist	

Table of Contents

Abbreviations		1
1.0	Introduction	1
	1.1 General	1
	1.2 Objectives	1
2.0	Scope of Work	2
	2.1 Deviations from the SAQP	5
3.0	Methodology	6
	3.1 Adopted Screening Criteria	7
	3.2 Data Quality Objectives and Data Validation	8
4.0	Field Observations and Results	9
	4.1 General Field Observations	9
	4.2 Groundwater	9
	4.2.1 Field Observations and Field Measurements	9
	4.2.2 PFAS Groundwater Analytical Results	10
	4.2.3 Non-PFAS Groundwater Analytical Results	10
	4.3 Surface Water	11
	4.3.1 Field Observations and Field Measurements	11
	4.3.2 PFAS Surface Water Analytical Results	11
	4.3.3 Non PFAS Surface Water Analytical Results	12
5.0	Summary and Next Sampling Events	13
	5.1 Summary of Monitoring Event	13
	5.2 Upcoming Sampling Events	14
	5.3 Upcoming Annual Interpretive Report	14
6.0	References	15
Appendix A		
	Figures	A
Appendix B		
	Tables	B
Appendix C		
	Data Validation Reports	C
Appendix D		
	Chain of Custody	D
Appendix E		
	Laboratory Certificates	E
Appendix F		
	Calibration Certificates	F

List of Tables

Table 1	Groundwater Sampling Locations	3
Table 2	Groundwater Gauging Locations	4
Table 3	Surface Water Sampling Locations	4
Table 4	Deviations from the SAQP during sampling event for February 2021	5
Table 5	Sampling Methodology	6
Table 6	Summary of Adopted Screening Criteria	7
Table 7	General Field Observations	9
Table 8	Groundwater observations and field measurements	9
Table 9	Surface Water Observations and Field Measurements	11
Table 10	Deviations from Historical Surface Water Dataset	12
Table 11	Summary of Sampling Event	13

Abbreviations

Term	Description
AECOM	AECOM Australia Pty Ltd
ALS	Australian Laboratory Services Pty Ltd
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure, as amended (2013)
DCMM	Defence Contamination Management Manual
DEW	Department for Environment and Water
DO	Dissolved oxygen
DoH	Department of Health
EC	Electrical conductivity
FSANZ	Food Standards Australia and New Zealand
HEPA	Heads of Environmental Protection Agencies
LOR	Limit of reporting
mAHD	metres Australian Height Datum
mbtoc	metres below top of casing
NATA	National Association of Testing Authorities
NEMP	National Environmental Management Plan
NEPC	National Environment Protection Council
NHMRC	National Health and Medical Research Council
NMI	National Measurement Institute
NT	Northern Territory
NTU	Nephelometric Turbidity Unit
NSW	New South Wales
OMP	Ongoing Monitoring Program
ORP	Oxidation-reduction potential
PFAS	Per- and poly-fluoroalkyl substances
PFHxS	Perfluorohexane sulfonic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonate
PMAP	PFAS Management Area Plan
QA/QC	Quality Assurance/Quality Control
Q1	Quaternary aquifer unit 1
RAN	Royal Australian Navy
SA EPA	South Australian Environmental Protection Agency

Term	Description
SAQP	Sampling Analysis Quality Plan
SWL	Standing Water Level
T1	Tertiary aquifer unit 1

1.0 Introduction

1.1 General

AECOM Australia Pty Ltd (AECOM) was engaged by the Department of Defence (Defence) to implement the per- and poly-fluoroalkyl substances (PFAS) Ongoing Monitoring Program (OMP) outlined in the *PFAS Management Area Plan (PMAP)* (Department of Defence, 2019) at RAAF Base Edinburgh (the 'Site') in South Australia. The location of the Site and Management Area is shown in **Figure 1.1** in **Appendix A** and PFAS source areas as outlined in the PMAP (Defence, 2019) are shown in **Figure 1.2, Appendix A**. The OMP (Defence, 2019) for the Site outlines the requirement to complete biannual groundwater and surface water sampling.

A sampling event factual report is prepared following each sampling event. Annual interpretative reports will be prepared following the completion of each 12-month sampling period.

This sampling event factual report has been prepared to document the results of the summer sampling event completed between 11 January and 5 February 2021, specifically highlighting first time detections and/or first-time exceedances of adopted human health and ecological screening criteria for perfluorohexane sulfonic acid (PFHxS)+perfluorooctane sulfonate (PFOS) and / or perfluorooctanoic acid (PFOA).

This report has been prepared in accordance with the *Defence PFAS OMP factual reports – interim guidance for preparation, v0.2, March 2020* (Defence, 2020).

1.2 Objectives

The primary purpose of the OMP program is to monitor changes to the PFAS impact in groundwater and surface water pathways associated with sources of PFAS as initially assessed through the detailed site investigation phase of works. Changes may result from the specific or cumulative impact of remediation or containment actions, existing transportation trends, and changes to hydrogeology or weather events.

The monitoring program at RAAF Base Edinburgh includes a regime of groundwater and surface water sampling to capture these changes in the long term, to enable Defence to maintain an up-to-date understanding of temporal and spatial distribution, concentration and transport of PFAS contaminants.

The data collected will assist in the timely identification of risks and inform Defence's approach to the management of PFAS, including updates and revisions to the PFAS Management Area Plan (PMAP) (Defence, 2019).

The purpose of this PFAS OMP factual report is to summarise the scope of works and findings for the January to February 2021 groundwater and surface water sampling event, specifically highlighting first time detections and first-time exceedances of human health screening criteria for perfluorohexane sulfonic acid (PFHxS)+ perfluorooctane sulfonate (PFOS) and / or perfluorooctanoic acid (PFOA).

2.0 Scope of Work

The sampling event was completed in general accordance with the SAQP (AECOM, 2020).

Prior to commencement of the sampling events the SAQP was reviewed to ensure compliance with the following:

- PFAS National Environmental Management Plan (NEMP) (2020).
- National Environment Protection (Assessment of Site Contamination) Measure 1999, Schedule B1, as amended in 2013 (ASC NEPM, 2013).
- Defence Routine Environment Water Quality Monitoring Manual.
- AS/NZ 5667:1998 Water quality – Sampling.
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality; and
- Relevant State regulatory guidelines.

In summary, the scope of works for this sampling event included:

- Obtaining access to two City of Salisbury operational bores, one Department for Environment and Water (DEW) monitoring bore and one private bore.
- Collection of groundwater samples (including gauging of groundwater levels), in January and February 2021 from 105 existing monitoring wells using Hydrasleeves™ (refer to **Table 1** below, and **Figure 3** in **Appendix A** for specific locations).
- Collection of 20 surface water samples from 20 locations, in February 2021 (refer to **Table 2** below and **Figure 2** in **Appendix A** for specific locations) coinciding with a significant rainfall event (forecast for >10 mm of rain). One location was dry and a surface water sample unable to be collected from this location during this sampling event.
- Collection of intra- and inter-laboratory duplicate samples at a rate of 1 in 10 primary samples, one rinsate and one field blank sample per fieldwork day for groundwater and surface water.
- Analysis of samples for the following:
 - all samples for a suite of 28 PFAS analytes at the standard limit of reporting (LOR).
 - 20% of groundwater and surface water samples for major cations (sodium, calcium, magnesium and potassium) and anions (chlorine, sulphate, bicarbonate, carbonate), total suspended solids (TSS) and dissolved organic carbon (DOC). Including pH and total dissolved solids (TDS) for surface water.
- Data management of the OMP field and laboratory data in the Defence ESdat database.
- Preparation of this Sampling Event Factual Report.

Table 1 Groundwater Sampling Locations

Location Description	Aquifer	On-Base wells/bores	Off-base wells/bores	Number of wells/bores
Background North and Northeast of Base	Quaternary aquifer unit 1 (Q1)	MW2325, MW2134, MW2135, MW2159	MW2218	On-Base (6 locations) Off-Base (1 location)
	Q2	MW2216, MW4011*, MW4218		
Source Area P4	Q1	MW2358, MW2411, MW2394		On-Base (5 locations)
	Q2	MW2126, MW2162		
Source Areas P9 and P15, P11, P16 and P21	Q1	MW2499, MW2112, MW2116, MW2120, MW2148, MW2149, MW2150, MW2188, MW2194, MW2197, MW2201, MW2202, MW2203		On-Base (19 locations)
	Q2	MW2158, MW2189, MW2200		
	Q3	MW2270, MW2272		
	Q4	MW2284		
Source Areas P1, P3A, P3B and P27	Q1	MW2528, MW2490 MW2114, MW2130, MW2131, MW2193		On-Base (9 locations)
	Q2	MW2157, MW2209, MW2210		
Southern, western and northern boundary	Q1	MW2501, MW2129, MW2137, MW2139, MW2166, MW2169, MW2172, MW2175, MW2177, MW2180, MW2182, MW2184	MW4013	On-Base (21 locations) Off-Base (1 location)
	Q2	MW2145, MW2173, MW2176, MW2183, MW2185		
	Q3	MW2275, MW2281		
	Q4	MW2285, MW2286		
Helps Road Drain	Q1		MW4001, MW4003, MW4015, MW4053	Off-Base (11 locations)
	Q2		MW4035, MW4045, MW4048	
	Q3		MW4068, MW4069^, MW4070	
	Q4		MW4075	
	Q1		MW4009, MW4020,	Off-Base (20 locations)

Location Description	Aquifer	On-Base wells/bores	Off-base wells/bores	Number of wells/bores
Lateral extent of PFAS impacts			MW4023, MW4027, MW4037, MW4041, MW4052, MW4055, MW4059, MW4060, MW4061, MW4063*, MW4064, MW4072, MW4219	
	Q2		MW4021, MW4022, MW4024, MW4076, MW4077	
	Q3		MW4071	
Proximity to identified licensed groundwater users	Q1		MW4057, MW4058	Off-Base (9 locations)
	Q2		MW4065, MW4066	
	Q3		MW4069 [^] , MW4073, MW4074,	
	Q4		MW4078, MW4079	
Tertiary Aquifer Bores	T1 (Tertiary aquifer unit 1)		MW21322, MW20327 (DEW) and MW22767	Off-Base (3 locations)
Private Property Bore	Q2		MW15586	Off-Base (1 location)

[^]Targeted wells are applicable to multiple investigative locations

* Wells MW4011 and MW4063 believed destroyed and replaced with wells MW4128 and MW4219, respectively.

Table 2 Groundwater Gauging Locations

Aquifer	On-Base wells/bores	Off-base wells/bores	Number of wells/bores
Q1	MW2118, MW2156, MW2163, MW2171	MW4006, MW4028, MW4029, MW4030, MW4043, MW4046, MW4047, MW4049	On-Base (4 locations) Off-Base (8 locations)
Q2	MW2160, MW2164, MW2199, MW2195	MW4031, MW4032	On-Base (4 locations) Off-Base (2 locations)

Refer to Table 8 for further details

Table 3 Surface Water Sampling Locations

Location Description	On-Base locations	Off-Base locations	Number of locations
Upgradient locations	SW003, SW028	SW029, SW032 SW033	On-Base (2 locations) Off-Base (3 locations)
On-Base surface water drain network	SW006, SW017, SW018, SW019, SW021, SW050, SW054		On-Base (7 locations)
On-Base surface water exiting the Base	SW037*		On-Base (1 location)

Location Description	On-Base locations	Off-Base locations	Number of locations
Helps Road Drain south of the Base boundary		SW009, SW010, SW011, SW012, SW062	Off-Base (5 locations)
Kaurna Park Wetland		SW058, SW059, SW078	Off-Base (3 locations)

*Location not sampled. Refer to Table 9 for further details

2.1 Deviations from the SAQP

Some deviations from the SAQP exist. Outlined in **Table 4** below are the deviations from the SAQP (AECOM, 2020) during this sampling event.

Table 4 Deviations from the SAQP during sampling event for February 2021

SAQP	January/February 2021 Sampling Event
Field parameters to be obtained from 105 groundwater locations	Due to an insufficient water column, field parameters were not obtained at MW2188, however a sample was obtained from this location. Field parameters were not obtained at MW2180 due to a field transcription error, historical field parameters from previous rounds will be used to supplement data at this location for this event.
21 surface water locations to be sampled as part of the biannual sampling event.	Location SW037 was dry and was not sampled.

3.0 Methodology

The methodology adopted for the biannual groundwater and surface water sampling events was in accordance with the SAQP (AECOM, 2020) and is summarised below in **Table 5**:

Table 5 Sampling Methodology

Item	January/February 2021 Sampling Events
Groundwater gauging	The depth to groundwater was measured in each monitoring well immediately prior to collection of groundwater samples using an interface probe.
Field parameters	<p><u>Groundwater</u> Temperature, electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (ORP), pH and observations of water quality were recorded for all groundwater and surface water samples.</p> <p>Groundwater field parameters were obtained prior to sampling by retrieving groundwater via Hydrasleeve™ samplers for measurement with a water quality meter.</p> <p><u>Surface water</u> Surface water field parameters were obtained prior to sampling by retrieving surface water via a sampling pole and bottle for measurement with a water quality meter.</p> <p>Field parameters and observations were collected electronically using AECOM's environmental data collection and analysis (EDCA) tool. Observations collected in the field are presented in table T1 in Appendix B.</p> <p>Calibration certificates are presented in Appendix F.</p>
Sampling collection	<p><u>Groundwater</u> Groundwater samples were collected from accessible monitoring wells using no-purge methodology HydraSleeves™, with the exception of wells MW15586, MW21322 and MW22767 which were sampled via a tap.</p> <p>HydraSleeves™ were installed within the screened interval of the wells for a minimum of 24 hours prior to the sampling round. This was based on a review of the well construction log. Once sampling was completed, new HydraSleeves™ were deployed at the screened interval depth in preparation for the next sampling round.</p> <p>Groundwater samples obtained through a tap were collected by placing the laboratory sample bottle beneath the tap and the tap slowly opened to collect the "first flush" of water.</p> <p><u>Surface water</u> Surface water samples were collected from approximately 0.1 meters below the water surface to minimise collection of sediment or floating materials in the samples. At each location, a new, laboratory supplied container was lowered into the water, using an aluminium sampling pole, with the cap immediately applied once the container was full.</p>
QAQC samples	Field QA/QC samples collected included intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits), field blanks and rinsate samples. Refer to Appendix C for assessment of QAQC sample data.

Item	January/February 2021 Sampling Events
Sample analysis	<p>Samples were submitted to the primary and secondary laboratories for analysis for the extended suite of PFAS, major ions, dissolved organic carbon and total suspended solids.</p> <p>ALS Environmental (ALS) Sydney, NSW was used as the primary laboratory. National Measurement Institute (NMI) of Sydney, NSW was used as the secondary laboratory. ALS and NMI methods for analyses were certified by the National Association of Testing Authorities (NATA).</p> <p>Chain of custody documents are presented in Appendix D and laboratory certificates are presented in Appendix E.</p>

3.1 Adopted Screening Criteria

Screening criteria were selected on the basis of national guidance in the form of the PFAS National Environmental Management Plan, Defence estate and environmental strategies, and Defence PFAS-specific strategies and guidance. Guidance documents used to assess the dataset includes the following:

- Department of Health (DoH), 2019. Health Based Guidance Values for PFAS for use in site investigations in Australia. April 2017 [updated September 2019].
- Heads of the Environment Protection Authority (HEPA), (2020), PFAS National Environmental Management Plan (NEMP). January 2020.
- Food Standards Australia New Zealand (FSANZ), 2017. Perfluorinated Chemicals in Food (FSANZ, 2017).
- National Health and Medical Research Council (NHMRC), 2019. Guidance on PFAS in Recreational Water. August 2019 (NHMRC 2019).
- National Environment Protection Council (NEPC), 1999. National Environment Protection (Assessment of Site Contamination) Measure, 1999, Schedule B1, as amended in 2013 (ASC NEPM) (NEPC, 2013).

The screening criteria which have been adopted are presented **Table 6** below.

Table 6 Summary of Adopted Screening Criteria

Pathway	Compound	Criteria	Comment/Reference
Human Health Receptors			
Drinking water - groundwater	PFOS + PFHxS	0.07 µg/L	The values are from the PFAS NEMP (HEPA, 2020). Where the guideline value refers to the sum of PFOS + PFHxS, this includes PFOS only, PFHxS only and the sum of the two (HEPA, 2020). <i>All groundwater results will be compared to these criteria.</i>
	PFOA	0.56 µg/L	
Recreational use – surface water	PFOS + PFHxS	2 µg/L	The values are from the PFAS NEMP, 2020(HEPA, 2020). <i>All surface water results will be compared to these criteria.</i>
	PFOA	10 µg/L	
Ecological Receptors			
Freshwater (95% species protection values)	PFOS	0.13 µg/L	The values are from the PFAS NEMP (HEPA, 2020). <i>All surface water and groundwater results will be compared to these criteria.</i>
	PFOA	220 µg/L	

PFOS + PFHxS: Perfluorooctanesulfonic acid and Perfluorohexanesulfonic acid

PFOA: Perfluorooctanoic acid

3.2 Data Quality Objectives and Data Validation

The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2020).

Data validation assessment is provided in **Appendix C**.

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

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

4.0 Field Observations and Results

4.1 General Field Observations

The following field observations were applicable across the entirety of the sampling event.

Table 7 General Field Observations

Item	Observation
Weather conditions	<p>Weather was observed to be partly cloudy and ranged from cool to hot conditions (20°C to 40°C) during the groundwater sampling event in January and February 2021.</p> <p>During the surface water sampling event on 5 February 2021, 13.0 mm of rain was recorded (Edinburgh RAAF station, 023083) (Bureau of Meteorology, 2021).</p>
Estate Management Works or Training Activities	<p>During the sampling event, no notable estate works, or training activities were observed in the vicinity of sampling locations with the exception of the following:</p> <ul style="list-style-type: none"> • Current airside construction activities. • Flight training activities undertaken airside. <p>Due to the nature and location of these works within the groundwater sampling network, they are not expected to affect data or samples collected within the sampling program or interpretations made for the site.</p>

4.2 Groundwater

4.2.1 Field Observations and Field Measurements

Table 8 Groundwater observations and field measurements

Item	Observations and field measurements
Fieldwork dates	Groundwater sampling was completed between 11-15 January, 19 January, and 5 February 2021.
Access and sample collection	<p>All monitoring wells and bores were accessible between 11-15 January 2021, with the exception of the following:</p> <ul style="list-style-type: none"> • Monitoring well MW2188 was sampled, however had insufficient water for field parameters to be collected. • Monitoring well MW2150 was not located during the January 2021 sampling event, however, was located in long grass during the surface water sampling event on 5 February using a metal detector. • Council bores were sampled on 19 January 2021 to accommodate council staff availability. • Bores MW21322, MW22767 and MW15586 were sampled from a tap; headworks or infrastructure present restricted access to gauge groundwater levels at these bores. <p>A key obtained from DEW was required to access DEW bore MW20327. Council of Salisbury bores MW21322 and MW22767 required council escort for access.</p>
Monitoring well network	The monitoring well network was generally in good condition and unchanged from the previous round with deviations noted in Section 2.1 .
Contamination Observations	No visible or olfactory indications of contamination were observed during sampling.

Item	Observations and field measurements
Depth to groundwater and flow direction	<p>Depth to groundwater for each aquifer ranged between:</p> <ul style="list-style-type: none"> • Q1: 1.140 (MW4057) and 9.655 (MW4072) meters below top of casing (mBTOC). • Q2: 1.115 (MW4046) and 7.990 (MW2218) mBTOC. • Q3: 1.825 (MW4070) and 7.311 (MW4068) mBTOC. • Q4: 7.265 (MW2285) and 13.825 (MW4078) mBTOC. • T1: 15.54 mBTOC (MW20327). MW20327 was the only monitoring well available for gauging attributed to this aquifer. <p>Groundwater gauging data is presented in Table T1, Appendix B. Inferred groundwater contours and groundwater flow directions at the site between the 11 to 19 January and on 5 February 2021 are shown on Figure 4.1, 4.2, 4.3 and 4.4 in Appendix A.</p> <p>Inferred groundwater contouring suggests that groundwater generally flows to the south west across all quaternary aquifers. Insufficient data is available to generate groundwater contours for the T1 aquifer.</p>
Geochemical parameters	<p>Groundwater geochemical parameters were measured prior to collecting groundwater samples. The readings are presented in Table T1 in Appendix B, and are summarised below:</p> <ul style="list-style-type: none"> • Dissolved oxygen ranged from 1.1 mg/L (MW2173) to 7.70 mg/L (MW2149). • Electrical conductivity ranged from 633.8 µS/cm (MW4027) to 31,996.1 µS/cm (MW2173) indicating fresh water to saline conditions. • pH ranged from 4.90 (MW4079) to 12.15 (MW2272) indicating slightly acidic to basic conditions. • Redox (field measured) ranged from -230.9 mV (MW4071) to 236.8 mV (MW2137) indicating oxidising to reducing conditions.

4.2.2 PFAS Groundwater Analytical Results

The PFAS groundwater analytical results from the January and February 2021 sampling event are presented in **Table T2 in Appendix B**. Of the 105 groundwater wells sampled during this event, 75 samples reported concentrations of PFAS compounds above the laboratory LOR.

PFHxS+PFOS concentrations across on-Base locations ranged between 2.88 µg/L (MW2112) and 98.8 µg/L (MW2189) and for off-base locations ranged between below the laboratory LOR (<0.01) at 23 locations and 7.63 µg/L (MW4013).

PFOA concentrations across on-Base locations ranged between below the laboratory LOR (<0.01 µg/L) at 19 locations and 9.7 µg/L (MW2148) and for off-base locations ranged between below the laboratory LOR (<0.01 µg/L) at 19 locations and 9.7 µg/L.

PFOS was detected above LOR for the first time in well MW2172, but this does not represent a first time detection of PFHxS+PFOS given PFHxS has been previously present. There were no first time detections or new exceedances of assessment criteria for PFHxS+PFOS or PFOA at any location for this round of sampling.

4.2.3 Non-PFAS Groundwater Analytical Results

The non-PFAS groundwater analytical results from this sampling event are presented in **Table T3 in Appendix B**. Parameters were variable across the well network, with ranges for key parameters summarised below:

Total alkalinity: 39 mg/L (MW4075) to 2,000 mg/L (MW4079)

Total anions: 9 meq/L (MW2120) to 117 meq/L (MW2126)

Total cations: 8.29 meq/L (MW4048) to 118 meq/L (MW4066)

Ionic balance: 4.46% (MW4057) to 12.2% (MW2272)

Calcium: 2 mg/L (MW2284, MW4001, MW4048) to 534 mg/L (MW4079)
 Magnesium: less than laboratory LOR (MW2200, MW2286, MW4079) to 305 mg/L (MW2281)
 Potassium: 6 mg/L (MW4001, MW4048) to 238 mg/L (MW2272)
 Sodium: 98 mg/L (MW2120) to 2,500 mg/L (MW4073)
 Chloride: 67 mg/L (MW4048) to 3,240 mg/L (MW4066)
 Fluoride: 0.1 mg/L (MW4075 and MW4079) to 7.7 mg/L (MW4001 and MW4048)
 Sulphide: 10 mg/L (MW4079) to 1,330 mg/L (MW4066)
 DOC: less than laboratory LOR (MW2120, MW2148, MW2281, MW4048) to 28 mg/L (MW2358)
 TSS: less than laboratory LOR (MW2281) to 5,490 mg/L (MW4075)

4.3 Surface Water

4.3.1 Field Observations and Field Measurements

Table 9 Surface Water Observations and Field Measurements

Item	Description
Fieldwork Dates	Surface water sampling was completed on 5 February 2021.
Access and sample collection	SW037 was dry, therefore no surface water was collected at this location. All other locations were suitable for sampling.
Contamination Observations	No obvious visible signs of contamination were observed.
Rainfall	The sampling conducted in February targeted a forecasted rainfall event (greater than 10 mm of rain). Rainfall data from the Edinburgh RAAF weather station reported 13 mm on 5 February 2021 (Bureau of Meteorology, 2021).
Surface Water Flow	During the February 2021 sampling event, it was noted that surface water generally flowed to the south west within the drainage network. Sample locations were stagnant at SW012, SW018, SW019, SW021, SW050, SW054 and SW059. Sample location SW037 was dry.
Geochemical Parameters	<p>Surface water geochemical parameters were measured prior to collecting surface water samples in February 2021. The readings are presented in Table T4 in Appendix B, and are summarised below:</p> <ul style="list-style-type: none"> Dissolved oxygen ranged from 0.48 mg/L (SW029) and 6.53 mg/L (SW012), indicating low to well oxygenated conditions. Electrical conductivity ranged from 126.1 µS/cm (SW019) to 722.80 µS/cm (SW011), indicating low salinity conditions. pH ranged from 5.39 (SW028) to 7.29 (SW058). pH results indicate generally neutral conditions. Redox (field measured) ranged from 92.0 mV (SW019) to 159.60 mV (SW003) indicating oxidising conditions.

4.3.2 PFAS Surface Water Analytical Results

The PFAS surface water analytical results from the February 2021 sampling event are presented in **Table T5** in **Appendix B**. Seventeen of the 20 surface water sample locations sampled during this event reported concentrations of PFAS compounds above the laboratory LOR.

PFHxS+PFOS concentrations across on-Base locations ranged between below the laboratory LOR (<0.01 µg/L) at seven locations and 1.44 µg/L (SW019) and for off-base locations ranged between below the laboratory LOR (<0.01 µg/L) at three locations and 0.03 µg/L (SW018).

PFOA concentrations across on-Base locations ranged between below the laboratory LOR (<0.01 µg/L) at five locations and 0.08 µg/L (SW019) and for off-base locations ranged between below the laboratory LOR (<0.01 µg/L) at three locations and 0.02 µg/L (SW012 and SW059).

There were three first time detections of PFOA at off-base locations SW012 and SW059 and at on-Base location SW018. A new exceedance of the adopted ecological assessment criteria for PFOS was reported at on-Base location SW017.

Deviations from the historical dataset are recorded in **Table 10** below and shown graphically on **Figure 5** in **Appendix A**.

Table 10 Deviations from Historical Surface Water Dataset

Deviation Type	Location	PFHxS+PFOS concentration (ug/L)		PFOS concentration (ug/L)		PFOA concentration (ug/L)	
		February 2021	Previous maximum	February 2021	Previous maximum	February 2021	Previous maximum
First time exceedance of NEMP (HEPA, 2020) 95% species protection guideline	SW017 (on-Base)	0.3	0.17	0.2	0.11	0.02	0.01
First-time detections of PFOA or PFHxS+PFOS	SW012 (off-Base)	0.17	0.15	0.11	0.12	0.02	<LOR
	SW018 (on-Base)	0.97	0.33	0.7	0.27	0.03	<LOR
	SW059 (off-Base)	0.27	0.26	0.18	0.23	0.02	<LOR

	Blue cells denote first time detection above LOR for PFHxS+PFOS or PFOA.
	Purple cells denote new exceedance of ecological screening criteria.

4.3.3 Non PFAS Surface Water Analytical Results

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

Non-PFAS analytical results for surface water were generally consistent between on-site and off-site locations. The highest reported concentrations for TDS and major ions, with the exception of fluoride, were reported at sampling location SW003. The highest reported concentration of TSS was reported at SW058 (47 mg/L) and the highest reported concentration of DOC was at SW009 (20 mg/L).

5.0 Summary and Next Sampling Events

5.1 Summary of Monitoring Event

The bi-annual monitoring event was completed at the Site, publicly accessible land and on a private property within the Management Area between 11 and 19 January 2020, with further surface water sampling and one additional groundwater sample taken on 5 February 2021. The program included:

- Gauging and sampling of groundwater from 105 monitoring wells and bores
- Gauging of an additional 18 monitoring wells
- Surface water sampling at 20 locations.

Table 11 summarises the findings of the January and February 2021 sampling event and recommended actions.

Table 11 Summary of Sampling Event

Item	Comment	Recommended Actions
Access to sampling locations	Field parameters were not collected at monitoring well MW2188 as the location had insufficient water. The volume of water available was sampled. A sample at surface water sample location SW037 was not collected as the location was dry at the time of sampling.	Continue monitoring in accordance with the OMP.
Monitoring well network condition	The monitoring well network was generally in good condition and unchanged from the previous round.	No action required
Analytical Results	PFAS concentrations were recorded above the LOR at 75 of 105 sampled groundwater monitoring locations and at 17 of 20 sampled surface water monitoring locations.	No action required
First time detection of PFOA or PFHxS+PFOS in groundwater or surface water	Groundwater No first time detections above the LOR were recorded for PFOA or PFHxS+PFOS downgradient of the identified PFAS plume, at cross or upgradient locations, at the private Q2 bore, or at locations adjacent to registered extractive users of groundwater. Surface water Three surface water samples, one on-Base (SW018) and two off-Base (SW012 and SW059), reported first time detections of PFOA above the LOR.	Continue monitoring in accordance with the OMP.
First time exceedance of screening criteria.	Groundwater No first time exceedances of screening criteria were recorded in groundwater. Surface water	Continue monitoring in accordance with the OMP.

Item	Comment	Recommended Actions
	on-BaseOne on-Base surface water sample (SW017) reported first time exceedance of the NEMP (HEPA, 2020) 95% species protection guideline for PFOS.	

5.2 Upcoming Sampling Events

The next biannual sampling event is scheduled for July 2021.

5.3 Upcoming Annual Interpretive Report

The next annual interpretive report is scheduled to be delivered in October 2021.

6.0 References

AECOM Australia Pty Ltd (AECOM) (2020). *Sampling Analysis and Quality Plan - RAAF Base Edinburgh* prepared for Department of Defence.

Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ), 2000. *Australian and New Zealand guidelines for fresh and marine water quality*.

Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ), 2000. *Australian guidelines for water quality monitoring and reporting*.

Bureau of Meteorology, 2021, *Edinburgh RAAF (station number 023083) Daily Rainfall*, accessed 25.02.2021

National Environment Protection (Assessment of Site Contamination) Measure 1999 (ASC NEPM)

AS4482.1 *Guide to the sampling and investigation of potentially contaminated soil, Part 1: Non-Volatile and Semi-Volatile Substances*.

AS4482.2 *Guide to the sampling and investigation of potentially contaminated soil, Part 2: Volatile Substances*.

AS/NZ 5667.1 *Water Quality Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handing of samples*.

Department of Defence (Defence) (2019). *PFAS Management Area Plan - RAAF Base Edinburgh*

Department of Defence (Defence) (2016). *Routine Environment Water Quality Monitoring Manual*.

Department of Defence (Defence) (July 2018, Amended August 2019). *Defence Contamination Management Manual*.

Department of the Environment and Energy (DoEE) (2018). *PFAS National Environmental Management Plan (PFAS NEMP)*.

Department of Health (DoH) (2017). *Health Based Guidance Values for PFAS for use in site investigations in Australia. April 2017 (FSANZ 2017)*.

Heads of Environment Protection Authorities (HEPA) Australia and New Zealand 2018. *PFAS National Environmental Management Plan*. January 2018.

Heads of EPAs Australia and New Zealand (HEPA) (2020). *PFAS National Environmental Management Plan Version 2.0 (PFAS NEMP 2.0)*.

National Health and Medical Research Council (NHMRC) (2019). *Guidance on PFAS in Recreational Water*. August 2019.

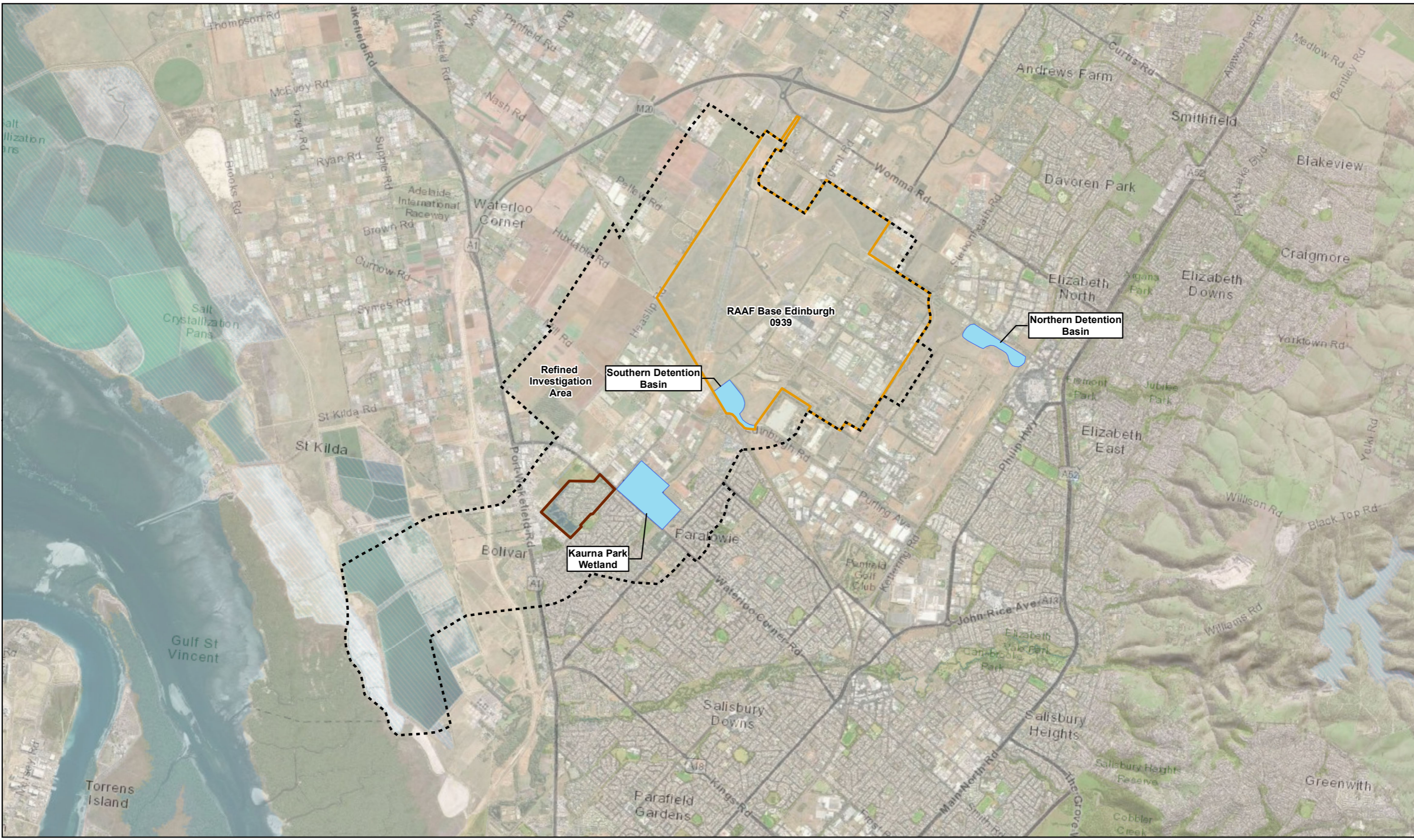
National Health and Medical Research Council (NHMRC) (2016). *Australian Drinking Water Guidelines (ADWG)*

Appendix A

Figures

Appendix A Figures

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 0.5 1 2
Kilometers

1:55,000 (when printed at A3)

Legend

- Detention Basin
- Springbank Waters Estate
- RAAF Base Edinburgh Boundary
- Refined Investigation Area

**Department of Defence
RAAF BASE EDINBURGH
ONGOING MONITORING
PROGRAM**

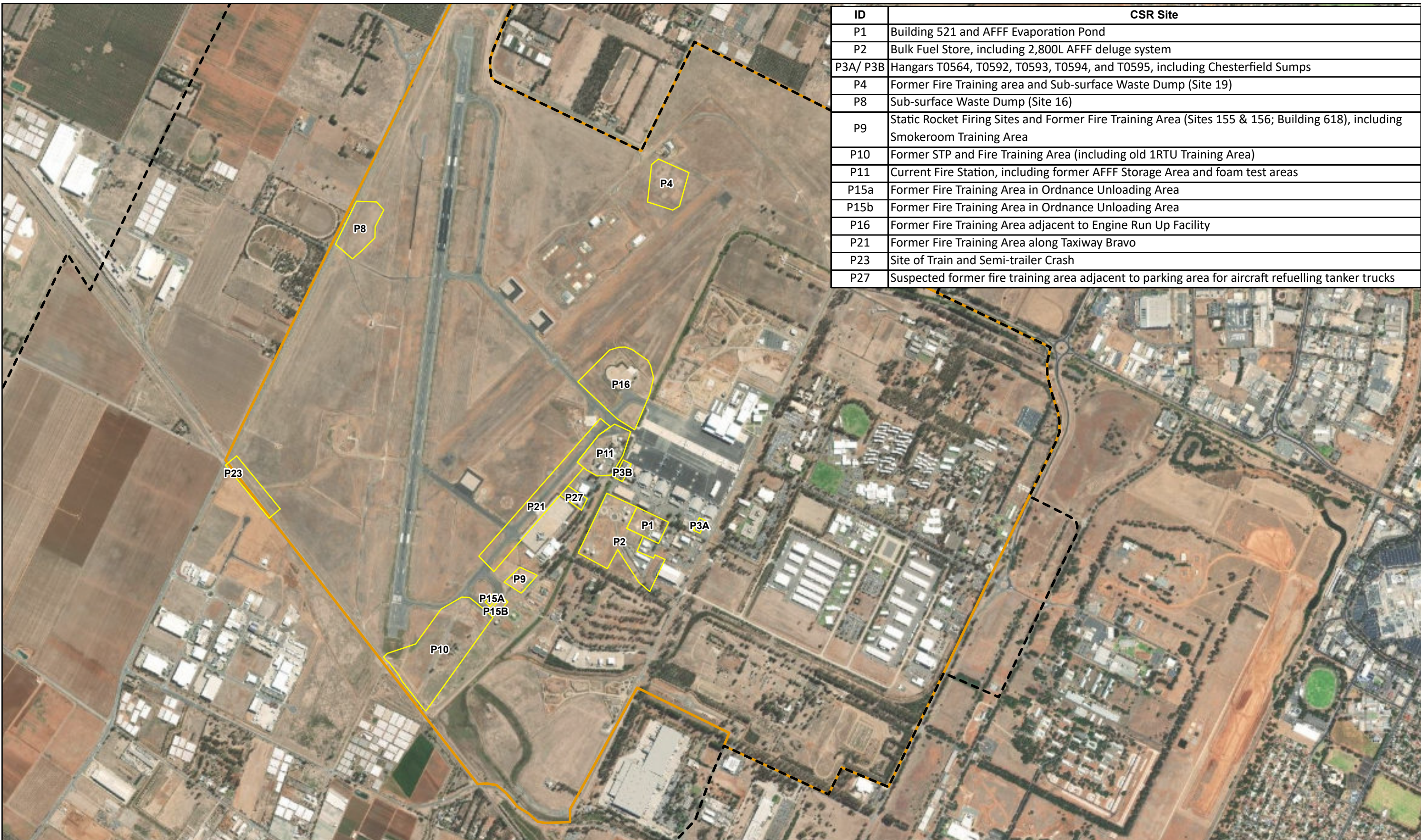
SITE LOCATION

PROJECT ID	60612561
CREATED BY	 prachi.kulkarni
LAST MODIFIED	127 Apr 2020
VERSION:	1

**Figure
1.1**

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



ID	CSR Site
P1	Building 521 and AFFF Evaporation Pond
P2	Bulk Fuel Store, including 2,800L AFFF deluge system
P3A/ P3B	Hangars T0564, T0592, T0593, T0594, and T0595, including Chesterfield Sumps
P4	Former Fire Training area and Sub-surface Waste Dump (Site 19)
P8	Sub-surface Waste Dump (Site 16)
P9	Static Rocket Firing Sites and Former Fire Training Area (Sites 155 & 156; Building 618), including Smokeroom Training Area
P10	Former STP and Fire Training Area (including old 1RTU Training Area)
P11	Current Fire Station, including former AFFF Storage Area and foam test areas
P15a	Former Fire Training Area in Ordnance Unloading Area
P15b	Former Fire Training Area in Ordnance Unloading Area
P16	Former Fire Training Area adjacent to Engine Run Up Facility
P21	Former Fire Training Area along Taxiway Bravo
P23	Site of Train and Semi-trailer Crash
P27	Suspected former fire training area adjacent to parking area for aircraft refuelling tanker trucks

AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 0.225 0.45 0.9
Kilometers

1:18,000 (when printed at A3)

Legend

PFAS Source Area

RAAF Base Edinburgh Boundary

Management Area

**Department of Defence
RAAF BASE EDINBURGH
FACTUAL REPORT**

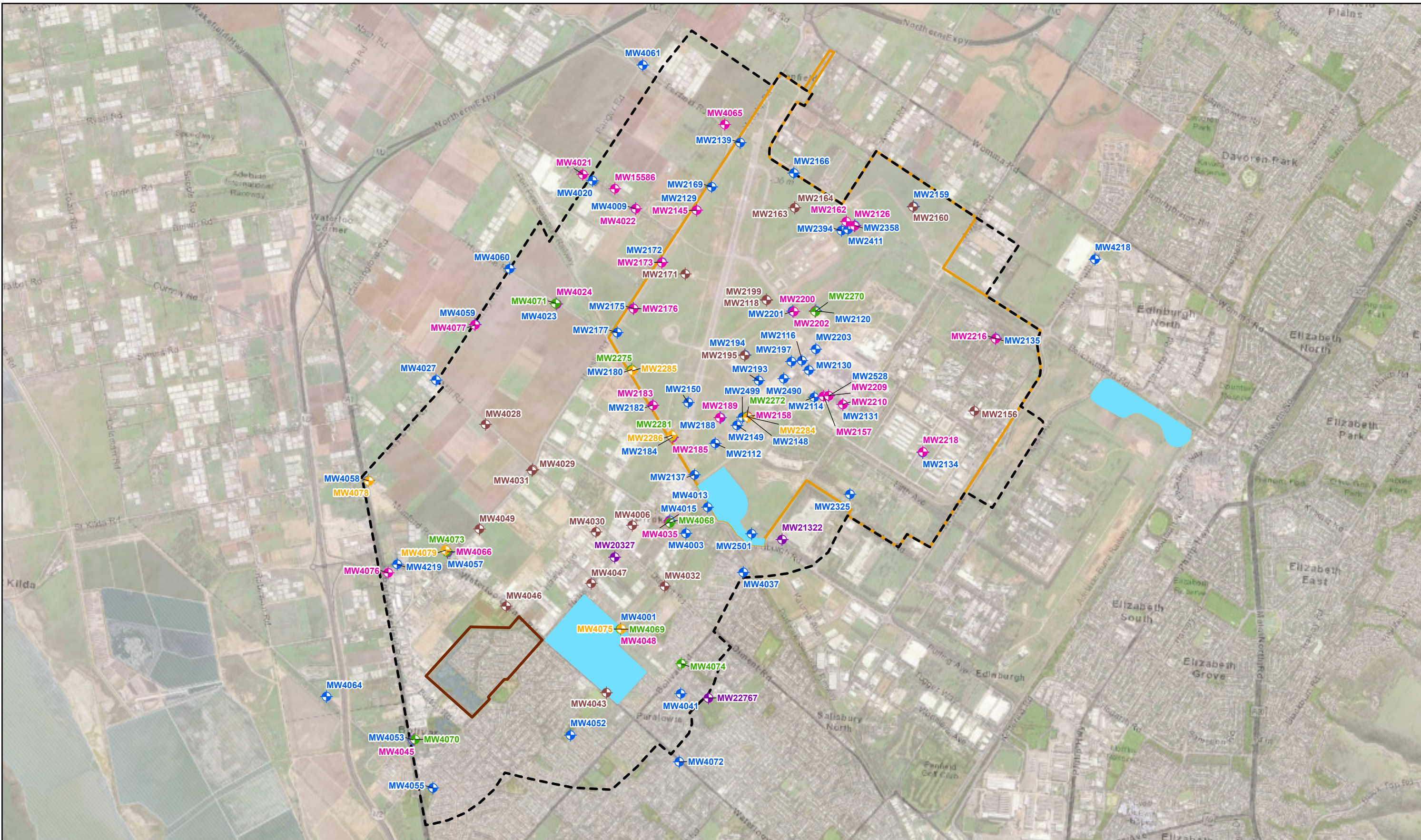
INFERRED PFAS SOURCE AREAS

PROJECT ID 60612561
 CREATED BY [REDACTED]
 LAST MODIFIED KAL/DU 06 AUG 2021
 VERSION: 1

**Figure
1.2**

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, omissions, or inaccuracies in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54
0 0.425 0.85 1.7
Kilometers
1:35,000 (when printed at A3)

- Legend**
- Gauging Locations Only
 - Sample Locations**
 - Q1 Aquifer
 - Q2 Aquifer
 - Q3 Aquifer
 - Q4 Aquifer
 - T1 Aquifer

- Management Area
- RAAF Base Edinburgh Boundary
- Springbank Waters Estate
- Detention Basin

**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM**

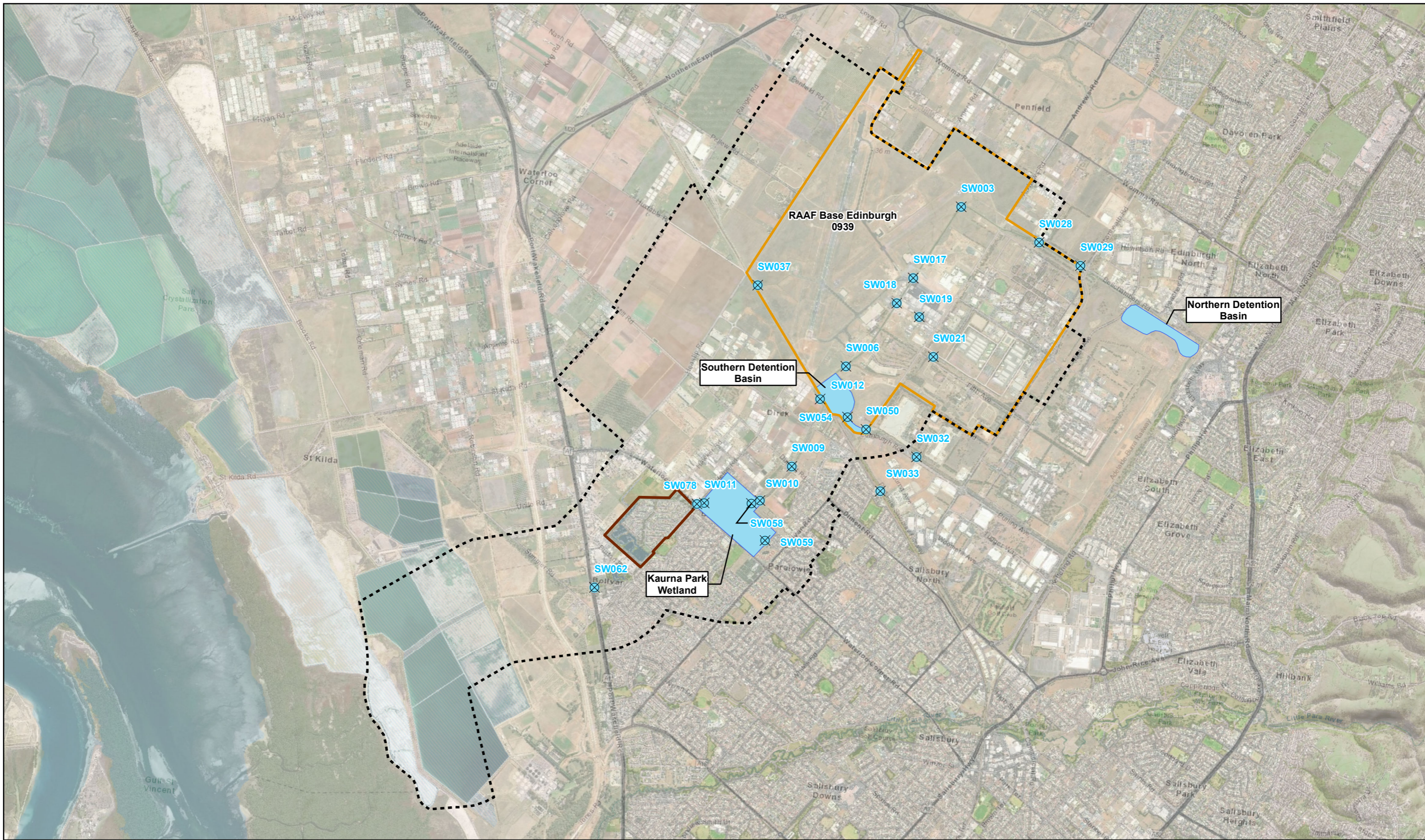
GROUNDWATER SAMPLE LOCATIONS

PROJECT ID 60612561
CREATED BY [Redacted]
LAST MODIFIED KAL.DU 26 FEB 2021
VERSION: 1

**Figure
2**

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 0.5 1 2
Kilometers

1:45,000 (when printed at A3)

Legend

- Surface Water Sample Locations
- Type**
- Detention Basin
- Springbank Waters Estate
- RAAF Base Edinburgh Boundary
- Refined Investigation Area

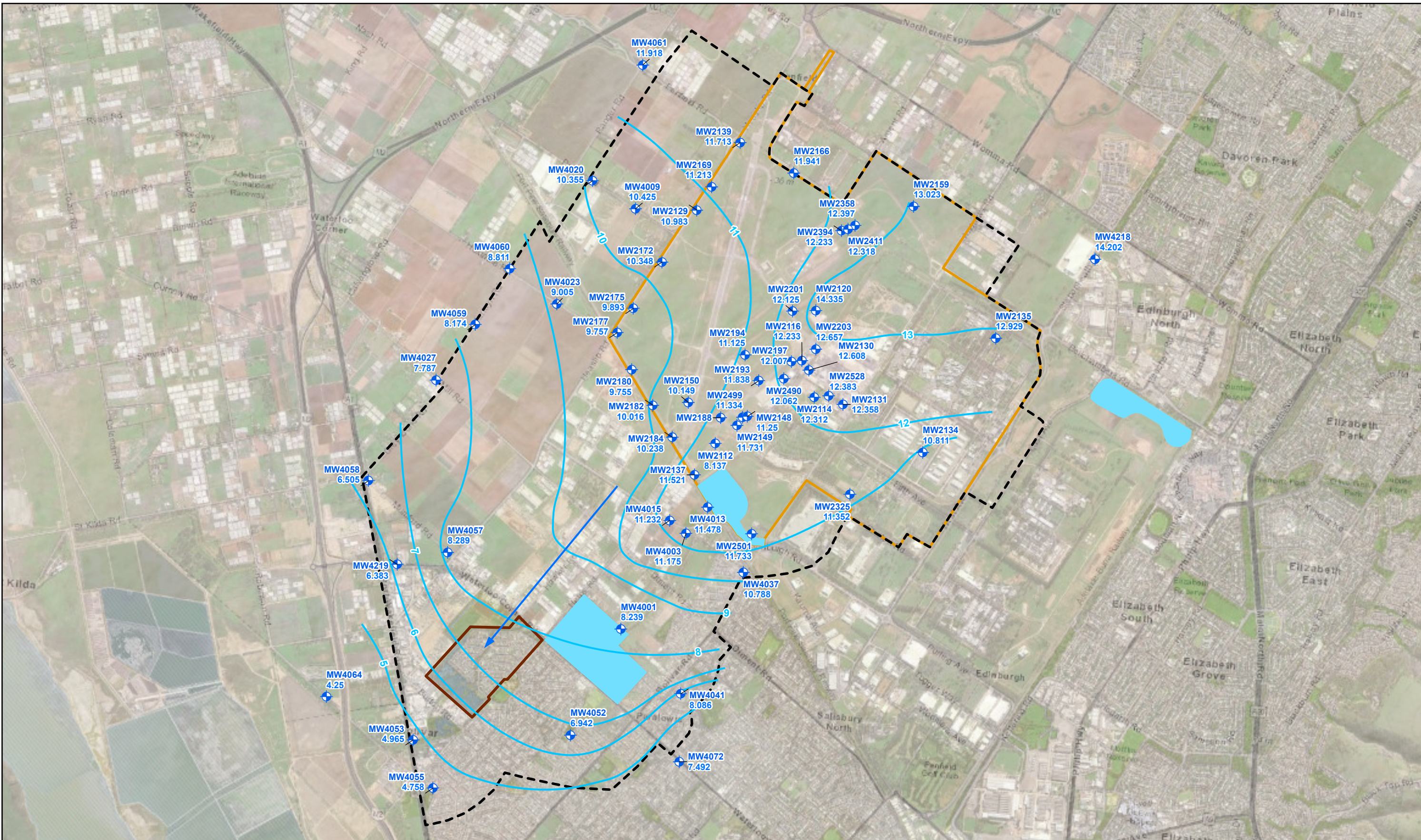
**Department of Defence
RAAF BASE EDINBURGH
ONGOING MONITORING PROGRAM**

SURFACE WATER SAMPLE LOCATIONS

PROJECT ID	60612561	Figure 3
CREATED BY		
LAST MODIFIED	prachi.kulkarni127 Apr 2020	
VERSION:	1	

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 0.425 0.85 1.7
Kilometers

1:35,000 (when printed at A3)

Legend

- Q1 Aquifer
- 175.44 Groundwater Elevation (mAHd)
- Inferred Groundwater Contour
- Inferred Groundwater Flow Direction
- Management Area
- RAAF Base Edinburgh Boundary
- Springbank Waters Estate
- Detention Basin

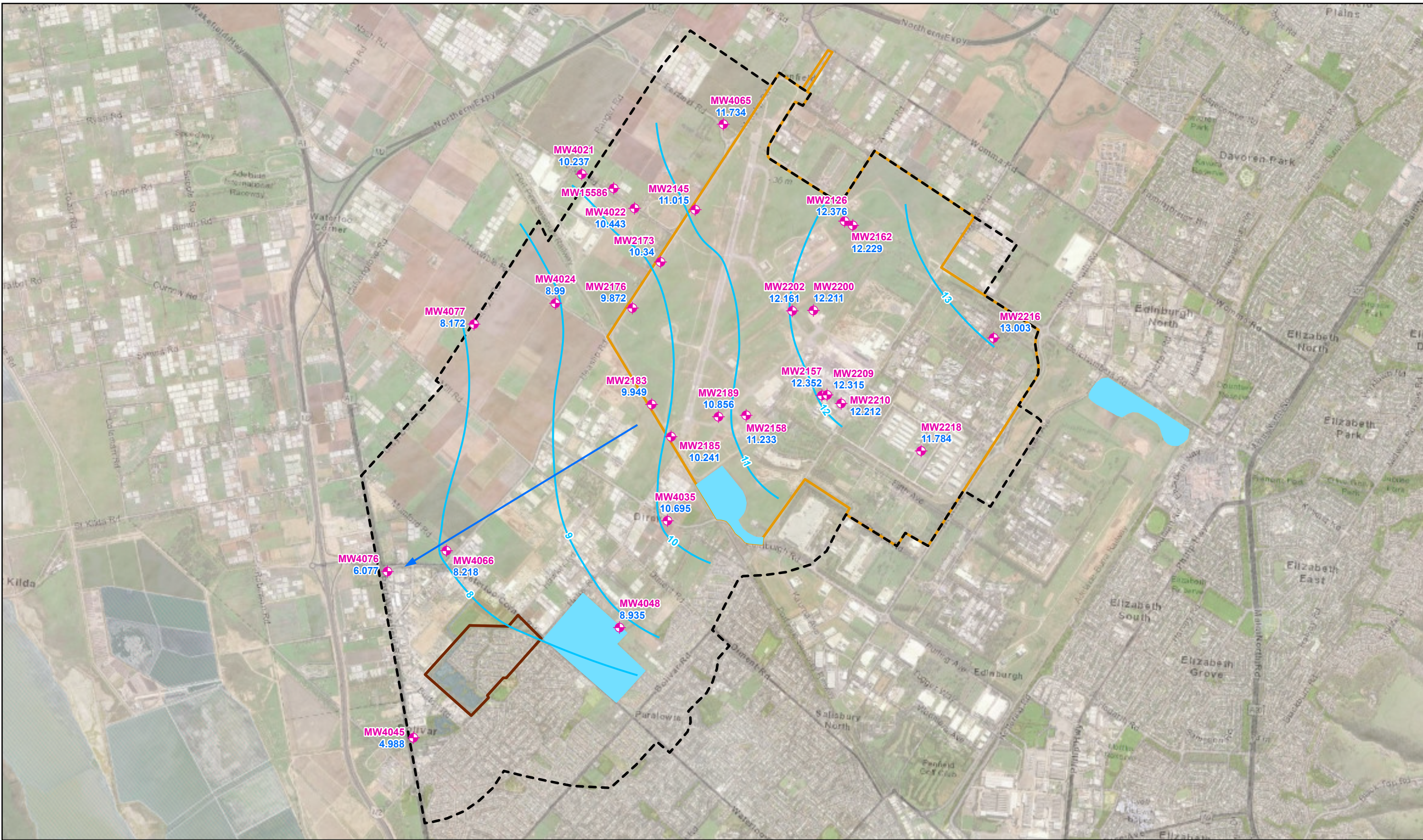
**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM
Inferred Groundwater Elevation
Q1 Monitoring Wells
January - February 2021**

PROJECT ID 60612561
CREATED BY [REDACTED]
LAST MODIFIED KAL.DU 02 MAR 2021
VERSION: 1

**Figure
4.1**

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, omissions, or defects in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 0.425 0.85 1.7
Kilometers

1:35,000 (when printed at A3)

Legend

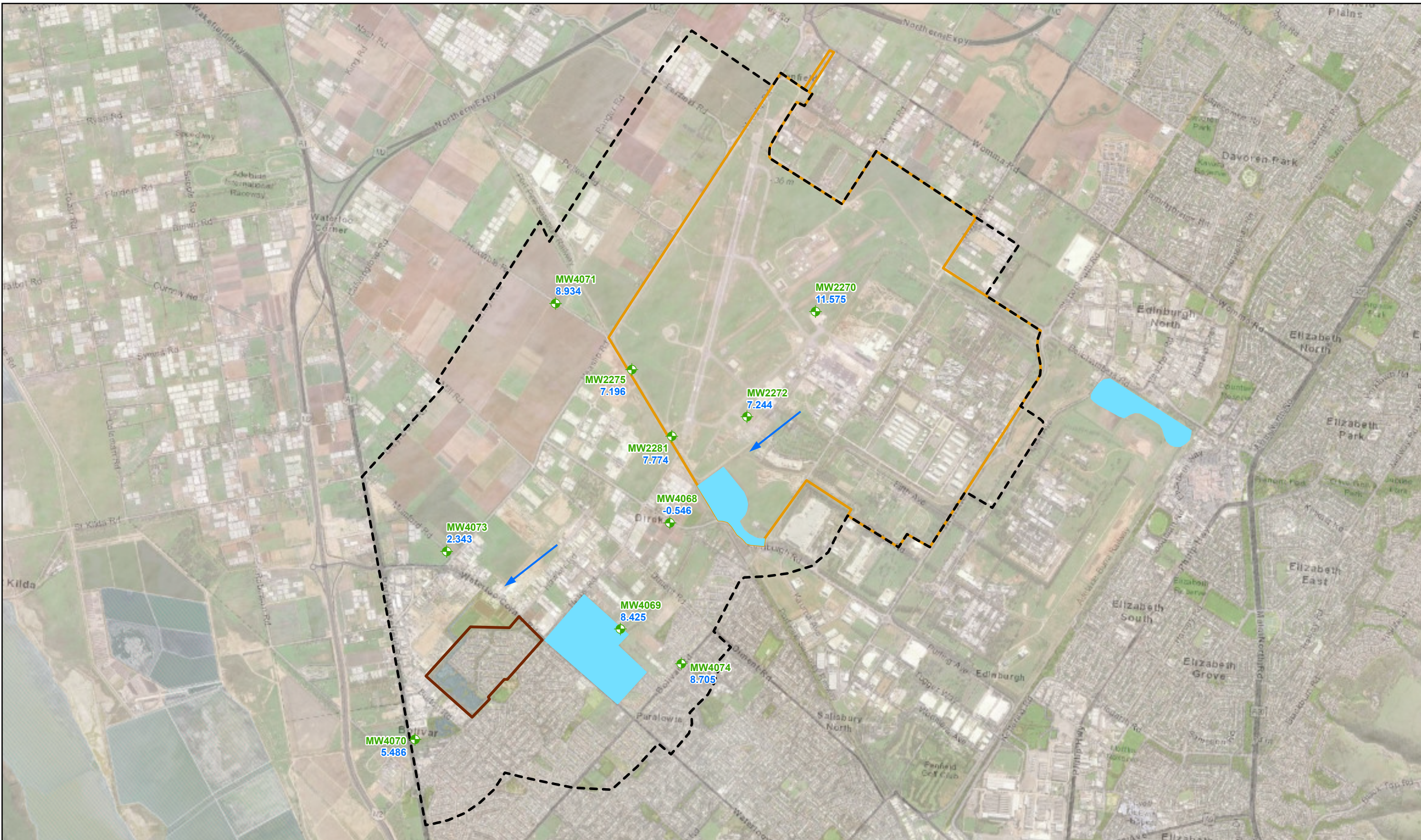
- ◆ Q2 Aquifer
- ◆ 175.44 Groundwater Elevation (mAHD)
- Inferred Groundwater Contour
- Inferred Groundwater Flow Direction
- Management Area
- RAAF Base Edinburgh Boundary
- Springbank Waters Estate
- Detention Basin

Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM
Inferred Groundwater Elevation
Q2 Monitoring Wells
January - February 2021

PROJECT ID: 60612561	Figure
CREATED BY: [REDACTED]	4.2
LAST MODIFIED: KALDU 05 MAR 2021	
VERSION: 1	

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 0.425 0.85 1.7
Kilometers

1:35,000 (when printed at A3)

Legend

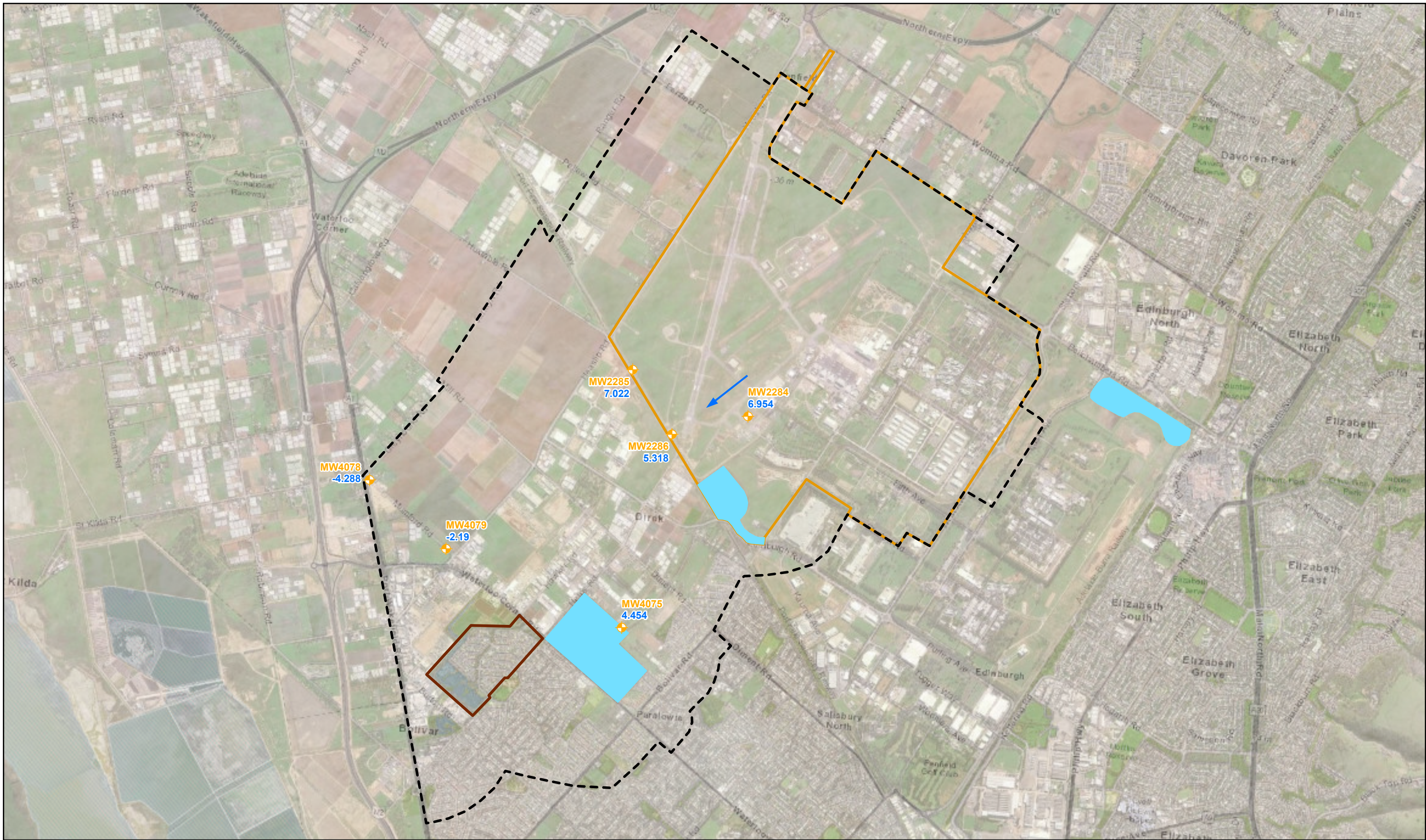
- ◆ Q3 Aquifer
- 175.44 Groundwater Elevation (mAHD)
- Inferred Groundwater Flow Direction
- Management Area
- RAAF Base Edinburgh Boundary
- Springbank Waters Estate
- Detention Basin

**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM
Inferred Groundwater Elevation
Q3 Monitoring Wells
January - February 2021**

PROJECT ID: 60612561	Figure
CREATED BY: [REDACTED]	4.3
LAST MODIFIED: KALDU 05 MAR 2021	
VERSION: 1	

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, omissions, or inaccuracies in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 0.425 0.85 1.7
Kilometers

1:35,000 (when printed at A3)

Legend

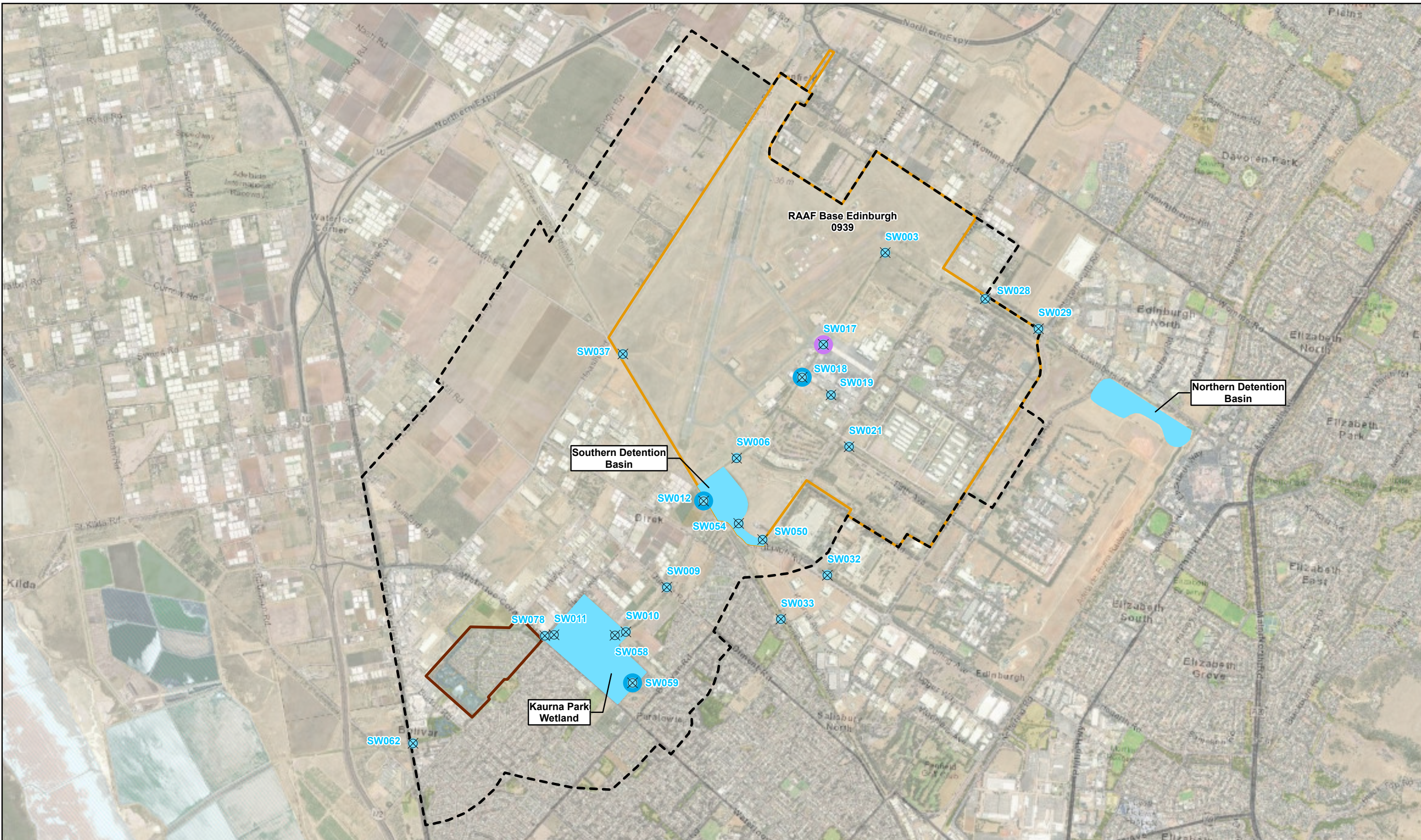
- Q4 Aquifer
- 175.44 Groundwater Elevation (mAHd)
- Inferred Groundwater Flow Direction
- Management Area
- RAAF Base Edinburgh Boundary
- Springbank Waters Estate
- Detention Basin

**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM
Inferred Groundwater Elevation
Q4 Monitoring Wells
January - February 2021**

PROJECT ID: 60612561	Figure
CREATED BY: [REDACTED]	4.4
LAST MODIFIED: KAL/DU 02 MAR 2021	
VERSION: 1	

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 0.425 0.85 1.7
Kilometers

1:35,000 (when printed at A3)

Legend

- Surface Water Sample Locations
- Denotes First Time Detection Above LOR for Sum of PFHxS+PFOS or PFOA
- Denotes New Exceedance of Ecological Screening Criteria
- Management Area
- RAAF Base Edinburgh Boundary
- Springbank Waters Estate
- Detention Basin

**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING
MONITORING PROGRAM
Surface Water Results
Deviations from Historical Data**

PROJECT ID 60612561
CREATED BY [Redacted]
LAST MODIFIED kai.du06 Aug 2021
VERSION: 1

**Figure
5**

Data sources:
Base Data: Imagery (c) 2017 ESRI

Appendix B

Tables

Appendix B Tables

Table T1 Field Parameters

Location ID	Date	Targeted Aquifer	Depth of Well (m BTOC)	R.L. Top of Casing	Depth to Water (m BTOC)	Corrected Groundwater Elevation (m AHD)	Well Condition	pH	Electrical Conductivity	Estimated TDS*	Dissolved Oxygen	Temperature	Redox Potential	Comments
								pH units	µS/cm	mg/L	mg/L	°C	mV	
MW15586	15/01/2021	Q2	-	-	-	-	Good condition	7.84	3766.42	2259.9	2.81	20.39	-131.4	Clear, Low Turbidity, No odour
MW20327	13/01/2021	T1	105	-	15.54	-	Key from DEW required for access	8.17	1051.35	630.8	2.41	23.07	-106.4	Clear, Low Turbidity, No odour
MW21322	19/01/2021	T1	-	-	-	-	Good condition	6.14	2084.6	1250.8	3.46	19.49	118.3	Clear, No Turbidity, No Odour
MW22767	19/01/2021	T1	-	-	-	-	Good condition	7.12	1356	813.6	3.91	21.33	44.5	Clear, No Turbidity, No Odour
MW2112	14/01/2021	Q1	8.34	15.877	7.74	8.137	Good condition	8.16	1042.8	625.7	1.9	22.74	-79.8	Clear, Low Turbidity, No odour
MW2114	12/01/2021	Q1	8.86	17.697	5.385	12.312	Good condition	7.31	14805.2	8883.1	2.57	21.91	-72.3	Light Yellow, Low to Medium Turbidity, No Odour
MW2116	12/01/2021	Q1	9.03	16.978	4.745	12.233	Good condition	8.96	-	-	4.68	19.81	-39.6	Light Yellow, Low Turbidity, No odour. EC field transcription error.
MW2118	14/01/2021	Q1	8.95	17.329	5.795	11.534	Good condition							Gauge only
MW2120	11/01/2021	Q1	6.25	18.18	3.845	14.335	Good condition	7.52	1188.9	713.3	2.53	36.53	-30.4	Light Brown, Low Turbidity, No odour
MW2126	11/01/2021	Q2	17.28	20.151	7.775	12.376	Good condition	7.13	11933	7159.8	1.47	26.42	-50.7	Brown, Medium Turbidity, Slight Organic Odour
MW2129	11/01/2021	Q1	6.37	15.881	4.898	10.983	Good condition	7.98	3102	1861.2	4.42	24.9	-73.7	Light Brown, Low Turbidity, No odour
MW2130	12/01/2021	Q1	8.38	17.483	4.875	12.608	Good condition	8.65	2938.6	1763.2	1.82	19.13	-122.5	Light Brown, Low to Medium turbidity, Slight Organic Odour
MW2131	12/01/2021	Q1	8.45	18.058	5.7	12.358	Good condition	8.19	1053.2	631.9	4.34	21.06	-47.2	Light Yellow, Low turbidity, Slight Organic Odour
MW2134	12/01/2021	Q1	10.83	19.716	8.905	10.811	Good condition	7.62	7824.1	4694.5	2.64	22.64	-21	Light Brown, Medium turbidity, No odour
MW2135	12/01/2021	Q1	10.97	20.504	7.575	12.929	Good condition	7.17	11001.1	6800.7	2.8	23.54	39.3	Brown, Medium turbidity, No odour
MW2137	11/01/2021	Q1	8.19	15.791	4.27	11.521	Good condition	6.16	3506.5	2103.9	3.62	25.6	236.8	Light Yellow, Low Turbidity, No odour
MW2139	11/01/2021	Q1	11.33	18.653	6.94	11.713	Good condition	7.21	13344.8	8006.9	2.99	25.64	24.8	Light Brown, Low Turbidity, No odour
MW2145	11/01/2021	Q2	25	15.84	4.825	11.015	Good condition	7.45	9585.2	5751.1	3.55	26.02	-172.4	Clear, Low Turbidity, Organic Odour
MW2148	12/01/2021	Q1	10.36	16.49	5.24	11.25	Good condition	7.62	7680.6	4608.4	3.65	31.1	18.6	Clear, Low Turbidity, Organic Odour
MW2149	14/01/2021	Q1	7.38	16.626	4.895	11.731	Good condition	7.83	5241	3144.6	7.7	22.57	80.2	Light Brown, Medium turbidity, No odour
MW2150	5/02/2021	Q1	7.97	14.873	4.724	10.149	Buried in grass cuttings	7.53	2353.3	1412.0	3.68	19.3	138.2	Light Yellow, Low Turbidity, No odour
MW2156	12/01/2021	Q1	9.05	19.773	7.1	12.673	Good condition							Gauge only
MW2157	12/01/2021	Q2	18.23	17.777	5.425	12.352	Good condition	7.7	9193.1	5515.9	3.66	22.17	-149.6	Clear, Low Turbidity, No odour
MW2158	12/01/2021	Q2	17.85	16.498	5.265	11.233	Good condition	7.37	8100.3	4860.2	2.72	24	3.6	Clear, Low Turbidity, No odour
MW2159	14/01/2021	Q1	8.5	20.478	7.455	13.023	Good condition	7.47	12244	7346.4	3.91	22.13	-10.5	Clear, Low Turbidity, No odour
MW2160	14/01/2021	Q2	22.5	20.433	7.425	13.008	Good condition							Gauge only
MW2162	11/01/2021	Q2	21	19.721	7.492	12.229	Good condition	7.25	10386.4	6231.8	2.12	25.44	-203	Brown, Medium Turbidity, Slight Organic Odour
MW2163	13/01/2021	Q1	8.5	18.161	6.33	11.831	Good condition							Gauge only
MW2164	11/01/2021	Q2	25.5	18.172	6.335	11.837	Good condition							Gauge only
MW2166	11/01/2021	Q1	8	19.063	7.122	11.941	Good condition	6.93	5879.8	3527.9	1.61	26.19	-124.9	Black, Medium Turbidity, Slight Organic Odour
MW2169	11/01/2021	Q1	7.5	16.608	5.395	11.213	Good condition	7.38	11233.7	6740.2	3.54	24.38	-8.6	Light Brown, Low Turbidity, No odour
MW2171	11/01/2021	Q1	9.5	16.471	5.875	10.596	Good condition							Gauge only
MW2172	11/01/2021	Q1	9.5	15.828	5.48	10.348	Good condition	7.31	21366.6	12820.0	3.4	26.62	-22.7	Clear, Low Turbidity, No odour
MW2173	11/01/2021	Q2	21	15.882	5.542	10.34	Good condition	7.01	31996.1	19197.7	1.1	26.25	-214.8	Black / Grey, Medium Turbidity, Organic Odour
MW2175	11/01/2021	Q1	8.3	14.438	4.545	9.893	Good condition	7.23	24589.6	14753.8	1.63	24.34	6	Orange, Medium Turbidity, No odour
MW2176	11/01/2021	Q2	22.2	14.282	4.41	9.872	Good condition	7.04	28672.5	17203.5	2.25	25.29	-131.3	Clear, Low Turbidity, Organic Odour
MW2177	11/01/2021	Q1	7.2	13.902	4.145	9.757	Good condition	7.64	14118.5	8471.1	2.33	23.97	8.5	Light Brown, Medium Turbidity, No odour
MW2180	11/01/2021	Q1	10	14.195	4.44	9.755	Good condition	-	-	-	-	-	-	Field transcription error
MW2182	11/01/2021	Q1	10	13.821	3.805	10.016	Good condition	8.3	17698.5	10619.1	1.83	24.7	137.6	Light Brown, Medium Turbidity, No odour
MW2183	11/01/2021	Q2	20	14.831	4.882	9.949	Good condition	8.47	16617	9970.2	2.26	25.24	142.4	Light Brown, Medium Turbidity, No odour
MW2184	11/01/2021	Q1	8.3	14.438	4.2	10.238	Good condition	7.54	4322.4	2593.4	2.91	27.09	184.8	Yellow, Medium Turbidity, No odour
MW2185	11/01/2021	Q2	18	15.286	5.045	10.241	Good condition	6.83	8923.4	5354.0	3.12	25.1	204.8	Clear, Low Turbidity, No odour
MW2188	14/01/2021	Q1	5.5	15.46	-	-	SWL below hydrasleeve							Insufficient water for parameters

Table T1 Field Parameters

Location ID	Date	Targeted Aquifer	Depth of Well (m BTOC)	R.L. Top of Casing	Depth to Water (m BTOC)	Corrected Groundwater Elevation (m AHD)	Well Condition	pH	Electrical Conductivity	Estimated TDS*	Dissolved Oxygen	Temperature	Redox Potential	Comments
								pH units	µS/cm	mg/L	mg/L	°C	mV	
MW2188	14/01/2021	Q2	21	15.201	4.345	10.856	Good condition	8.2	1728.2	1036.9	2.47	25.19	-191.2	Black / Grey, Low to Medium Turbidity, Organic Odour
MW2193	14/01/2021	Q1	6.5	15.918	4.08	11.838	Good condition	7.75	5922.5	3553.5	2.56	22.71	82.4	Light Brown, Low to Medium Turbidity, No odour
MW2194	14/01/2021	Q1	10	15.31	4.185	11.125	Good condition	7.35	25280.2	15168.1	3.34	22.84	105.8	Light Brown, Low to Medium Turbidity, No odour
MW2195	14/01/2021	Q2	24	16.05	4.875	11.175	Good condition							Gauge only
MW2197	14/01/2021	Q1	7.5	17.642	5.635	12.007	Good condition	7.65	9690.4	5814.2	2.47	22.04	81.9	Light Brown, Low to Medium Turbidity, No odour
MW2199	14/01/2021	Q2	24	17.177	5.595	11.582	Good condition							Gauge only
MW2200	11/01/2021	Q2	19.5	17.903	5.692	12.211	Good condition	11.57	12096.4	7257.8	1.4	25.53	-230.8	Light Yellow, Low Turbidity, No odour
MW2201	11/01/2021	Q1	10	16.395	4.27	12.125	Good condition	7.62	4097.2	2458.3	4.31	24.27	-90.9	Brown, Medium Turbidity, Slight Organic Odour
MW2202	11/01/2021	Q2	24	16.473	4.312	12.161	Good condition	7.14	12686.6	7612.0	2.43	25.02	-117.5	Black / Grey, Medium Turbidity, Organic Odour
MW2203	14/01/2021	Q1	8	16.772	4.115	12.657	Good condition	7.66	5394.3	3236.6	2.07	22.53	70.8	Light Brown, Medium Turbidity, No odour
MW2209	12/01/2021	Q2	24	17.075	4.76	12.315	Good condition	7.49	7834.8	4700.9	2.48	22.8	-188.9	Clear, Low to Medium Turbidity, Organic Odour
MW2210	12/01/2021	Q2	20.4	18.087	5.875	12.212	Good condition	7.72	8844	5306.4	2.02	20.39	-151.3	Light Yellow, Low Turbidity, Slight Organic Odour
MW2216	12/01/2021	Q2	21	20.468	7.465	13.003	Good condition	7.16	6688.4	4013.0	2.17	23.85	-54.1	Clear, Low Turbidity, No odour
MW2218	12/01/2021	Q2	20.5	19.774	7.99	11.784	Good condition	7.67	7909.9	4745.9	2.66	22.87	-137.7	Clear, Low Turbidity, Slight Organic Odour
MW2270	11/01/2021	Q3	42	18.1	6.525	11.575	Good condition	7.17	10771.4	6462.8	2.12	28.45	-45.6	Brown, Medium Turbidity, Organic Odour
MW2272	12/01/2021	Q3	42	16.499	9.255	7.244	Good condition	12.15	9085.4	5451.2	1.86	23.7	-108.7	Clear, Low Turbidity, No odour
MW2275	11/01/2021	Q3	46.5	14.121	6.925	7.196	Good condition	7.69	6908.4	4145.0	3.13	23.92	-171.8	Light Brown, Medium Turbidity, No odour
MW2281	11/01/2021	Q3	39	15.229	7.455	7.774	Good condition	6.97	11750.8	7050.5	3.67	25.09	219.8	Clear, Low Turbidity, No odour
MW2284	12/01/2021	Q4	61	16.509	9.555	6.954	Good condition	10.25	5629.3	3377.6	2.07	26.37	-215.1	Milky Grey, Medium Turbidity, No odour
MW2285	11/01/2021	Q4	57	14.287	7.265	7.022	Good condition	7.78	7145.2	4287.1	2.23	24.73	-134.2	Black / Grey, Turbid, Organic Odour
MW2286	11/01/2021	Q4	57	15.323	10.005	5.318	Good condition	11.7	5335.2	3201.1	2.65	25.23	-123.8	Clear, Low Turbidity, No odour
MW2325	12/01/2021	Q1	#N/A	#N/A	7.775	#N/A	Good condition	8.79	8689.3	5213.6	2.37	24.19	-81.3	Light Brown, Medium Turbidity, Organic Odour
MW2358	11/01/2021	Q1	#N/A	#N/A	7.665	#N/A	Good condition	6.93	11053.2	6631.9	3.28	25.44	-34.4	Brown, Medium Turbidity, No odour
MW2394	11/01/2021	Q1	#N/A	#N/A	6.555	#N/A	Good condition	6.73	13634.9	8180.9	1.74	26.54	-99.6	Brown, Medium Turbidity, No odour
MW2411	11/01/2021	Q1	#N/A	#N/A	6.4	#N/A	Good condition	7.02	12029.2	7217.5	2.05	25.13	-222	Clear, Low to Medium Turbidity, Organic Odour
MW2490	12/01/2021	Q1	0	17.58	5.518	12.062	Good condition	7.62	7401.2	4440.7	3.66	22.22	-35	Light Brown, Low Turbidity, No odour
MW2499	14/01/2021	Q1	#N/A	#N/A	4.435	#N/A	Good condition	8.43	-	-	6	22.5	69.8	Light Brown, Low to Medium Turbidity, No odour. EC field transcription error.
MW2501	14/01/2021	Q1	#N/A	#N/A	3.94	#N/A	Good condition	7.59	4736.7	2842.0	2.34	21.87	-9.8	Black / Grey, Medium Turbidity, Slight Organic Odour
MW2528	12/01/2021	Q1	9.06	17.181	4.798	12.383	Good condition	7.95	2764.7	1658.8	1.99	22.04	-21.3	Clear, Low Turbidity, No odour
MW4001	13/01/2021	Q1	9.56	12.909	4.67	8.239	Good condition	8.29	1092.4	655.4	3.12	27.29	-46.1	Light Brown, Low to Medium Turbidity, No odour
MW4003	13/01/2021	Q1	7.63	13.46	2.285	11.175	Good condition	7.82	7864.6	4718.8	2.2	22.89	-44	Clear, Low to Medium Turbidity, No odour
MW4006	13/01/2021	Q1	7.25	13.283	2.715	10.568	Good condition							Gauge only
MW4009	12/01/2021	Q1	9.5	14.37	3.945	10.425	Good condition	7.21	8611.2	5166.7	3.03	23.72	1.9	Light Brown, Medium Turbidity, No odour
MW4011	-	Q1	10.26	22.542	-	-	Lost/destroyed							Destroyed
MW4013	13/01/2021	Q1	6.95	13.123	1.645	11.478	Good condition	8.53	2356.3	1413.8	2.61	24.39	-77	Light Brown, Low Turbidity, No odour
MW4015	14/01/2021	Q1	6.96	13.627	2.395	11.232	Good condition	7.78	4124	2474.4	2.5	20.43	70.1	Brown, Medium Turbidity, No odour
MW4020	12/01/2021	Q1	8.4	13.97	3.615	10.355	Good condition	7.18	6487.3	3892.4	5.28	23.02	8	Light Yellow, Low Turbidity, Slight Organic Odour
MW4021	12/01/2021	Q2	18	13.697	3.46	10.237	Good condition	7.15	6433.8	3860.3	3.2	22.74	27.3	Clear, Low Turbidity, No odour
MW4022	12/01/2021	Q2	22.5	14.423	3.98	10.443	Good condition	7.23	6815.4	4089.2	2.87	23.56	-83.4	Black, Medium Turbidity, Organic Odour
MW4023	12/01/2021	Q1	8	11.855	2.85	9.005	Good condition	7.13	30855.3	18513.2	1.3	23.02	-53.2	Brown, Medium Turbidity, Slight Organic Odour
MW4024	12/01/2021	Q2	21	11.895	2.905	8.99	Good condition	7.42	24183.1	14509.9	4.44	22.8	-79.2	Light Brown, Low to Medium Turbidity, No odour

Table T1 Field Parameters

Location ID	Date	Targeted Aquifer	Depth of Well (m BTOC)	R.L. Top of Casing	Depth to Water (m BTOC)	Corrected Groundwater Elevation (m AHD)	Well Condition	pH	Electrical Conductivity	Estimated TDS*	Dissolved Oxygen	Temperature	Redox Potential	Comments
								pH units	µS/cm	mg/L	mg/L	°C	mV	
MW4027	13/01/2021	Q1	8	9.532	1.745	7.787	Good condition	7.55	633.8	380.3	2.48	21.01	-158.4	Black, Medium Turbidity, Organic Odour
MW4028	13/01/2021	Q1	8	10.396	2.158	8.238	Good condition							Gauge only
MW4029	13/01/2021	Q1	8.5	11.916	3.255	8.661	Good condition							Gauge only
MW4030	13/01/2021	Q1	8.5	11.755	2.475	9.28	Good condition							Gauge only
MW4031	13/01/2021	Q2	24	11.831	3.215	8.616	Good condition							Gauge only
MW4032	13/01/2021	Q2	19.5	12.948	3.47	9.478	Good condition							Gauge only
MW4035	13/01/2021	Q2	22.5	13.735	3.04	10.695	Good condition	9.61	2610.5	1566.3	1.97	23.57	-156.9	Clear, Low Turbidity, Slight Organic Odour
MW4037	13/01/2021	Q1	8	15.193	4.405	10.788	Good condition	8.3	6510.6	3906.4	3.23	25.14	81.6	Clear, Low Turbidity, No odour
MW4041	13/01/2021	Q1	10	14.606	6.52	8.086	Good condition	7.23	5123.8	3074.3	2.9	20.56	42.4	Light Brown, Medium Turbidity, No odour
MW4043	13/01/2021	Q2	10	12.125	5.055	7.07	Good condition							Gauge only
MW4045	13/01/2021	Q2	18	7.328	2.34	4.988	Good condition	7.58	4104.5	2462.7	3.06	20.48	-91.6	Black / Grey, Low Turbidity, No odour
MW4046	14/01/2021	Q2	6.5	9.19	1.115	8.075	Good condition							Gauge only
MW4047	14/01/2021	Q1	8.5	11.657	3.355	8.302	Good condition							Gauge only
MW4048	13/01/2021	Q2	21	12.975	4.04	8.935	Good condition	8.24	1619.1	971.5	2.94	24.84	105.2	Light Brown, Low Turbidity, No odour
MW4049	13/01/2021	Q1	8.5	10.643	1.74	8.903	Good condition							Gauge only
MW4052	13/01/2021	Q1	9.5	12.057	5.115	6.942	Good condition	7.73	1723.7	1034.2	3.96	20.78	-3.7	Light Brown, Medium Turbidity, No odour
MW4053	13/01/2021	Q1	8.5	7.45	2.485	4.965	Good condition	7.81	2470.2	1482.1	2.51	20.53	-14.3	Light Brown, Medium Turbidity, No odour
MW4055	13/01/2021	Q1	9	7.883	3.125	4.758	Good condition	7.46	4988.3	2993.0	3.9	21.38	-33.5	Light Brown, Medium Turbidity, No odour
MW4057	14/01/2021	Q1	8	9.429	1.14	8.289	Good condition	7.93	7701.5	4620.9	2.13	19.67	62.6	Light Brown, Medium Turbidity, Slight Organic Odour
MW4058	13/01/2021	Q1	5.5	9.407	2.902	6.505	Good condition	7.04	7887.8	4732.7	2.38	21	-89.5	Brown, Medium Turbidity, Organic Odour
MW4059	13/01/2021	Q1	8	10.204	2.03	8.174	Good condition	6.5	13699	8219.4	3.02	20.12	230.1	Light Brown, Medium Turbidity, No odour
MW4060	12/01/2021	Q1	6.9	11.386	2.575	8.811	Good condition	7.33	10024.5	6014.7	1.51	22.98	-13	Light Brown, Low Turbidity, No odour
MW4061	12/01/2021	Q1	8	16.538	4.62	11.918	Good condition	7.19	5345.1	3207.1	2.52	23.21	-115	Light Brown, Medium Turbidity, No odour
MW4063	-	Q1	8.5	8.916	-	-	Lost/destroyed							Destroyed
MW4064	13/01/2021	Q1	8	5.885	1.635	4.25	Good condition	7.54	6227.4	3736.4	3.64	20.87	-91.3	Light Brown, Low Turbidity, No odour
MW4065	12/01/2021	Q2	20	17.754	6.02	11.734	Good condition	7.24	4884.1	2930.5	1.96	24.47	-91.4	Light Brown, Medium Turbidity, Organic Odour
MW4066	14/01/2021	Q2	18	9.478	1.26	8.218	Good condition	8	13259.2	7955.5	2.58	20.17	74.1	Light Brown, Medium Turbidity, Slight Organic Odour
MW4068	13/01/2021	Q3	45	13.749	14.295	-0.546	Good condition	11.94	5819.1	3491.5	1.76	24.54	-99.1	Clear, Low Turbidity, No odour
MW4069	13/01/2021	Q3	36	12.92	4.495	8.425	Good condition	7.46	2979.5	1787.7	1.68	34.12	-88.5	Light Brown, Low Turbidity, No odour
MW4070	13/01/2021	Q3	45	7.311	1.825	5.486	Good condition	7.73	2712.8	1627.7	3.95	20.65	-115.9	Black / Grey, Medium Turbidity, No odour
MW4071	12/01/2021	Q3	30	12.009	3.075	8.934	Good condition	7.34	14308.6	8585.2	1.91	24.38	-230.9	Clear, Low to Medium Turbidity, Organic Odour
MW4072	13/01/2021	Q1	13	17.147	9.655	7.492	Good condition	7.73	872.7	523.6	7.21	20.65	15.9	Light Brown, Low to Medium Turbidity, Slight Organic Odour
MW4073	14/01/2021	Q3	43.5	9.458	7.115	2.343	Good condition	8.95	12856.1	7713.7	4.54	20.04	61.8	Light Brown, Medium Turbidity, No odour
MW4074	13/01/2021	Q3	39	14.06	5.355	8.705	Good condition	7.24	5217	3130.2	5.78	21.47	42.8	Light Brown, Low Turbidity, No odour
MW4075	13/01/2021	Q4	48	13.059	8.605	4.454	Good condition	9.67	2396.5	1437.9	2.44	24.01	-189.1	Milky White, Medium Turbidity, No odour
MW4076	13/01/2021	Q2	18	7.942	1.865	6.077	Good condition	7.64	3534	2120.4	3.28	21.71	-192.7	Black, Medium Turbidity, Organic Odour
MW4077	13/01/2021	Q2	18	10.232	2.06	8.172	Good condition	6.79	15901.6	9541.0	2.49	20.7	-6.2	Light Brown, Medium Turbidity, Organic Odour
MW4078	13/01/2021	Q4	54	9.537	13.825	-4.288	Good condition	7.04	20649.6	12389.8	3.18	20.85	-13.9	Clear, Low Turbidity, No odour
MW4079	14/01/2021	Q4	57	9.505	11.695	-2.19	Good condition	4.9	13668.2	8200.9	4.88	20.92	-66.9	Milky White, Medium Turbidity, No odour
MW4218	12/01/2021	Q1	10	21.857	7.655	14.202	Good condition	6.99	23782.5	14269.5	3.09	24.69	16.4	Light Brown, Medium Turbidity, No odour
MW4219	13/01/2021	Q1	8.5	8.978	2.595	6.383	Good condition	7.53	11672.9	7003.7	3.86	21.2	4.2	Light Brown, Medium Turbidity, No odour

Notes:

- m AHD: metres above Australian Height Datum
- m BTOC: metres Below Top Of Casing
- LNAPL: Light non aqueous phase liquid
- °C: Degrees Celsius
- mg/L: Milligrams per litre (ppm w/v)
- mV: Millivolts
- µS/cm: Micro Siemens per centimetre
- EC: Electrical Conductivity
- * Approximate value determined using the following equation: TDS (mg/L) = EC x 0.65
- : no data/equipment or probe failure

Table T2 - Groundwater PFAS Analytical Results

			PFAS																																				
			Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluorohexanoic acid (PFHxA)	Perfluoropentanoic acid (PFPeA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDDA)	Perfluorononanoic acid (PFNA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	Sum of PFAS (WA DER List)	Sum of PFHxS and PFOS	Sum of PFAS						
LOR			0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.05	0.02	0.01	0.05	0.02	0.01	0.01	0.01					
Human health receptors PFAS NEMP 2020 Drinking Water													0.56																					0.07					
Location Code	Field ID	Date	Lab Report Number	Sample Type	0.04	0.09	0.51	0.07	2.81	<0.02	<0.1	0.10	<0.02	0.03	0.06	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	3.55	3.32	3.71		
MW2112	0939_MW2112_210114	14/01/2021	EM2100517	Primary	0.04	0.09	0.51	0.07	2.81	<0.02	<0.1	0.10	<0.02	0.03	0.06	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	3.55	3.32	3.71			
	0939_QC111_210114	14/01/2021	EM2100517	Intralab Duplicate	0.04	0.09	0.52	0.07	3.32	<0.02	<0.1	0.10	<0.02	0.02	0.06	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	4.06	3.84	4.22			
	0939_QC211_210114	14/01/2021	RN1302014	Interlab Duplicate	0.051	0.053	0.68	0.039	2.2	<0.01	0.065	0.1	0.028	0.027	0.066	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	3.22	2.88	3.309		
MW2114	0939_MW2114_210112	12/01/2021	EM2100359	Primary	12.3	13.3	63.9	6.91	104	<0.04	2.2	17.0	3.31	4.47	8.78	<0.04	<0.04	<0.10	<0.04	<0.04	<0.05	0.36	<0.05	<0.05	<0.04	<0.10	<0.04	<0.10	<0.04	<0.10	<0.04	<0.10	216	168	236				
MW2116	0939_MW2116_210112	12/01/2021	EM2100359	Primary	348	436	3,710	304	7,320	0.45	53.7	734	143	100	219	0.17	<0.04	1.06	<0.09	<0.04	<0.05	0.33	0.17	<0.05	3.92	<0.09	<0.04	<0.09	<0.09	<0.04	<0.09	12,600	11,000	13,400					
MW2120	0939_MW2120_210111	11/01/2021	EM2100359	Primary	0.62	0.78	5.94	0.99	36.0	0.36	0.2	1.46	0.28	0.24	0.85	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.74	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.05	45.6	41.9	48.5				
	0939_QC103_210111	11/01/2021	EM2100359	Intralab Duplicate	0.65	0.82	5.49	1.05	33.4	0.32	0.2	1.48	0.29	0.25	0.84	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.05	42.6	38.9	45.8				
	0939_QC203_210111	11/01/2021	RN1301926	Interlab Duplicate	0.58	0.66	6	0.57	4.0	0.043	0.2	1.4	0.28	0.21	0.74	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	0.45	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05	<0.02	49.41	46	51.133				
MW2126	0939_MW2126_210111	11/01/2021	EM2100359	Primary	0.08	0.08	0.82	0.04	0.41	<0.02	<0.1	0.12	<0.02	0.03	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	1.46	1.23	1.58		
MW2129	0939_MW2129_210111	11/01/2021	EM2100359	Primary	0.40	2.04	32.1	0.71	8.29	<0.02	<0.1	4.47	0.54	0.75	1.35	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	47.9	40.4	50.6			
MW2130	0939_MW2130_210112	12/01/2021	EM2100359	Primary	11.4	14.2	90.3	14.0	420	0.86	8.9	73.4	14.7	12.8	20.8	0.15	<0.04	0.60	<0.10	<0.04	<0.04	<0.05	0.75	0.35	<0.05	0.32	<0.10	<0.04	<0.10	<0.10	<0.04	<0.10	653	510	684				
MW2131	0939_MW2131_210112	12/01/2021	EM2100359	Primary	0.65	0.97	11.7	0.42	106	<0.04	0.8	6.48	3.08	2.24	5.97	<0.04	<0.04	0.11	<0.10	<0.04	<0.04	<0.05	1.66	<0.05	<0.05	0.34	<0.10	<0.04	<0.10	<0.10	<0.04	<0.10	138	118	140				
MW2134	0939_MW2134_210112	12/01/2021	EM2100359	Primary	<0.02	<0.02	0.03	<0.02	0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.05	0.05	
MW2135	0939_MW2135_210112	12/01/2021	EM2100359	Primary	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
MW2137	0939_MW2137_210111	11/01/2021	EM2100359	Primary	1.20	1.51	14.2	0.58	11.8	<0.02	0.4	1.71	0.27	0.19	0.41	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	30.2	26.0	32.3		
MW2139	0939_MW2139_210111	11/01/2021	EM2100359	Primary	<0.02	<0.02	0.17	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.17	0.17	0.17
MW2145	0939_MW2145_210111	11/01/2021	EM2100359	Primary	0.08	0.06	0.76	0.04	0.88	<0.02	<0.1	0.10	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	1.85	1.64	1.95
MW2148	0939_MW2148_210112	12/01/2021	EM2100359	Primary	23.8	32.9	205	13.0	156	<0.04	3.5	33.9	6.04	5.61	11.0	<0.04	<0.04	<0.10	<0.04	<0.04	<0.05	<0.05	<0.05	<0.05	0.04	<0.10	<0.04	<0.10	<0.10	<0.04	<0.10	<0.04	<0.10	445	361	491			
	0939_QC104_210112	12/01/2021	EM2100359	Intralab Duplicate	23.5	34.8	201	12.7	152	<0.04	3.6	32.5	6.09	5.29	11.1	<0.04	<0.04	<0.11	<0.04	<0.04	<0.05	<0.05	<0.05	<0.05	0.05	<0.11	<0.04	<0.11	<0.11	<0.04	<0.11	<0.04	<0.11	435	353	483			
	0939_QC204_210112	12/01/2021	RN1301926	Interlab Duplicate	22	21	170	8.9	110	<0.01	4.2	31	6.5	4.6	9.7	<0.01	<0.01	0.022	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.031	<0.02	<0.01	<0.02	<0.01	<0.02	<0.01	<0.02	358	387.922	280				
MW2149	0939_MW2149_210114	14/01/2021	EM2100517	Primary	1.39	1.76	12.7	1.37	88.3	<0.02	3.5	3.89	2.83	2.73	2.30	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	0.26	<0.05	<0.05	0.08	<0.05	<0.02	<0.05	<0.05	118	101	121			
MW2150	0939_MW2150_210205	5/02/2021	EM2101800	Primary	0.24	0.33	4.14	0.39	9.88	<0.02	<0.1	0.49	0.1	0.06	0.15	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	15.1	14	15.8		
MW2157	0939_MW2157_210112	12/01/2021	EM2100359	Primary	0.53	0.72	3.75	0.38	8.56	<0.02	0.2	0.84	0.16	0.14	0.27	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	14.5	12.3	15.6		
MW2158	0939_MW2158_210112	12/01/2021	EM2100359	Primary	60.6	67.6	455	49.6	1,370	0.12	11.5	115	22.7	19.3	45.6	<0.04	<0.04	0.22	<0.10	<0.04	<0.04	<0.05	<0.05	<0.05	<0.05	0.23	<0.10	<0.04	<0.10	<0.10	<0.04	<0.10	2,100	1,820	2,220				
MW2159	0939_MW2159_210114	14/01/2021	EM2100517	Primary	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	
MW2162	0939_MW2162_210111	11/01/2021	EM2100359	Primary	0.09	0.08	1.03	0.04	0.55	<0.02	<0.1	0.09	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	1.79	1.58	1.91	
MW2166	0939_MW2166_210111	11/01/2021	EM210																																				

Table T2 - Groundwater PFAS Analytical Results

					PFAS																																			
					Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluorohexanoic acid (PFHxA)	Perfluoropentanoic acid (PFPeA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDDA)	Perfluorononanoic acid (PFNA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluoroundecanoic acid (PFUnDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	Sum of PFAS (WA DER List)	Sum of PFHxS and PFOS	Sum of PFAS					
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L						
LOR					0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.05	0.02				0.01	0.01	0.01					
Human health receptors	PFAS NEMP 2020 Drinking Water														0.56																			0.07						
Location Code	Field ID	Date	Lab Report Number	Sample Type	1.17	1.46	11.1	1.10	87.7	0.89	1.0	3.86	1.88	1.39	2.91	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	111	98.8	114			
MW2189	0939_MW2189_210114	14/01/2021	EM2100517	Primary	1.17	1.46	11.1	1.10	87.7	0.89	1.0	3.86	1.88	1.39	2.91	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	114	98.8	114	
MW2193	0939_MW2193_210114	14/01/2021	EM2100517	Primary	2.82	9.58	45.5	2.95	40.2	0.12	0.4	21.6	1.08	0.66	1.39	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	114	85.7	126	
MW2194	0939_MW2194_210114	14/01/2021	EM2100517	Primary	0.09	0.11	1.13	0.07	1.31	<0.02	<0.1	0.17	<0.02	0.03	0.05	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	2.78	2.44	2.96	
MW2197	0939_MW2197_210114	14/01/2021	EM2100517	Primary	14.0	17.1	117	13.9	280	<0.04	3.0	25.7	5.24	4.05	8.11	<0.04	<0.04	0.07	<0.11	<0.04	<0.04	<0.05	0.26	<0.05	<0.05	0.10	<0.11	<0.04	<0.11	<0.11	<0.04	<0.11	<0.11	<0.04	<0.11	457	397	488		
	0939_QC110_210114	14/01/2021	EM2100517	Intralab Duplicate	13.9	16.8	105	13.2	268	0.14	4.7	25.9	4.87	3.87	8.10	<0.02	<0.02	0.06	<0.05	<0.02	<0.02	<0.05	0.09	<0.05	<0.05	0.13	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	434	373	465			
	0939_QC210_210114	14/01/2021	RN1302014	Interlab Duplicate	14	13	120	9.4	240	<0.01	3.9	24	5.1	3.2	7.7	<0.01	<0.01	0.05	<0.02	<0.02	<0.01	<0.01	0.12	<0.01	<0.01	0.094	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05	418.02	440.564	360		
MW2200	0939_MW2200_210111	11/01/2021	EM2100359	Primary	9.08	14.4	85.6	4.89	49.8	0.05	2.7	15.7	3.54	2.87	4.34	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	174	135	193
MW2201	0939_MW2201_210111	11/01/2021	EM2100359	Primary	<0.02	<0.02	0.10	<0.02	0.84	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.94	0.94	0.94
MW2202	0939_MW2202_210111	11/01/2021	EM2100359	Primary	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01		
MW2203	0939_MW2203_210114	14/01/2021	EM2100517	Primary	72.9	94.4	838	79.5	2,890	<0.04	14.5	183	36.7	25.8	62.0	0.04	<0.04	0.44	<0.10	<0.04	<0.04	<0.05	0.45	<0.05	<0.05	0.51	<0.10	<0.04	<0.10	<0.10	<0.04	<0.10	<0.04	<0.10	<0.04	<0.10	4,120	3,730	4,290	
MW2209	0939_MW2209_210112	12/01/2021	EM2100359	Primary	<0.02	<0.02	<0.02	<0.02	0.08	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.08	0.08	0.08		
MW2210	0939_MW2210_210112	12/01/2021	EM2100359	Primary	10.5	8.85	58.1	8.99	109	<0.04	1.5	13.4	2.25	3.61	<0.04	<0.04	<0.04	<0.10	<0.04	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	201	167	219		
MW2216	0939_MW2216_210112	12/01/2021	EM2100359	Primary	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01		
MW2218	0939_MW2218_210112	12/01/2021	EM2100359	Primary	<0.02	<0.02	0.16	0.02	0.82	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.98	0.98	1.00		
MW2270	0939_MW2270_210111	11/01/2021	EM2100359	Primary	0.08	0.08	0.65	0.02	0.24	<0.02	<0.1	0.11	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	1.11	0.89	1.21		
MW2272	0939_MW2272_210112	12/01/2021	EM2100359	Primary	19.7	23.3	120	8.58	66.6	<0.04	3.8	36.0	7.52	6.16	10.6	<0.04	<0.04	<0.04	<0.11	<0.04	<0.04	<0.05	<0.05	<0.05	<0.05	<0.04	<0.11	<0.04	<0.11	<0.04	<0.11	<0.04	<0.11	<0.04	<0.11	270	187	302		
MW2275	0939_MW2275_210111	11/01/2021	EM2100359	Primary	0.09	<0.02	0.70	<0.02	0.08	<0.02	<0.1	0.15	<0.02	<0.02	0.05	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	0.10	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	1.17	0.78	1.17		
MW2281	0939_MW2281_210111	11/01/2021	EM2100359	Primary	0.14	0.07	0.94	0.07	2.00	<0.02	<0.1	0.11	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	3.23	2.94	3.37		
MW2284	0939_MW2284_210112	12/01/2021	EM2100359	Primary	3.60	3.75	25.2	1.58	17.8	0.11	1.0	7.44	1.42	1.27	2.11	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	59.8	43.0	65.3		
MW2285	0939_MW2285_210111	11/01/2021	EM2100359	Primary	<0.02	<0.02	0.05	<0.02	0.12	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.17	0.17	0.17		
MW2286	0939_MW2286_210111	11/01/2021	EM2100359	Primary	0.04	0.06	0.63	0.03	0.64	<0.02	<0.1	0.04	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	1.37	1.27	1.46		
MW2325	0661_MW2325_210112	12/01/2021	EM2100359	Primary	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01		
MW2358																																								

Table T2 - Groundwater PFAS Analytical Results

			PFAS																																
			Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluorohexanoic acid (PFHxA)	Perfluoropentanoic acid (PFPeA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluoroundecanoic acid (PFUnDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOCAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOCAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	Sum of PFAS (WA DER List)	Sum of PFHxS and PFOS	Sum of PFAS			
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L			
LOR			0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.05	0.02	0.01	0.05	0.02	0.01	0.05	0.01		
Human health receptors	PFAS NEMP 2020 Drinking Water												0.56																			0.07			
Location Code	Field ID	Date	Lab Report Number	Sample Type	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01
MW4037	0939_MW4037_210113	13/01/2021	EM2100517	Primary	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01
	0939_QC108_210113	13/01/2021	EM2100517	Intralab Duplicate	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01
	0939_QC208_210113	13/01/2021	RN1303312	Interlab Duplicate	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.05	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01
MW4041	0939_MW4041_210113	13/01/2021	EM2100517	Primary	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01
MW4045	0939_MW4045_210113	13/01/2021	EM2100517	Primary	0.02	<0.02	0.09	<0.02	0.27	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.38	0.36	0.38
MW4048	0939_MW4048_210113	13/01/2021	EM2100517	Primary	0.05	0.04	0.36	<0.02	0.73	<0.02	<0.1	0.09	0.03	0.02	0.04	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	1.32	1.09	1.36
MW4052	0939_MW4052_210113	13/01/2021	EM2100517	Primary	<0.02	<0.02	<0.02	<0.02	0.01	<0.02	<0.1	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.01	0.01	0.01
MW4053	0939_MW4053_210113	13/01/2021	EM2100517	Primary	0.04	0.04	0.26	<0.02	0.56	<0.02	<0.1	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.88	0.82	0.92
MW4055	0939_MW4055_210113	13/01/2021	EM2100517	Primary	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.03	0.03	0.03
MW4057	0939_MW4057_210114	14/01/2021	EM2100517	Primary	0.06	0.02	0.15	<0.02	0.10	<0.02	<0.1	0.04	<0.02	<0.02	0.04	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.39	0.25	0.41
MW4058	0939_MW4058_210113	13/01/2021	EM2100517	Primary	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01
MW4059	0939_MW4059_210113	13/01/2021	EM2100517	Primary	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01
MW4060	0939_MW4060_210112	12/01/2021	EM2100359	Primary	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01
	0939_QC106_210112	12/01/2021	EM2100359	Intralab Duplicate	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01
	0939_QC206_210112	12/01/2021	RN1301926	Interlab Duplicate	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01
MW4061	0939_MW4061_210112	12/01/2021	EM2100359	Primary	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01
MW4061	0939_QC105_210112	12/01/2021	EM2100359	Intralab Duplicate	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01
MW4061	0939_QC205_210112	12/01/2021	RN1301926	Interlab Duplicate	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01
MW4064	0939_MW4064_210113	13/01/2021	EM2100517	Primary	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01
MW4065	0939_MW4065_210112	12/01/2021	EM2100359	Primary	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01
MW4066	0939_MW4066_210114	14/01/2021	EM2100517	Primary	0.07	0.04	0.16	<0.02	0.06	<0.02	<0.1	0.04	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.35	0.22	0.39
MW4068	0939_MW4068_210113	13/01/2021	EM2100517	Primary	0.31	0.77	3.56	0.49	9.40	<0.02	<0.1	0.51	0.09	0.10	0.22	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	14.2	13.0	15.4
MW4069	0939_MW4069_210113	13/01/2021	EM2100517	Primary	0.08	0.08	0.69	0.03	1.39	<0.02	<0.1	0.11	0.04	0.02	0.05	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	2.38	2.08	2.49
MW4070	0939_MW4070_210113	13/01/2021	EM2100517	Primary	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02																									

Table T3 Non-PFAS Analytical Results

Location Code	Field ID	Date	Lab Report Number	Sample Type	DOC		TSS		Major Ions												
					Dissolved Organic Carbon	Total Suspended Solids	Chloride	Fluoride	Sulphate as SO4 - Turbidimetric (filtered)	Alkalinity (Bicarbonate as CaCO3)	Carbonate Alkalinity (as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Anions Total	Cations Total	Ionic Balance	Calcium (filtered)	Magnesium (filtered)	Potassium (filtered)	Sodium (filtered)	
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	%	mg/L	mg/L	mg/L	mg/L	
LOR					1	5	0.1	0.1	1	1	1	1	1	0.01	0.01	0.01	0.005	0.005	0.05	0.05	
MW2120	0939_MW2120_210111	11/01/2021	EM2100359	Primary	<1	674	98	1.5	52	320	<1	<1	320	10.2	8.34	10.2	30	27	14	98	
	0939_QC103_210111	11/01/2021	EM2100359	Intralab Duplicate	<1	2,050	95	1.5	53	319	<1	<1	319	10.2	8.30	10.1	30	27	14	97	
	0939_QC203_210111	11/01/2021	RN1301926	Interlab Duplicate	-	-	86	1.5	45	-	<5	-	260	9	9	-	41	34	8.7	90	
MW2126	0939_MW2126_210111	11/01/2021	EM2100359	Primary	2	1,690	3,160	0.6	872	490	<1	<1	490	117	96.2	9.80	183	214	28	1,580	
	0939_MW2148_210112	12/01/2021	EM2100359	Primary	<1	127	1,760	3.5	203	332	<1	<1	332	60.5	51.6	7.94	32	58	17	1,030	
MW2148	0939_QC104_210112	12/01/2021	EM2100359	Intralab Duplicate	1	195	1,730	3.6	191	330	<1	<1	330	59.4	51.7	6.91	30	55	17	1,040	
	0939_QC204_210112	12/01/2021	RN1301926	Interlab Duplicate	-	-	1,900	3.2	-	-	<5	-	280	63	65	-	60	92	17	1,250	
MW2158	0939_MW2158_210112	12/01/2021	EM2100359	Primary	7	282	1,490	1.7	719	734	<1	<1	734	71.7	60.0	8.81	33	64	20	1,210	
MW2184	0939_MW2184_210111	11/01/2021	EM2100359	Primary	2	664	654	4.0	544	399	<1	<1	399	37.7	31.8	8.48	18	37	16	632	
MW2185	0939_MW2185_210111	11/01/2021	EM2100359	Primary	2	79	1,880	1.6	881	620	<1	<1	620	83.8	72.8	7.00	63	119	28	1,360	
MW2200	0939_MW2200_210111	11/01/2021	EM2100359	Primary	22	247	2,660	0.2	1,260	<1	79	283	363	108	90.1	9.26	245	<1	206	1,670	
MW2270	0939_MW2270_210111	11/01/2021	EM2100359	Primary	2	942	3,140	0.5	647	347	<1	<1	347	109	90.0	9.56	226	240	25	1,340	
MW2272	0939_MW2272_210112	12/01/2021	EM2100359	Primary	27	203	1,030	0.3	95	<1	76	1,030	1,100	53.0	41.5	12.2	103	<1	238	696	
MW2281	0939_MW2281_210111	11/01/2021	EM2100359	Primary	<1	<5	3,360	0.4	591	385	<1	<1	385	115	95.2	9.30	310	305	29	1,240	
MW2284	0939_MW2284_210112	12/01/2021	EM2100359	Primary	18	3,260	1,340	0.3	348	121	702	<1	<1	824	61.5	54.2	6.35	2	176	187	800
MW2286	0939_MW2286_210111	11/01/2021	EM2100359	Primary	4	332	941	0.2	36	<1	77	461	537	38.0	26.1	18.6	133	<1	25	433	
MW2358	0939_MW2358_210111	11/01/2021	EM2100359	Primary	28	1,810	2,780	0.8	791	713	<1	<1	713	109	90.1	9.54	140	192	31	1,530	
MW4001	0939_MW4001_210113	13/01/2021	EM2100517	Primary	4	139	88	7.7	26	656	<1	<1	657	16.2	13.3	9.72	2	3	6	294	
MW4048	0939_MW4048_210113	13/01/2021	EM2100517	Primary	<1	88	67	7.7	22	343	25	<1	368	9.70	8.29	7.86	2	3	6	179	
MW4057	0939_MW4057_210114	14/01/2021	EM2100517	Primary	9	2,840	1,410	4.2	750	766	<1	<1	766	70.7	64.7	4.46	18	51	16	1,360	
MW4066	0939_MW4066_210114	14/01/2021	EM2100517	Primary	5	97	3,240	2.8	1,330	659	<1	<1	659	132	118	5.49	63	166	30	2,320	
MW4069	0939_MW4069_210113	13/01/2021	EM2100517	Primary	8	1,520	698	1.8	71	323	<1	<1	323	27.6	23.5	8.11	36	46	16	402	
MW4073	0939_MW4073_210114	14/01/2021	EM2100517	Primary	13	179	2,720	3.8	1,180	1,520	<1	<1	1,520	132	116	6.15	10	79	26	2,500	
MW4075	0939_MW4075_210113	13/01/2021	EM2100517	Primary	18	5,940	605	0.1	33	2	37	<1	39	18.5	15.4	9.16	68	11	20	244	
MW4079	0939_MW4079_210114	14/01/2021	EM2100517	Primary	19	169	1,420	0.1	10	<1	97	1,900	2,000	80.2	68.2	8.10	534	<1	150	867	

Legend:

LOR: Limit of reporting
 - not analysed
 mg/L: milligrams per litre
 meq/L: milliequivalent per litre

Table T4 Surface Water Field Parameters

Location ID	Date	pH	Electrical Conductivity	Estimated TDS*	Dissolved Oxygen	Temperature	Redox Potential	Comments
		pH units	µS/cm	mg/L	mg/L	°C	mV	
SW003	05/02/2021	6.23	541.20	324.7	3.58	17.97	159.60	Light Yellow, low turbidity, no odour. Drain, flows south west. Vegetation.
SW006	05/02/2021	6.97	244.80	146.9	5.98	18.87	104.40	Clear, low turbidity, no odour. Drain, flows south west, vegetation growing in water.
SW009	05/02/2021	6.90	133.40	80.0	1.43	19.34	133.30	Clear, low turbidity, no odour. Drain, flows south west.
SW010	05/02/2021	7.16	267.20	160.3	4.75	19.58	104.70	Light olive brown, low turbidity, no odour. Dam, no apparent flow.
SW011	05/02/2021	6.36	722.80	433.7	2.82	19.12	127.80	Clear, low turbidity, no odour. Drain, flows south west.
SW012	05/02/2021	6.54	382.50	229.5	6.53	21.99	128.90	Clear, low turbidity, no odour. Drain, stagnant.
SW017	05/02/2021	7.01	243.40	146.0	5.65	18.07	158.16	Yellowish brown, low turbidity, no odour. Drain, flows south west. Vegetation.
SW018	05/02/2021	7.2	268.5	161.1	4.08	18.45	97.1	Clear, low turbidity, no odour. Drain, stagnant.
SW019	05/02/2021	6.88	126.1	75.7	2.8	17.85	92	Clear, low turbidity, no odour. Drain, stagnant, vegetation in growing in water.
SW021	05/02/2021	6.8	255	153.0	5.42	18.78	109.7	Light olive brown, low turbidity, no odour. Drain, stagnant.
SW028	05/02/2021	5.39	274.40	164.6	1.27	17.55	157.10	Clear, low turbidity, no odour. Drain, flows west.
SW029	05/02/2021	5.83	341.40	204.8	0.48	18.20	136.10	Clear, low turbidity, no odour. Drain, flows west.
SW032	05/02/2021	7.11	149.50	89.7	4.07	20.06	121.20	Clear, low turbidity, no odour. Drain, flows west.
SW033	05/02/2021	6.96	144.10	86.5	6.17	19.61	118.10	Clear, low turbidity, no odour. Drain, flows west
SW037	05/02/2021			Dry				Drain.
SW050	05/02/2021	7.05	135.5	81.3	5.36	19.26	94.2	Clear, low turbidity, no odour. Drain, stagnant/no apparent flow direction end of drain, vegetation.
SW054	05/02/2021	6.96	186.00	111.6	5.95	19.23	103.50	Light yellow, low turbidity, no odour. Drain, stagnant/no apparent flow direction end of drain. Vegetation.
SW058	05/02/2021	7.29	271.00	162.6	5.45	19.59	105.40	Light olive brown, low turbidity, no odour. Drain, stagnant.
SW059	05/02/2021	6.61	164.3	98.6	4.7	18.31	109.3	Clear, low turbidity, no odour. Drain, stagnant.
SW062	05/02/2021	6.58	469.70	281.8	3.24	19.16	114.40	Clear, low turbidity, no odour. Drain, flows south west.
SW078	05/02/2021	6.68	356.20	213.7	4.01	19.41	103.60	Clear, low turbidity, no odour. Drain, flows south west.

Notes:

°C: Degrees Celsius

mg/L: Milligrams per litre (ppm w/v)

mV: Millivolts

µS/cm: Micro Siemens per centimetre

EC: Electrical Conductivity

* Approximate value determined using the following equation: TDS (mg/L) = EC x 0.65

Table T6 Surface Water Non-PFAS Results

	Major Ions														pH	TDS	TSS	DOC
	Carbonate Alkalinity (as CaCO3)	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Anions Total	Cations Total	Calcium (filtered)	Chloride	Fluoride	Magnesium (filtered)	Potassium (filtered)	Sodium (filtered)	Sulphate as SO4 - Turbidimetric (filtered)					
	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH (Lab)	mg/L	mg/L	mg/L
LOR	1	1	1	1	0.01	0.01	1	1	0.1	1	1	1	1	1	0.01	10	5	1

Location Code	Field ID	Date	Lab Report Number	Carbonate Alkalinity (as CaCO3)	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Anions Total	Cations Total	Calcium (filtered)	Chloride	Fluoride	Magnesium (filtered)	Potassium (filtered)	Sodium (filtered)	Sulphate as SO4 - Turbidimetric (filtered)	pH (Lab)	TDS	TSS	DOC
SW003	0939_SW003_210205	5/02/2021	EM2101800/EM2102479	107	<1	<1000	107	3.93	3.45	30	51	0.1	6	13	26	17	7.71	231	<5	15
SW009	0939_SW009_210205	5/02/2021	EM2101800/EM2102479	41	<1	<1000	41	1.2	1.14	9	12	<0.1	2	7	8	2	7.02	106	37	20
SW018	0939_SW018_210205	5/02/2021	EM2101800/EM2102479	60	<1	<1000	60	2.05	1.7	13	22	0.2	3	6	15	11	7.65	105	<5	11
SW050	0939_SW050_210205	5/02/2021	EM2101800/EM2102479	38	<1	<1000	38	1.1	0.9	6	9	<0.1	2	5	7	4	7.4	56	<5	13
SW058	0939_SW058_210205	5/02/2021	EM2101800/EM2102479	70	<1	<1000	70	2.38	1.93	13	29	0.2	3	8	19	8	7.47	151	47	19

Legend:

LOR: Limit of reporting
 mg/L: milligrams per litre
 meq/L: milliequivalent per litre

Appendix C

Data Validation Reports

Appendix C Data Validation Reports

DATA VALIDATION REPORT

Project No.:	60612561	Validation by:	[REDACTED]	Date:	22/02/2021
Client:	Department of Defence				
Site:	RAAF Base Edinburgh				
Matrix type:	Groundwater, surface water	Data verified by	[REDACTED]	Date:	05/03/2021
No. of primary samples:	105 groundwater, 20 surface water				
Laboratory:	ALS (Melbourne), NMI (Sydney)	Project Manager:	[REDACTED]		
Lab reference:	EM2100359, EM2100500, RN1301926 EM2100517, RN1302014, RN1303312 EM2100623				
Key Issues:	<p>The following QA/QC issues were identified in the field or laboratory datasets that could have a material implication on data interpretation and therefore decision-making on the project:</p> <p>Groundwater</p> <ul style="list-style-type: none"> The potential exists for 10:2 FTS and PFPeS to be under reported in batches EM2100517 and EM2100359, this potential for under reporting should be taken into consideration when using data quantitatively. The potential exists for 10:2 FTS in batch EM2100359 to be over reported and should be taken into consideration when using data quantitatively. The potential exists for PFBA to be bias low in laboratory batch EM2100359. The potential for under reporting should be taken into consideration when using results quantitatively. The potential exists for PFAS in samples 0939_QC110_210114 (batch EM2100517) and 0939_MW2116_210112 (batch EM2100359) to be under reported. This apparent lack of accuracy should be taken into consideration when interpreting concentrations for PFAS close to guidelines. Elevated RPDs for PFBA, FOSA or TSS should be taken into consideration when using the data quantitatively. Elevated RPDs for PFPeS, PFHpS, PFHpA, PFBA, PFDS, FOSA, PFOS, PFHxA, 6:2 FTS, ionic balance, potassium, TSS, calcium and magnesium should be taken into consideration when using the data quantitatively. <p>Surface water</p> <ul style="list-style-type: none"> pH and TDS were analysed outside of holding times, under reporting should be taken into consideration when using data quantitatively. <p>The data are considered appropriate for use to meet the project objectives and meet the DQOs set out in Section 3.5 of the report.</p>				
Field QA/QC					
Sampling personnel	Groundwater sampling was conducted by Georgia Matthews and Mark Vial between 11-15 and 19 January and surface water on 5 February 2021 (including one groundwater location).				
Sampling Methodology	Samples were collected using appropriate methods as identified within the main body of the report.				
Chain of Custody (COC)	COC documents were completed as per AECOM procedures.				
Field Blank	Field blank samples were collected at a frequency of one in ten primary samples. Concentrations were reported below the LOR for all analytes tested (see Table C4).				
Rinsate Blank	Rinsate blank samples were collected at a frequency of one in ten primary samples:				

- 2 in total for groundwater (from interface probe)
- 2 in total for surface water (from glove)

Concentrations were reported below the LOR for all analytes tested (see **Table C4**). Rinsate samples were not analysed for general chemistry parameters, however, the decontamination methods are assessed as acceptable and the potential for cross contamination via sampling methods is considered unlikely based on the following:

- All sampling equipment was either dedicated, disposable or decontaminated with a solution of water and liquinox between sampling locations
- Clean disposable gloves were used to collect each sample
- The decontamination methods and field staff were consistent over the course of the sampling event
- Concentrations of all other analytes were reported below the LOR in the rinsate sample analysed

Trip Blanks

Trip blank samples were not required.

Frequency of field QC

Field duplicate (inter-laboratory duplicates) and triplicates (inter-laboratory duplicates) were collected at a frequency of one in ten primary samples (11 duplicates and triplicates for groundwater, three duplicates and triplicates for surface water).

The target frequency of 10% for field duplicates and triplicates for PFAS was achieved for groundwater and surface water.

Field duplicates and triplicates were not obtained for general chemistry parameters in surface water samples. The precision of the data can be assessed as acceptable based on the laboratory duplicate RPDs, which were reported at the required frequency and within control limits.

Handling and preservation

Primary, duplicate and triplicate samples were received preserved and chilled at the laboratory. The following sample receipt temperatures were reported for:

Groundwater	
Batch Number	Temperature (°C)
EM2100359	9.8, ice present
EM2100517	8.9, ice present
EM2100500	16.8, ice present
EM2100623	16.8, ice present
RN1301926	Chilled
RN1302014	Chilled
RN1303312	Chilled
Surface water	
EM2102479/EM2101800	11.9, ice present
RN1303991	Chilled

Sample receipt temperatures were outside of the recommended range ($\leq 6^{\circ}\text{C}$) in all primary batches. As the samples were received below ambient groundwater temperature at the time of sampling (19-36 °C), the samples were immediately cooled upon collection, and the primary and inter-laboratory RPDs were generally within control limits, the potential for under reporting is not considered to materially affect the interpretation of results.

All samples were received at the laboratory in appropriate sample containers with no sample container / preservation non-compliances noted.

Equipment Calibration

Calibration of the water quality meter was conducted on each day of sampling.

Laboratory QA/QC

Tests requested/reported

Samples were analysed and reported as requested on the COC.

Holding time compliance

Surface water

Samples were extracted and analysed within recommended holding times with the exception of pH and TDS for surface water, which were requested retrospectively (laboratory batch EM2102479). As these analytes are not considered COPCs, analyte degradation is not considered to affect the interpretation of the results, however under reporting should be taken into consideration when using the data quantitatively.

Laboratory Accreditation	The laboratory analysis was conducted by ALS Environmental Pty Ltd (Melbourne) a National Association of Testing Authorities (NATA) accredited laboratory. The triplicate samples were analysed at the national Measurement Institute (Sydney), also a NATA accredited laboratory.																																			
Frequency of laboratory QC	<p>The laboratory did not report sufficient frequency of quality control samples to assess whether the results have been reported to an acceptable accuracy and precision for surface water and groundwater.</p> <p>Groundwater Laboratory duplicate samples were not reported at the required frequency in batches EM2100359, EM2100500 and EM2100517 for PFAS and for dissolved major cations, alkalinity by PC titrator, ionic balance, DOC, sulfate, TSS, chloride and fluoride in batches EM2100359 and EM2100500. The precision of the data can be assessed as acceptable based on intra- and inter-laboratory duplicate RPDs which were reported at or above the required frequencies and generally within control limits.</p> <p>Matrix spikes were not reported at the required frequencies for PFAS in all batches. The accuracy of the data can be assessed as acceptable based on method blanks and LCS recoveries (which were reported above the required frequencies).</p> <p>Surface water Laboratory duplicate samples were not reported at the required frequency in surface water laboratory batch EM2101800 for PFAS and in EM2102479 for pH. The precision of the data for PFAS can be assessed as acceptable based on intra- and inter-laboratory duplicate RPDs which were reported at or above the required frequencies and generally within control limits. As available lab duplicate results for pH were within control limits and laboratory results for pH were generally consistent with field measured pH, the lack of precision for this analyte is not considered to affect the interpretation of results.</p> <p>Matrix spikes were not reported at the required frequencies for PFAS in all laboratory batches. The accuracy of the data can be assessed as acceptable based on method blanks and LCS recoveries where within control limits (which were reported above the required frequencies).</p>																																			
Method Blank	Method blank concentrations were not detected above the LOR for all analytes tested for groundwater and surface water.																																			
Laboratory duplicate RPDs	<p>Laboratory duplicate Relative Percentage Differences (RPD) were within control limits for surface water.</p> <p>Groundwater Laboratory duplicate Relative Percentage Differences (RPD) were outside control limits and may affect data interpretation:</p> <table border="1"> <thead> <tr> <th>Lab batch</th> <th>Analyte</th> <th>Recovery (%)</th> <th>Limits (%)</th> <th>Comment</th> </tr> </thead> <tbody> <tr> <td rowspan="6">EM2100517</td> <td>PFPeS</td> <td>99.9</td> <td rowspan="6">0-20</td> <td rowspan="6">Recovery greater than control limit</td> </tr> <tr> <td>PFHxS</td> <td>90.3</td> </tr> <tr> <td>PFHxA</td> <td>124</td> </tr> <tr> <td>Sum of PFAS</td> <td>59</td> </tr> <tr> <td>PFHxS+PFOS</td> <td>50.8</td> </tr> <tr> <td>Sum PFAS (WA DER)</td> <td>58.6</td> </tr> <tr> <td rowspan="6">EM2100359</td> <td>PFOS</td> <td>28.4</td> <td rowspan="6">0-20</td> <td rowspan="6">Recovery greater than control limit</td> </tr> <tr> <td>PFHpA</td> <td>23.5</td> </tr> <tr> <td>6:2 FTS</td> <td>25.5</td> </tr> <tr> <td>Sum PFAS</td> <td>26</td> </tr> <tr> <td>PFHxS+PFOS</td> <td>27.3</td> </tr> <tr> <td>Sum PFAS (WA DER)</td> <td>26</td> </tr> </tbody> </table>	Lab batch	Analyte	Recovery (%)	Limits (%)	Comment	EM2100517	PFPeS	99.9	0-20	Recovery greater than control limit	PFHxS	90.3	PFHxA	124	Sum of PFAS	59	PFHxS+PFOS	50.8	Sum PFAS (WA DER)	58.6	EM2100359	PFOS	28.4	0-20	Recovery greater than control limit	PFHpA	23.5	6:2 FTS	25.5	Sum PFAS	26	PFHxS+PFOS	27.3	Sum PFAS (WA DER)	26
Lab batch	Analyte	Recovery (%)	Limits (%)	Comment																																
EM2100517	PFPeS	99.9	0-20	Recovery greater than control limit																																
	PFHxS	90.3																																		
	PFHxA	124																																		
	Sum of PFAS	59																																		
	PFHxS+PFOS	50.8																																		
	Sum PFAS (WA DER)	58.6																																		
EM2100359	PFOS	28.4	0-20	Recovery greater than control limit																																
	PFHpA	23.5																																		
	6:2 FTS	25.5																																		
	Sum PFAS	26																																		
	PFHxS+PFOS	27.3																																		
	Sum PFAS (WA DER)	26																																		

The potential exists for the above PFAS analytes to be over reported in samples 0939_MW2193_210114 (batch EM2100517) and 0939_MW2131_210112 (batch EM2100359).

As there are no adopted guideline values for PFPeS, PFHxS, PFHxA, sum of PFAS, sum PFAS (WA DER), PFOS, PFHpA or 6:2 FTS, the potential for over reporting is not expected to affect interpretation of results against guidelines. However, this potential for over reporting should be taken into consideration when using the data quantitatively.

This apparent lack of accuracy should be taken into consideration when interpreting concentrations for PFHxS where close to guidelines.

ALS laboratory noted that sample 0939_MW2131_210112 had poor duplicate precision and was confirmed by re-analysis.

Laboratory control spike recovery (LCS)

Laboratory control spike (LCS) recoveries were within control limits for surface water.

Groundwater

The following laboratory control spike (LCS) recoveries were outside control limits and may affect data interpretation:

Lab batch	Analyte	Recovery (%)	Limits (%)	Comment
EM2100517	10:2 FTS	59.8	70-130	Recovery less than control limit
EM2100359	PFPeS	70.9	71-127	Recovery less than control limit
	10:2 FTS	135	70-130	Recovery greater than control limit

The LCS recovery for 10:2 FTS and PFPeS was less than the control limit in batches EM2100517 and EM2100359, respectively, the potential exists for concentrations of these analytes to be under reported by up to 40.2% and 29.1%.

The LCS recovery for 10:2 FTS was greater than the control limit in batch EM2100359 the potential exists for concentrations of this analyte to be over reported by up to 35%.

As there are no adopted guideline values for 10:2 FTS or PFPeS, the potential for over and under reporting is not expected to affect interpretation of the results against guidelines. However, this potential for over and under reporting should be taken into consideration when using the data quantitatively.

Matrix spike recovery

Groundwater

Matrix spike recoveries were not determined as background levels were greater than or equal to 4x spike levels for the following batches:

- EM2100517; PFBS, PFPeS, PFHpS, PFPeA, PFHxA, PFOA
- EM2100359; PFHxS, PFOS

These non-determinations do not reflect method bias and do not affect data interpretation. The accuracy of the data can be assessed as acceptable based on method blanks and LCS recoveries where within control limits (which were reported above the required frequencies).

Matrix spike (MS) recoveries (where reported) were within control limits, with the following exceptions:

	Lab batch	Analyte	Recovery (%)	Range (%)	Comment
	EM2100359	PFBA	51.1	73-129	Recovery less than lower data quality objective
	The potential exists for concentrations of PFBA to be bias low by up to 77.9%.				
	As there is no adopted guideline value for PFBA the potential for under reporting is not expected to affect interpretation of the results against guidelines. However, this potential for under reporting should be taken into consideration when using the data quantitatively.				
Surrogate spike recovery	Surrogate spike recoveries were within control limits for surface water.				
	Groundwater				
	Surrogate spike recoveries were outside of control limits for the following:				
	Lab batch	Analyte	Recovery (%)	Range (%)	Comment
	EM2100517	13C4-PFOS	57.8	65-140	Recovery less than lower data quality objective
	EM2100359	13C4-PFOS	20.5	65-140	Recovery less than lower data quality objective
	The potential exists for PFAS in samples 0939_QC110_210114 (batch EM2100517) and 0939_MW2116_210112 (batch EM2100359) to be under reported. This apparent lack of accuracy should be taken into consideration when interpreting concentrations for PFAS close to guidelines.				
QA/QC Data Evaluation					
Comparison of Field Observations and Laboratory Results	No anomalous results between field observations and analysis results were noted for surface water or groundwater.				
Data transcription	A random 10% check of the laboratory results identified no anomalies within the electronic data, the laboratory reports, and tables generated by AECOM.				
Limits of reporting	Limits of Reporting (LORs) were sufficiently low to enable assessment against adopted screening levels.				
Field duplicate RPDs	<p>RPDs for groundwater and surface water are reported in Tables C1 and C2, respectively.</p> <p>Groundwater</p> <p>Field duplicate RPDs were reported within control limits with the exception the following in lab batch EM2100359 (the sample with the higher concentration is in bold):</p> <ul style="list-style-type: none"> • 0939_MW2180_210111 and 0939_QC101_210111 for PFBA (114%) • 0939_MW2120_210111 and 0939_QC103_210111 for FOSA (32%) and TSS (101%) • 0939_MW2148_210112 and 0939_QC104_210112 for TSS (42%) <p>And in lab batch EM2100517:</p> <ul style="list-style-type: none"> • 0939_MW2197_210114 and 0939_QC110_210114 for PFBA (44%) <p>As there are no adopted guideline values for PFBA, FOSA or TSS the elevated RPD is not expected to affect interpretation of the result of results against guidelines. However, the elevated RPDs should be taken into consideration when using the data quantitatively.</p>				
Field triplicate RPDs	<p>Field triplicate RPDs were reported within control limits with the exception of the following in lab batch RN1301926 (the sample with the higher concentration is in bold):</p> <ul style="list-style-type: none"> • 0939_MW2180_210111 and 0939_QC201_210111 for PFPeS (59%), PFHpS (39%), PFHpA (32%) and PFBA (65%) 				

- **0939_MW2120_210111** and 0939_QC203_210111 for PFHpS (54%), PFDS (157%), FOSA (49%), ionic balance (200%), and potassium (47%)
 - 0939_MW2120_210111 and **0939_QC203_210111** for TSS (56%) and calcium (31%)
 - **0939_MW2148_210112** and 0939_QC204_210112 for PFOS (35%), PFPeS (44%), PFHxA (37%), ionic balance (133%),
 - 0939_MW2148_210112 and **0939_QC204_210112** for calcium (61%) and magnesium (45%)
- In laboratory batch RN1303312
- **0939_MW4015_210114** and 0939_QC209_210114 for PFPeS (69%) and PFHpS (83%)

In laboratory batch RN1302014:

- **0939_MW2197_210114** and 0939_QC210_210114 for 6:2 FTS (74%) and PFHpS (39%)

As there are no adopted guideline values for these analytes the elevated RPD is not expected to affect interpretation of the result of results against guidelines. However, the elevated RPDs should be taken into consideration when using the data quantitatively.

The non-compliant RPDs are likely to be due to different extraction methods used by the laboratories as the duplicate and primary sample are comparable.

Other

Other observations

ALS laboratory noted the following:

EM2100359

- Major cations were confirmed in samples 0939_MW2286_210111 and MW2272_210112 by re-preparation and re-analysis.
- TSS were confirmed in samples 0939_MW2120_210111, 0939_QC103_210111, 0939_MW2148_210112 and 0939_QC104_210112 by re-preparation and re-analysis
- Ionic balance out of acceptable limits for samples 0939_MW2120_210112, 0939_QC103_210111 and 0939_MW2272_210112 due to analytes not quantified in this report
- Ionic balance out of acceptable limits for sample 0939_MW2286_210111 due to analytes not quantified in this report. Major anions and cations have been confirmed by re-preparation and re-analysis

EM2100517

- Ionic balance out of acceptable limits for sample 0939_MW4048_210113 due to analytes not quantified in this report
- Results in sample 0939_MW4079_210114 have been confirmed by re-preparation and re-analysis.

Table C1 Relative Percentage Difference Table

Method Group	Analyte	Units	LOR	EM2100359			EM2100359		
				Field ID	Sample Type	Sampled Date	Field ID	Sample Type	Sampled Date
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	62.8	64	2	62.8	58	8
	Perfluorooctanoic acid (PFQA)	µg/L	0.01	8.01	7.26	10	8.01	6.6	19
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)	74.8	65.5	13	74.8	65	14
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorotridecanoic acid (PFTeDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.02	0
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	2.95	2.83	4	2.95	1.6	59
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	1.22	1.22	0	1.22	1.1	10
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	0.1	0.09	11	0.1	0.058	53
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	7.97	7.62	4	7.97	7.1	12
	Perfluorooheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	7.43	6.88	8	7.43	5	39
	Perfluorooctanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	1.09	0.99	10	1.09	0.79	32
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0.7	0.64	9	0.7	0.63	11
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	1.1	0.3	114	1.1	0.56	65
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.02	0
	N-Ethyl perfluorooctane sulfonamidoethanol (EiFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	N-Ethyl perfluorooctane sulfonamide (EiFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.02	0
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	0.04	0.04	0	0.04	0.028	35
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EiFOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Sum of PFHxS and PFOS	µg/L	0.01	138	130	6	138	123.00	11
	Sum of PFAS	µg/L	0.01	168	157	7	168	146.47	14
Sum of PFAS (WA DER List)	µg/L	0.01	158	148	7	158	139.78	12	
Alkalinity by PC Titrator	Alkalinity (Bicarbonate as CaCO3)	mg/l	1						
	Alkalinity (Carbonate as CaCO3)	mg/l	1						
	Alkalinity (Hydroxide) as CaCO3	mg/l	1000						
	Alkalinity (total) as CaCO3	mg/l	1 : 5 (Interlab)						
Chloride by Discrete Analyser	Chloride	mg/l	1 : 0.1 (Interlab)						
Dissolved Organic Carbon	Dissolved Organic Carbon	mg/l	1						
Fluoride by PC Titrator	Fluoride	mg/l	0.1						
Ionic Balance by PCT DA and Turbi SO4 DA	Anions Total	meq/L	0.01						
	Cations Total	meq/L	0.01						
	Ionic Balance	%	0.01						
Major Cations - Dissolved	Sodium (Filtered)	mg/l	1 : 0.05 (Interlab)						
Sulfate (Turbidimetric) as SO4 2- by Discrete Anal	Sulfate as SO4 - Turbidimetric (Filtered)	mg/l	1						
Suspended Solids (High Level)	TSS	mg/l	5						
Major Cations - Dissolved	Calcium (Filtered)	mg/l	1 : 0.005 (Interlab)						
	Magnesium (Filtered)	mg/l	1 : 0.005 (Interlab)						
	Potassium (Filtered)	mg/l	1 : 0.05 (Interlab)						

**High RPDs are in bold (Acceptable RPDs for LOR multiplier range: 200 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.

Any methods in the row header relate to those used in the primary laboratory

Table C1 Relative Percentage Difference Table

Lab Report Number	EM2100359	EM2100359		EM2100359	RN1301926
Field ID	0939_MW2166_210111	0939_QC102_210111	RPD	0939_MW2166_210111	0939_QC202_210111
Sample Type	Primary	Intralab Duplicate		Primary	Intralab Duplicate
Sample Date	11/01/2021	11/01/2021		11/01/2021	11/01/2021

Method Group	Analyte	Units	LOR						
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	<0.01	<0.01	0	<0.01	0.06	143
	Perfluorooctanoic acid (PFOA)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorotridecanoic acid (PFTriDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.02	0
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorododecane sulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorododecane sulfonic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorododecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.05	0
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.02	0
	N-Ethyl perfluorooctane sulfonamidoethanol (EiFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	N-Ethyl perfluorooctane sulfonamide (EiFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.02	0
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EiFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0
Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	
Alkalinity by PC Titrator	Alkalinity (Bicarbonate as CaCO3)	mg/l	1						
	Alkalinity (Carbonate as CaCO3)	mg/l	1						
	Alkalinity (Hydroxide) as CaCO3	mg/l	1000						
	Alkalinity (total) as CaCO3	mg/l	1 : 5 (Interlab)						
Chloride by Discrete Analyser	Chloride	mg/l	1 : 0.1 (Interlab)						
Dissolved Organic Carbon	Dissolved Organic Carbon	mg/l	1						
Fluoride by PC Titrator	Fluoride	mg/l	0.1						
Ionic Balance by PCT DA and Turbi SO4 DA	Anions Total	meq/L	0.01						
	Cations Total	meq/L	0.01						
	Ionic Balance	%	0.01						
Major Cations - Dissolved	Sodium (Filtered)	mg/l	1 : 0.05 (Interlab)						
Sulfate (Turbidimetric) as SO4 2- by Discrete Anal	Sulfate as SO4 - Turbidimetric (Filtered)	mg/l	1						
Suspended Solids (High Level)	TSS	mg/l	5						
Major Cations - Dissolved	Calcium (Filtered)	mg/l	1 : 0.005 (Interlab)						
	Magnesium (Filtered)	mg/l	1 : 0.005 (Interlab)						
	Potassium (Filtered)	mg/l	1 : 0.05 (Interlab)						

**High RPDs are in bold (Acceptable RPDs for LOR multiplier range: 200 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.

Any methods in the row header relate to those used in the primary laboratory

Table C1 Relative Percentage Difference Table

Lab Report Number	EM2100359	EM2100359		EM2100359	RN1301926
Field ID	0939_MW2120_210111	0939_QC103_210111	RPD	0939_MW2120_210111	0939_QC203_210111
Sample Type	Primary	Intralab Duplicate		Primary	Intralab Duplicate
Sample Date	11/01/2021	11/01/2021		11/01/2021	11/01/2021

Method Group	Analyte	Units	LOR						
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	36	33.4	7	36	40	11
	Perfluorooctanoic acid (PFOA)	µg/L	0.01	0.85	0.84	1	0.85	0.74	14
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)	5.94	5.49	8	5.94	6	1
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorododecanoic acid (PFDTDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.02	0
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02 : 0.01 (Interlab)	0.78	0.82	5	0.78	0.66	17
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	0.28	0.29	4	0.28	0.28	0
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	1.46	1.48	1	1.46	1.4	4
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.99	1.05	6	0.99	0.57	54
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.24	0.25	4	0.24	0.21	13
	Perfluorododecane sulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	0.36	0.32	12	0.36	0.043	157
	Perfluorododecane sulfonic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorododecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0.62	0.65	5	0.62	0.58	7
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	0.2	0.2	0	0.2	0.2	0
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.02	0
	N-Ethyl perfluorooctane sulfonamidoethanol (EiFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	N-Ethyl perfluorooctane sulfonamide (EiFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.02	0
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	0.74	1.02	32	0.74	0.45	49
N-Ethyl perfluorooctane sulfonamidoacetic acid (EiFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0	
Sum of PFHxS and PFOS	µg/L	0.01	41.9	38.9	7	41.9	46.00	11	
Sum of PFAS	µg/L	0.01	48.5	45.8	6	48.5	51.13	5	
Sum of PFAS (WA DER List)	µg/L	0.01	45.6	42.6	7	45.6	49.41	8	
Alkalinity by PC Titrator	Alkalinity (Bicarbonate as CaCO3)	mg/l	1	320	319	0	320	260	21
	Alkalinity (Carbonate as CaCO3)	mg/l	1	<1	<1	0	<1	<5	0
	Alkalinity (Hydroxide) as CaCO3	mg/l	1000	<1000	<1000	0	<1000	<5	0
	Alkalinity (total) as CaCO3	mg/l	1 : 5 (Interlab)	320	319	0	320	260	21
Chloride by Discrete Analyser	Chloride	mg/l	1 : 0.1 (Interlab)	98	95	3	98	86	13
Dissolved Organic Carbon	Dissolved Organic Carbon	mg/l	1	<1	<1	0	<1	4.7	130
Fluoride by PC Titrator	Fluoride	mg/l	0.1	1.5	1.5	0	1.5	1.5	0
Ionic Balance by PCT DA and Turbi SO4 DA	Anions Total	meq/L	0.01	10.2	10.2	0	10.2	9	13
	Cations Total	meq/L	0.01	8.34	8.3	0	8.34	9	8
	Ionic Balance	%	0.01	10.2	10.1	1	10.2	0	200
Major Cations - Dissolved	Sodium (Filtered)	mg/l	1 : 0.05 (Interlab)	98	97	1	98	90	9
Sulfate (Turbidimetric) as SO4 2- by Discrete Anal	Sulfate as SO4 - Turbidimetric (Filtered)	mg/l	1	52	53	2	52	45	14
Suspended Solids (High Level)	TSS	mg/l	5	674	2050	101	674	1200	56
Major Cations - Dissolved	Calcium (Filtered)	mg/l	1 : 0.005 (Interlab)	30	30	0	30	41	31
	Magnesium (Filtered)	mg/l	1 : 0.005 (Interlab)	27	27	0	27	34	23
	Potassium (Filtered)	mg/l	1 : 0.05 (Interlab)	14	14	0	14	8.7	47

**High RPDs are in bold (Acceptable RPDs for LOR multiplier range: 200 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))
 ***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.
 Any methods in the row header relate to those used in the primary laboratory

Table C1 Relative Percentage Difference Table

Method Group	Analyte	Units	LOR	EM2100359			EM2100359			EM2100359		
				0939_MW2148_210112	0939_QC104_210112	RPD	0939_MW2148_210112	0939_QC204_210112	RPD	0939_MW2148_210112	0939_QC204_210112	RPD
				Primary	Intralab Duplicate		Primary	Interlab Duplicate		Primary	Interlab Duplicate	
				Sampled Date	Sampled Date		Sampled Date	Sampled Date		Sampled Date	Sampled Date	
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	156	152	3	156	110	35			
	Perfluorooctanoic acid (PFOA)	µg/L	0.01	11	11.1	1	11	9.7	13			
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)	205	201	2	205	170	19			
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0			
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0			
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0			
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0			
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.04	<0.04	0	<0.04	<0.01	0			
	Perfluorotridecanoic acid (PFTTrDA)	µg/L	0.02	<0.04	<0.04	0	<0.04	<0.02	0			
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.1	<0.11	0	<0.1	<0.02	0			
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	32.9	34.8	6	32.9	21	44			
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	6.04	6.09	1	6.04	6.5	7			
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.04	<0.04	0	<0.04	0.022	0			
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	33.9	32.5	4	33.9	31	9			
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	13	12.7	2	13	8.9	37			
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	5.61	5.29	6	5.61	4.6	20			
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.04	<0.04	0	<0.04	<0.01	0			
	Perfluorododecanoic acid (PFDDA)	µg/L	0.02 : 0.01 (Interlab)	<0.04	<0.04	0	<0.04	<0.01	0			
	Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.04	<0.04	0	<0.04	<0.01	0			
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	23.8	23.5	1	23.8	22	8			
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	3.5	3.6	3	3.5	4.2	18			
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.1	<0.11	0	<0.1	<0.02	0			
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.1	<0.11	0	<0.1	<0.05	0			
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.1	<0.11	0	<0.1	<0.02	0			
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.1	<0.11	0	<0.1	<0.05	0			
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.04	<0.04	0	<0.04	<0.01	0			
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	0.04	0.05	22	0.04	0.031	25			
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.04	<0.04	0	<0.04	<0.01	0				
Sum of PFHxS and PFOS	µg/L	0.01	361	353	2	361	280.00	25				
Sum of PFAS	µg/L	0.01	491	483	2	491	387.92	23				
Sum of PFAS (WA DER List)	µg/L	0.01	445	435	2	445	358.00	22				
Alkalinity by PC Titrator	Alkalinity (Bicarbonate as CaCO3)	mg/l	1	332	330	1	332	280	17			
	Alkalinity (Carbonate as CaCO3)	mg/l	1	<1	0	<1	<5	0				
	Alkalinity (Hydroxide as CaCO3)	mg/l	1000	<1000	<1000	0	<1000	<5	0			
	Alkalinity (total) as CaCO3	mg/l	1 : 5 (Interlab)	332	330	1	332	280	17			
Chloride by Discrete Analyser	Chloride	mg/l	1 : 0.1 (Interlab)	1760	1730	2	1760	1900	8			
Dissolved Organic Carbon	Dissolved Organic Carbon	mg/l	1	<1	1	<1	4.4	126				
Fluoride by PC Titrator	Fluoride	mg/l	0.1	3.5	3.6	3	3.5	3.2	9			
Ionic Balance by PCT DA and Turbi SO4 DA	Anions Total	meq/L	0.01	60.5	59.4	2	60.5	63	4			
	Cations Total	meq/L	0.01	51.6	51.7	0	51.6	65	23			
	Ionic Balance	%	0.01	7.94	6.91	14	7.94	1.6	133			
Major Cations - Dissolved	Sodium (Filtered)	mg/l	1 : 0.05 (Interlab)	1030	1040	1	1030	1250	19			
Sulfate (Turbidimetric) as SO4 2- by Discrete Anal	Sulfate as SO4 - Turbidimetric (Filtered)	mg/l	1	203	191	6	203	180	12			
Suspended Solids (High Level)	TSS	mg/l	5	127	195	42	127	160	23			
Major Cations - Dissolved	Calcium (Filtered)	mg/l	1 : 0.005 (Interlab)	32	30	6	32	60	61			
	Magnesium (Filtered)	mg/l	1 : 0.005 (Interlab)	58	55	5	58	92	45			
	Potassium (Filtered)	mg/l	1 : 0.05 (Interlab)	17	17	0	17	17	0			

**High RPDs are in bold (Acceptable RPDs for LOR multiplier range: 200 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.
Any methods in the row header relate to those used in the primary laboratory

Table C1 Relative Percentage Difference Table

Method Group	Analyte	Units	LOR	EM2100359			RN1301926		
				Field ID	Sample Type	RPD	Field ID	Sample Type	RPD
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	0939_MW4061_210112	Primary	<0.01	0939_QC105_210112	Intralab Duplicate	<0.01
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	0939_MW4061_210112	Primary	<0.01	0939_QC105_210112	Intralab Duplicate	<0.01
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)	0939_MW4061_210112	Primary	<0.02	0939_QC105_210112	Intralab Duplicate	<0.01
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	0939_MW4061_210112	Primary	<0.05	0939_QC105_210112	Intralab Duplicate	<0.01
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	0939_MW4061_210112	Primary	<0.05	0939_QC105_210112	Intralab Duplicate	<0.01
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	0939_MW4061_210112	Primary	<0.05	0939_QC105_210112	Intralab Duplicate	<0.01
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	0939_MW4061_210112	Primary	<0.05	0939_QC105_210112	Intralab Duplicate	<0.01
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	0939_MW4061_210112	Primary	<0.02	0939_QC105_210112	Intralab Duplicate	<0.01
	Perfluorotridecanoic acid (PFTriDA)	µg/L	0.02	0939_MW4061_210112	Primary	<0.02	0939_QC105_210112	Intralab Duplicate	<0.02
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	0939_MW4061_210112	Primary	<0.05	0939_QC105_210112	Intralab Duplicate	<0.02
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0939_MW4061_210112	Primary	<0.02	0939_QC105_210112	Intralab Duplicate	<0.01
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	0939_MW4061_210112	Primary	<0.02	0939_QC105_210112	Intralab Duplicate	<0.02
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	0939_MW4061_210112	Primary	<0.02	0939_QC105_210112	Intralab Duplicate	<0.01
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0939_MW4061_210112	Primary	<0.02	0939_QC105_210112	Intralab Duplicate	<0.01
	Perfluorooheptanoic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	0939_MW4061_210112	Primary	<0.02	0939_QC105_210112	Intralab Duplicate	<0.01
	Perfluorooheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	0939_MW4061_210112	Primary	<0.02	0939_QC105_210112	Intralab Duplicate	<0.01
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	0939_MW4061_210112	Primary	<0.02	0939_QC105_210112	Intralab Duplicate	<0.01
	Perfluorododecanoic acid (PFDDA)	µg/L	0.02 : 0.01 (Interlab)	0939_MW4061_210112	Primary	<0.02	0939_QC105_210112	Intralab Duplicate	<0.01
	Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	0939_MW4061_210112	Primary	<0.02	0939_QC105_210112	Intralab Duplicate	<0.01
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0939_MW4061_210112	Primary	<0.02	0939_QC105_210112	Intralab Duplicate	<0.01
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	0939_MW4061_210112	Primary	<0.1	0939_QC105_210112	Intralab Duplicate	<0.05
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	0939_MW4061_210112	Primary	<0.05	0939_QC105_210112	Intralab Duplicate	<0.02
	N-Ethyl perfluorooctane sulfonamidoethanol (EiFOSE)	µg/L	0.05	0939_MW4061_210112	Primary	<0.05	0939_QC105_210112	Intralab Duplicate	<0.05
	N-Ethyl perfluorooctane sulfonamide (EiFOSA)	µg/L	0.05 : 0.02 (Interlab)	0939_MW4061_210112	Primary	<0.05	0939_QC105_210112	Intralab Duplicate	<0.02
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	0939_MW4061_210112	Primary	<0.05	0939_QC105_210112	Intralab Duplicate	<0.05
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOsAA)	µg/L	0.02 : 0.01 (Interlab)	0939_MW4061_210112	Primary	<0.02	0939_QC105_210112	Intralab Duplicate	<0.01
	Perfluorooctane sulfonamide (FOsA)	µg/L	0.02 : 0.01 (Interlab)	0939_MW4061_210112	Primary	<0.02	0939_QC105_210112	Intralab Duplicate	<0.01
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EiFOsAA)	µg/L	0.02 : 0.01 (Interlab)	0939_MW4061_210112	Primary	<0.02	0939_QC105_210112	Intralab Duplicate	<0.01
	Sum of PFHxS and PFOS	µg/L	0.01	0939_MW4061_210112	Primary	<0.01	0939_QC105_210112	Intralab Duplicate	<0.01
	Sum of PFAS	µg/L	0.01	0939_MW4061_210112	Primary	<0.01	0939_QC105_210112	Intralab Duplicate	<0.01
Sum of PFAS (WA DER List)	µg/L	0.01	0939_MW4061_210112	Primary	<0.01	0939_QC105_210112	Intralab Duplicate	<0.01	
Alkalinity by PC Titrator	Alkalinity (Bicarbonate as CaCO3)	mg/l	1						
	Alkalinity (Carbonate as CaCO3)	mg/l	1						
	Alkalinity (Hydroxide) as CaCO3	µo/l	1000						
	Alkalinity (total) as CaCO3	mg/l	1 : 5 (Interlab)						
Chloride by Discrete Analyser	Chloride	mg/l	1 : 0.1 (Interlab)						
Dissolved Organic Carbon	Dissolved Organic Carbon	mg/l	1						
Fluoride by PC Titrator	Fluoride	mg/l	0.1						
Ionic Balance by PCT DA and Turbi SO4 DA	Anions Total	meq/L	0.01						
	Cations Total	meq/L	0.01						
	Ionic Balance	%	0.01						
Major Cations - Dissolved	Sodium (Filtered)	mg/l	1 : 0.05 (Interlab)						
Sulfate (Turbidimetric) as SO4 2- by Discrete Anal	Sulfate as SO4 2- Turbidimetric (Filtered)	mg/l	1						
Suspended Solids (High Level)	TSS	mg/l	5						
Major Cations - Dissolved	Calcium (Filtered)	mg/l	1 : 0.005 (Interlab)						
	Magnesium (Filtered)	mg/l	1 : 0.005 (Interlab)						
	Potassium (Filtered)	mg/l	1 : 0.05 (Interlab)						

**High RPDs are in bold (Acceptable RPDs for LOR multiplier range: 200 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))
 ***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.
 Any methods in the row header relate to those used in the primary laboratory

Table C1 Relative Percentage Difference Table

Method Group	Analyte	Units	LOR	EM2100359		RPD	EM2100359		RPD						
				Field ID	Sample Type		Field ID	Sample Type							
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	0939_MW4060_210112	Primary	12/01/2021	0939_QC106_210112	Intralab Duplicate	12/01/2021	<0.01	<0.01	0	<0.01	<0.02	0
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01							<0.01	<0.01	0	<0.01	<0.01	0
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)							<0.05	<0.05	0	<0.05	<0.01	0
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)							<0.05	<0.05	0	<0.05	<0.01	0
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)							<0.05	<0.05	0	<0.05	<0.01	0
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)							<0.05	<0.05	0	<0.05	<0.01	0
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorotridecanoic acid (PFTriDA)	µg/L	0.02							<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)							<0.05	<0.05	0	<0.05	<0.02	0
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02							<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorododecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)							<0.1	<0.1	0	<0.1	<0.05	0
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)							<0.05	<0.05	0	<0.05	<0.02	0
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05							<0.05	<0.05	0	<0.05	<0.05	0
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.02 (Interlab)							<0.05	<0.05	0	<0.05	<0.02	0
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05							<0.05	<0.05	0	<0.05	<0.05	0
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
Sum of PFHxS and PFOS	µg/L	0.01							<0.01	<0.01	0	<0.01	<0.01	0	
Sum of PFAS	µg/L	0.01							<0.01	<0.01	0	<0.01	<0.01	0	
Sum of PFAS (W.A.D.E.R List)	µg/L	0.01							<0.01	<0.01	0	<0.01	<0.01	0	
Alkalinity by PC Titrator	Alkalinity (Bicarbonate as CaCO3)	mg/l	1												
	Alkalinity (Carbonate as CaCO3)	mg/l	1												
	Alkalinity (Hydroxide) as CaCO3	µo/l	1000												
	Alkalinity (total) as CaCO3	mg/l	1 : 5 (Interlab)												
Chloride by Discrete Analyser	Chloride	mg/l	1 : 0.1 (Interlab)												
Dissolved Organic Carbon	Dissolved Organic Carbon	mg/l	1												
Fluoride by PC Titrator	Fluoride	mg/l	0.1												
Ionic Balance by PCT DA and Turbi SO4 DA	Anions Total	meq/L	0.01												
	Cations Total	meq/L	0.01												
	Ionic Balance	%	0.01												
Major Cations - Dissolved	Sodium (Filtered)	mg/l	1 : 0.05 (Interlab)												
Sulfate (Turbidimetric) as SO4 2- by Discrete Anal	Sulfate as SO4 - Turbidimetric (Filtered)	mg/l	1												
Suspended Solids (High Level)	TSS	mg/l	5												
Major Cations - Dissolved	Calcium (Filtered)	mg/l	1 : 0.005 (Interlab)												
	Magnesium (Filtered)	mg/l	1 : 0.005 (Interlab)												
	Potassium (Filtered)	mg/l	1 : 0.05 (Interlab)												

**High RPDs are in bold (Acceptable RPDs for LOR multiplier range: 200 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))
 ***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.
 Any methods in the row header relate to those used in the primary laboratory

Table C1 Relative Percentage Difference Table

Method Group	Analyte	Units	LOR	EM2100517		RPD	EM2100517		RPD						
				Field ID	Sample Type		Field ID	Sample Type							
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	0939 MW4070_210113	Primary	13/01/2021	0939 QC107_210113	Intralab Duplicate	13/01/2021	<0.01	<0.01	0	<0.01	<0.02	0
	Perfluorooctanoic Acid (PFQA)	µg/L	0.01							<0.01	<0.01	0	<0.01	<0.01	0
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)							<0.05	<0.05	0	<0.05	<0.01	0
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)							<0.05	<0.05	0	<0.05	<0.01	0
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)							<0.05	<0.05	0	<0.05	<0.01	0
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)							<0.05	<0.05	0	<0.05	<0.01	0
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorotridecanoic acid (PFTriDA)	µg/L	0.02							<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)							<0.05	<0.05	0	<0.05	<0.02	0
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02							<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)							<0.1	<0.1	0	<0.1	<0.05	0
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)							<0.05	<0.05	0	<0.05	<0.02	0
	N-Ethyl perfluorooctane sulfonamidoethanol (EiFOSE)	µg/L	0.05							<0.05	<0.05	0	<0.05	<0.05	0
	N-Ethyl perfluorooctane sulfonamide (EiFOSA)	µg/L	0.05 : 0.02 (Interlab)							<0.05	<0.05	0	<0.05	<0.02	0
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05							<0.05	<0.05	0	<0.05	<0.05	0
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOsAA)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorooctane sulfonamide (FOsA)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EiFOsAA)	µg/L	0.02 : 0.01 (Interlab)							<0.02	<0.02	0	<0.02	<0.01	0
	Sum of PFHxS and PFOS	µg/L	0.01							<0.01	<0.01	0	<0.01	<0.01	0
	Sum of PFAS	µg/L	0.01							<0.01	<0.01	0	<0.01	<0.01	0
Sum of PFAS (WA DER List)	µg/L	0.01							<0.01	<0.01	0	<0.01	<0.01	0	
Alkalinity by PC Titrator	Alkalinity (Bicarbonate as CaCO3)	mg/l	1												
	Alkalinity (Carbonate as CaCO3)	mg/l	1												
	Alkalinity (Hydroxide) as CaCO3	mg/l	1000												
	Alkalinity (total) as CaCO3	mg/l	1 : 5 (Interlab)												
Chloride by Discrete Analyser	Chloride	mg/l	1 : 0.1 (Interlab)												
Dissolved Organic Carbon	Dissolved Organic Carbon	mg/l	1												
Fluoride by PC Titrator	Fluoride	mg/l	0.1												
Ionic Balance by PCT DA and Turbi SO4 DA	Anions Total	meq/L	0.01												
	Cations Total	meq/L	0.01												
	Ionic Balance	%	0.01												
Major Cations - Dissolved	Sodium (Filtered)	mg/l	1 : 0.05 (Interlab)												
Sulfate (Turbidimetric) as SO4 2- by Discrete Anal	Sulfate as SO4 - Turbidimetric (Filtered)	mg/l	1												
	TSS	mg/l	5												
Major Cations - Dissolved	Calcium (Filtered)	mg/l	1 : 0.005 (Interlab)												
	Magnesium (Filtered)	mg/l	1 : 0.005 (Interlab)												
	Potassium (Filtered)	mg/l	1 : 0.05 (Interlab)												

**High RPDs are in bold (Acceptable RPDs for LOR multiplier range: 200 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.

Any methods in the row header relate to those used in the primary laboratory

Table C1 Relative Percentage Difference Table

Method Group	Analyte	Units	LOR	EM2100517		RPD	EM2100517		RPD							
				Field ID	Sample Date		Field ID	Sample Date								
				0939_MW4037_210113	Primary 13/01/2021		0939_QC108_210113	Intralab Duplicate 13/01/2021		EM2100517	0939_MW4037_210113	Primary 13/01/2021	RN1303312	0939_QC208_210113	Intralab Duplicate 13/01/2021	RPD
				PFAS	Perfluorooctane sulfonic acid (PFOS)		µg/L	0.01 : 0.02 (Interlab)		<0.01	<0.01	0	<0.01	<0.02	0	
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0							
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0							
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0							
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0							
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0							
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0							
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0							
	Perfluorotridecanoic acid (PFTriDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0							
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.02	0							
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0							
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0							
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0							
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0							
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0							
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0							
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0							
	Perfluorododecanoic acid (PFDDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0							
	Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0							
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0							
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.05	0							
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.02	0							
	N-Ethyl perfluorooctane sulfonamidoethanol (EiFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0							
	N-Ethyl perfluorooctane sulfonamide (EiFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.02	0							
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0							
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0							
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0							
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EiFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0							
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0							
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0							
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0							
Alkalinity by PC Titrator	Alkalinity (Bicarbonate as CaCO3)	mg/l	1													
	Alkalinity (Carbonate as CaCO3)	mg/l	1													
	Alkalinity (Hydroxide) as CaCO3	µo/l	1000													
	Alkalinity (total) as CaCO3	mg/l	1 : 5 (Interlab)													
Chloride by Discrete Analyser	Chloride	mg/l	1 : 0.1 (Interlab)													
Dissolved Organic Carbon	Dissolved Organic Carbon	mg/l	1													
Fluoride by PC Titrator	Fluoride	mg/l	0.1													
Ionic Balance by PCT DA and Turbi SO4 DA	Anions Total	meq/L	0.01													
	Cations Total	meq/L	0.01													
	Ionic Balance	%														
Major Cations - Dissolved	Sodium (Filtered)	mg/l	1 : 0.05 (Interlab)													
Sulfate (Turbidimetric) as SO4 2- by Discrete Anal	Sulfate as SO4 - Turbidimetric (Filtered)	mg/l	1													
Suspended Solids (High Level)	TSS	mg/l	5													
Major Cations - Dissolved	Calcium (Filtered)	mg/l	1 : 0.005 (Interlab)													
	Magnesium (Filtered)	mg/l	1 : 0.005 (Interlab)													
	Potassium (Filtered)	mg/l	1 : 0.05 (Interlab)													

**High RPDs are in bold (Acceptable RPDs for LOR multiplier range: 200 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))
 ***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.
 Any methods in the row header relate to those used in the primary laboratory

Table C1 Relative Percentage Difference Table

Method Group	Analyte	Units	LOR	EM2100517		RPD	EM2100517		RPD
				0939_MW4015_210114	0939_QC109_210114		0939_MW4015_210114	0939_QC209_210114	
				Primary	Intralab Duplicate		Primary	Intralab Duplicate	
				14/01/2021	14/01/2021		14/01/2021	14/01/2021	
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	6.5	6.54	1	6.5	5.9	10
	Perfluorooctanoic acid (PFQA)	µg/L	0.01	0.18	0.18	0	0.18	0.16	12
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)	4.65	4.75	2	4.65	4.6	1
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.02	0
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0.88	0.87	1	0.88	0.43	69
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	0.07	0.08	13	0.07	0.097	32
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.55	0.55	0	0.55	0.49	12
	Perfluorooheptanoic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	0.46	0.4	14	0.46	0.19	83
	Perfluorooheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	0.07	0.07	0	0.07	0.062	12
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0.3	0.32	6	0.3	0.34	13
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.1	0.097	0
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.02	0
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.02	0	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOsAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0	
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOsAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0	
Sum of PFHxS and PFOS	µg/L	0.01	13.7	13.8	1	13.7	12.37	10	
Sum of PFAS (WA DER List)	µg/L	0.01	12.3	12.5	2	12.3	11.75	2	
Alkalinity by PC Titrator	Alkalinity (Bicarbonate as CaCO3)	mg/l	1						
	Alkalinity (Carbonate as CaCO3)	mg/l	1						
	Alkalinity (Hydroxide) as CaCO3	mg/l	1000						
	Alkalinity (total) as CaCO3	mg/l	1 : 5 (Interlab)						
Chloride by Discrete Analyser	Chloride	mg/l	1 : 0.1 (Interlab)						
Dissolved Organic Carbon	Dissolved Organic Carbon	mg/l	1						
Fluoride by PC Titrator	Fluoride	mg/l	0.1						
Ionic Balance by PCT DA and Turbi SO4 DA	Anions Total	meq/L	0.01						
	Cations Total	meq/L	0.01						
	Ionic Balance	%	0.01						
Major Cations - Dissolved	Sodium (Filtered)	mg/l	1 : 0.05 (Interlab)						
Sulfate (Turbidimetric) as SO4 2- by Discrete Anal	Sulfate as SO4 - Turbidimetric (Filtered)	mg/l	1						
Suspended Solids (High Level)	TSS	mg/l	5						
Major Cations - Dissolved	Calcium (Filtered)	mg/l	1 : 0.005 (Interlab)						
	Magnesium (Filtered)	mg/l	1 : 0.005 (Interlab)						
	Potassium (Filtered)	mg/l	1 : 0.05 (Interlab)						

**High RPDs are in bold (Acceptable RPDs for LOR multiplier range: 200 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))
 ***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.
 Any methods in the row header relate to those used in the primary laboratory

Table C1 Relative Percentage Difference Table

		Lab Report Number	EM2100517	EM2100517	RPD	EM2100517	RN1302014		
		Field ID	0939_MW2197_210114	0939_OC110_210114		0939_MW2197_210114	0939_OC210_210114		
		Sample Type	Primary	Intralab Duplicate		Primary	Intralab Duplicate		
		Sampled Date	14/01/2021	14/01/2021		14/01/2021	14/01/2021		
Method Group	Analyte	Units	LOR						
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	280	268	4	280	240	15
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	8.11	8.1	0	8.11	7.7	5
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)	117	105	11	117	120	3
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	0.26	0.09	97	0.26	0.12	74
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.04	<0.02	0	<0.04	<0.01	0
	Perfluorotridecanoic acid (PFTDA)	µg/L	0.02	<0.04	<0.02	0	<0.04	<0.02	0
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.11	<0.05	0	<0.11	<0.02	0
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	17.1	16.8	2	17.1	13	27
	Perfluorooctanoic acid (PFPA)	µg/L	0.02	5.24	4.87	7	5.24	5.1	3
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	0.07	0.06	15	0.07	0.05	33
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	25.7	25.9	1	25.7	24	7
	Perfluorohexane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	13.9	13.2	5	13.9	9.4	39
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	4.05	3.87	5	4.05	3.2	23
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.04	0.14	111	<0.04	<0.01	0
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.04	<0.02	0	<0.04	<0.01	0
	Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.04	<0.02	0	<0.04	<0.01	0
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	14	13.9	1	14	14	0
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	8	4.7	44	3	3.9	26
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.11	<0.05	0	<0.11	<0.02	0
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.11	<0.05	0	<0.11	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.11	<0.05	0	<0.11	<0.02	0	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.11	<0.05	0	<0.11	<0.05	0	
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.04	<0.02	0	<0.04	<0.01	0	
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	0.1	0.13	26	0.1	0.094	6	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.04	<0.02	0	<0.04	<0.01	0	
Sum of PFHxS and PFOS	µg/L	0.01	397	373	6	397	360.00	10	
Sum of PFAS	µg/L	0.01	488	465	5	488	440.56	10	
Sum of PFAS (WA DER List)	µg/L	0.01	457	434	5	457	418.02	9	
Alkalinity by PC Titrator	Alkalinity (Bicarbonate as CaCO3)	mg/l	1						
	Alkalinity (Carbonate as CaCO3)	mg/l	1						
	Alkalinity (Hydroxide) as CaCO3	mg/l	1000						
	Alkalinity (total) as CaCO3	mg/l	1 : 5 (Interlab)						
Chloride by Discrete Analyser	Chloride	mg/l	1 : 0.1 (Interlab)						
Dissolved Organic Carbon	Dissolved Organic Carbon	mg/l	1						
Fluoride by PC Titrator	Fluoride	mg/l	0.1						
Ionic Balance by PCT DA and Turbi SO4 DA	Anions Total	meq/L	0.01						
	Cations Total	meq/L	0.01						
	Ionic Balance	%	0.01						
Major Cations - Dissolved	Sodium (Filtered)	mg/l	1 : 0.05 (Interlab)						
Sulfate (Turbidimetric) as SO4 2- by Discrete Anal	Sulfate as SO4 - Turbidimetric (Filtered)	mg/l	1						
Suspended Solids (High Level)	TSS	mg/l	5						
Major Cations - Dissolved	Calcium (Filtered)	mg/l	1 : 0.005 (Interlab)						
	Magnesium (Filtered)	mg/l	1 : 0.005 (Interlab)						
	Potassium (Filtered)	mg/l	1 : 0.05 (Interlab)						

**High RPDs are in bold (Acceptable RPDs for LOR multiplier range: 200 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.

Any methods in the row header relate to those used in the primary laboratory

Table C1 Relative Percentage Difference Table

Method Group	Analyte	Units	LOR	EM2100517			RN1302014		
				Field ID	Sample Type	Sampled Date	Field ID	Sample Type	Sampled Date
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	0939_MW2112_210114	Primary	14/01/2021	0939_QC211_210114	Interlab Duplicate	14/01/2021
	Perfluorooctanoic acid (PFQA)	µg/L	0.01						
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)						
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)						
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)						
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)						
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)						
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)						
	Perfluorotridecanoic acid (PFTDA)	µg/L	0.02						
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)						
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)						
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02						
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)						
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)						
	Perfluorooheptanoic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)						
	Perfluorooheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)						
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)						
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)						
	Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)						
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)						
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)						
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)						
	N-Ethyl perfluorooctane sulfonamidoethanol (EiFOSE)	µg/L	0.05						
	N-Ethyl perfluorooctane sulfonamide (EiFOSA)	µg/L	0.05 : 0.02 (Interlab)						
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05						
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOsAA)	µg/L	0.02 : 0.01 (Interlab)						
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)						
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EiFOsAA)	µg/L	0.02 : 0.01 (Interlab)						
	Sum of PFHxS and PFOS	µg/L	0.01						
	Sum of PFAS	µg/L	0.01						
Sum of PFAS (WA DER List)	µg/L	0.01							
Alkalinity by PC Titrator	Alkalinity (Bicarbonate as CaCO3)	mg/l	1						
	Alkalinity (Carbonate as CaCO3)	mg/l	1						
	Alkalinity (Hydroxide) as CaCO3	mg/l	1000						
	Alkalinity (total) as CaCO3	mg/l	1 : 5 (Interlab)						
Chloride by Discrete Analyser	Chloride	mg/l	1 : 0.1 (Interlab)						
Dissolved Organic Carbon	Dissolved Organic Carbon	mg/l	1						
Fluoride by PC Titrator	Fluoride	mg/l	0.1						
Ionic Balance by PCT DA and Turbi SO4 DA	Anions Total	meq/L	0.01						
	Cations Total	meq/L	0.01						
	Ionic Balance	%	0.01						
Major Cations - Dissolved	Sodium (Filtered)	mg/l	1 : 0.05 (Interlab)						
Sulfate (Turbidimetric) as SO4 2- by Discrete Anal	Sulfate as SO4 - Turbidimetric (Filtered)	mg/l	1						
Suspended Solids (High Level)	TSS	mg/l	5						
Major Cations - Dissolved	Calcium (Filtered)	mg/l	1 : 0.005 (Interlab)						
	Magnesium (Filtered)	mg/l	1 : 0.005 (Interlab)						
	Potassium (Filtered)	mg/l	1 : 0.05 (Interlab)						

**High RPDs are in bold (Acceptable RPDs for LOR multiplier range: 200 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.

Any methods in the row header relate to those used in the primary laboratory

Table C2 Surface Water Relative Percentage Difference Table

Lab Report Number	EM2101800	EM2101800	EM2101800	RN1303991	EM2101800	EM2101800
Field ID	0939_SW019_210205	0939_QC101_210205	RPD	0939_SW019_210205	0939_QC201_210105	RPD
Sampled Date	5/02/2021	5/02/2021		5/02/2021	5/02/2021	
Sample Type	Primary	Intralab Duplicate		Primary	Intralab Duplicate	

Reporting Group	Analyte	Units	LOR									
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	0.94	0.82	14	0.94	0.8	16	<0.01	<0.01	0
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	0.08	0.08	0	0.08	0.065	21	<0.01	<0.01	0
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)	0.5	0.61	20	0.5	0.58	15	<0.02	<0.02	0
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
	6:2 Fluorotelomer Sulfonate (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	0.12	0.11	9	0.12	0.11	9	<0.05	<0.05	0
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	0.1	0.08	22	0.1	0.097	3	<0.05	<0.05	0
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
	Perfluorotridecanoic acid (PFTriDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.02	0	<0.05	<0.05	0
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0.07	0.08	13	0.07	0.073	4	<0.02	<0.02	0
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	0.08	0.08	0	0.08	0.073	9	<0.02	<0.02	0
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	0.02	0.02	0	0.02	0.023	14	<0.02	<0.02	0
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.2	0.2	0	0.2	0.14	35	<0.02	<0.02	0
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	0.02	0.02	0	0.02	0.019	5	<0.02	<0.02	0
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	0.04	0.03	29	0.04	0.027	39	<0.02	<0.02	0
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
	Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	0.02	<0.02	0	0.02	0.017	16	<0.02	<0.02	0
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0.17	0.17	0	0.17	0.15	13	<0.02	<0.02	0
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.1	0.097	0	<0.1	<0.1	0
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.02	0	<0.05	<0.05	0
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.02	0	<0.05	<0.05	0
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
	Sum of PFHxS and PFOS	µg/L	0.01	1.44	1.43	1	1.44	1.38	4	<0.01	<0.01	0
	Sum of PFAS	µg/L	0.01	2.36	2.3	3	2.36	2.271	4	<0.01	<0.01	0
	Sum of PFAS (WA DER List)	µg/L	0.01	2.23	2.18	2	2.23	1.699	27	<0.01	<0.01	0

**High RPDs are in bold (Acceptable RPDs for LOR multiplier range: 200 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.

Any methods in the row header relate to those used in the primary laboratory

Table C2 Surface Water Relative Percentage Difference Table

Lab Report Number	EM2101800	RN1303991		EM2101800	EM2101800		EM2101800	RN1303991
Field ID	0939_SW032_210205	0939_QC202_210105	RPD	0939_SW033_210205	0939_QC103_210205	RPD	0939_SW033_210205	0939_QC203_210105
Sampled Date	5/02/2021	5/02/2021		5/02/2021	5/02/2021		5/02/2021	5/02/2021
Sample Type	Primary	Interlab Duplicate		Primary	Intralab Duplicate		Primary	Interlab Duplicate

Reporting Group	Analyte	Units	LOR									
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	<0.01	<0.02	0	0.01	<0.01	0	0.01	<0.02	0
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
	6:2 Fluorotelomer Sulfonate (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorotridecanoic acid (PFTriDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	0	<0.05	<0.05	0	<0.05	<0.02	0
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.05	0	<0.1	<0.1	0	<0.1	<0.05	0
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	0	<0.05	<0.05	0	<0.05	<0.02	0
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	0	<0.05	<0.05	0	<0.05	<0.02	0
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0

**High RPDs are in bold (Acceptable RPDs for LOR multiplier range: 200 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.

Any methods in the row header relate to those used in the primary laboratory

Table C3 Field Blanks

Lab Report Number	EM2101800	EM2101800	EM2101800	EM2101800
Field ID	0939_QC402_210205	0939_QC401_210205	0939_QC301_210205	0939_QC302_210205
Sample Date	5/02/2021	5/02/2021	5/02/2021	5/02/2021
Sample Type	Field Bank	Field Blank	Rinsate	Rinsate

Reporting Group	Analyte	Units	LOR				
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
	6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1	<0.1	<0.1
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01

Table C4 Field Blanks

Lab Report Number	EM2100359	EM2100359	EM2100359	EM2100359	EM2100359
Field ID	0939_QC401_210111	0939_QC402_210111	0939_QC403_210111	0939_QC404_210112	0939_QC405_210112
Sampled Date	11/01/2021	12/01/2021	11/01/2021	12/01/2021	12/01/2021
Sample Type	Field Blank	Field Blank	Field Blank	Field Blank	Field Blank

Method Group	Analyte	Units	LOR					
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Table C4 Field Blanks

Lab Report Number	EM2100359	EM2100517	EM2100517	EM2100517	EM2100517
Field ID	0939_QC406_210112	0939_QC407_210113	0939_QC408_210113	0939_QC409_210113	0939_QC410_210114
Sample Date	12/01/2021	13/01/2021	13/01/2021	13/01/2021	14/01/2021
Sample Type	Field Blank	Field Blank	Field Blank	Field Blank	Field Blank

Method Group	Analyte	Units	LOR					
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Table C4 Field Blanks

Lab Report Number	EM2100517	EM2100517	EM2100623	EM2100359	EM2100359
Field ID	0939_QC411_210114	0939_QC412_210114	0939_QC413_210119	0939_QC301_210111	0939_QC302_210111
Sampled Date	14/01/2021	14/01/2021	19/01/2021	11/01/2021	11/01/2021
Sample Type	Field Blank	Field Blank	Field Blank	Rinsate	Rinsate

Method Group	Analyte	Units	LOR					
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Table C4 Field Blanks

Lab Report Number	EM2100359	EM2100359	EM2100359	EM2100359	EM2100517
Field ID	0939_QC303_210111	0939_QC304_210112	0939_QC305_210112	0939_QC306_210112	0939_QC307_210113
Sample Date	11/01/2021	12/01/2021	12/01/2021	12/01/2021	13/01/2021
Sample Type	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate

Method Group	Analyte	Units	LOR					
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Table C4 Field Blanks

Lab Report Number	EM2100517	EM2100517	EM2100517	EM2100517	EM2100517
Field ID	0939_QC308_210113	0939_QC309_210113	0939_QC310_210114	0939_QC311_210114	0939_QC312_210114
Sampled Date	13/01/2021	13/01/2021	14/01/2021	14/01/2021	14/01/2021
Sample Type	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate

Method Group	Analyte	Units	LOR					
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Appendix D

Chain of Custody

Appendix D Chain of Custody

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFSOMP
 SITE: SA_0939_PFSOMP
 ORDER NO: 60612561 6.1
 PROJECT MANAGER:
 PRIMARY SAMPLER:
 EMAIL REPORTS TO:
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:
 CONTACT PH: SAMPLER MOBILE:
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

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

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0939_MW15586_210115		15/01/2021 10:36 AM	Water	ALS: 2 Non ALS: 0	No	X		

Environmental Division
 Melbourne
 Work Order Reference
EM2100500



Telephone : + 61-3-8549 9600

Received: 20/1/21
 Carrier: MTA
 C/note: MTA 020223
 Temp: 16.8°C Seal: Y
 Ice / Icebricks: N/A



RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

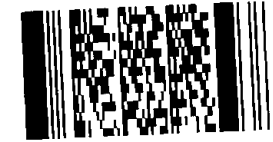
PROJECT MANAGER: [REDACTED] CONTACT PH: SAMPLER MOBILE:
 PRIMARY SAMPLER: [REDACTED] QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0
 EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0939_MW15586_210115	HDPE (no PTFE)	20 mL	00352010080074	Grey	No	
001	0939_MW15586_210115	HDPE (no PTFE)	20 mL	00352010080161	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0




Environmental Division
Melbourne
Work Order Reference
EM2100517





Telephone + 61-3-8549 9600

Custody Document for Submissions via ALS Compass App

Project: SA 0939 PFASOMP Client: AECOM / Department of Defence Project Manager: 
 Phone: _____
 ALS Compass COC Reference: 17781 # Samples: 64 Sampler: _____
 Phone: _____
 Turnaround Requirements: Standard Urgent

Special Instructions: _____

Received: 15/01/21 10:30 Carrier: COURIER
 C/note: _____
 Temp: 8.9°C Seal: Y/N
 Ice / Icebricks / NA 

Custody:	
Relinquished by: 	Received by:
Date / Time: <u>14/1/21</u> <u>3:50pm</u>	Date / Time:
Relinquished by:	Received by:
Date / Time:	Date / Time:

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0939_MW4059_210113		13/01/2021 09:32 AM	Water	ALS: 2 Non ALS: 0	No		X		
002	0939_MW4077_210113		13/01/2021 09:38 AM	Water	ALS: 2 Non ALS: 0	No		X		
003	0939_MW4027_210113		13/01/2021 09:45 AM	Water	ALS: 2 Non ALS: 0	No		X		
004	0939_MW4058_210113		13/01/2021 10:06 AM	Water	ALS: 2 Non ALS: 0	No		X		
005	0939_MW4078_210113		13/01/2021 10:11 AM	Water	ALS: 2 Non ALS: 0	No		X		
006	0939_MW4219_210113		13/01/2021 10:18 AM	Water	ALS: 2 Non ALS: 0	No		X		
007	0939_MW4076_210113		13/01/2021 10:27 AM	Water	ALS: 2 Non ALS: 0	No		X		
008	0939_MW4064_210113		13/01/2021 10:40 AM	Water	ALS: 2 Non ALS: 0	No		X		
009	0939_MW4045_210113	Extra volume for lab QC	13/01/2021 11:09 AM	Water	ALS: 4 Non ALS: 0	No		X		

*Ground water fresh:
 TSS
 DOC
 PFAS
 Catons / Anions*

Received: Carrier:
 C/note: °C Seal: Y/N
 Temp: Ice / Icebricks / NA



RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1
 PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:
 CONTACT PH: SAMPLER MOBILE:
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

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

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
010	0939_MW4070_210113		13/01/2021 11:20 AM	Water	ALS: 2 Non ALS: 0	No		X		
011	0939_QC107_210113		13/01/2021 11:21 AM	Water	ALS: 2 Non ALS: 0	No		X		
012	0939_QC207_210113	Please forward to NMI	13/01/2021 11:21 AM	Water	ALS: 2 Non ALS: 0	Yes		-		
013	0939_MW4053_210113		13/01/2021 11:04 AM	Water	ALS: 2 Non ALS: 0	No		X		
014	0939_MW4055_210113		13/01/2021 11:39 AM	Water	ALS: 2 Non ALS: 0	No		X		
015	0939_MW4052_210113		13/01/2021 11:53 AM	Water	ALS: 2 Non ALS: 0	No		X		
016	0939_MW4072_210113		13/01/2021 12:10 PM	Water	ALS: 2 Non ALS: 0	No		X		
017	0939_MW4041_210113		13/01/2021 12:22 PM	Water	ALS: 2 Non ALS: 0	No		X		
018	0939_MW4074_210113		13/01/2021 12:33 PM	Water	ALS: 2 Non ALS: 0	No		X		

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	0939_MW4069_210113		13/01/2021 01:53 PM	Water	ALS: 5 Non ALS: 0	No	X			
020	0939_MW4048_210113		13/01/2021 02:20 PM	Water	ALS: 5 Non ALS: 0	No	X			
021	0939_MW4001_210113		13/01/2021 02:33 PM	Water	ALS: 5 Non ALS: 0	No	X			
022	0939_MW4075_210113		13/01/2021 02:35 PM	Water	ALS: 5 Non ALS: 0	No	X			
023	0939_MW4037_210113		13/01/2021 02:56 PM	Water	ALS: 2 Non ALS: 0	No		X		
024	0939_QC108_210113		13/01/2021 02:55 PM	Water	ALS: 2 Non ALS: 0	No		X		
025	0939_QC208_210113	Please forward to NMI	13/01/2021 02:55 PM	Water	ALS: 2 Non ALS: 0	Yes		-		
026	0939_MW20327_210113	Extra volume for lab QC	13/01/2021 03:13 PM	Water	ALS: 4 Non ALS: 0	No		X		
027	0939_MW4003_210113		13/01/2021 03:25 PM	Water	ALS: 2 Non ALS: 0	No		X		

CHAIN OF CUSTODY
ALS COC#: 17751 ALS Laboratory: EM Melbourne

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

PROJECT MANAGER [REDACTED]
 PRIMARY SAMPLER [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

EMAIL REPORTS TO [REDACTED]

EMAIL INVOICES TO [REDACTED]

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
028	0939_MW4068_210113		13/01/2021 03:41 PM	Water	ALS: 2 Non ALS: 0	No		X		
029	0939_MW4035_210113		13/01/2021 03:46 PM	Water	ALS: 2 Non ALS: 0	No		X		
030	0939_MW4013_210113		13/01/2021 04:00 PM	Water	ALS: 2 Non ALS: 0	No		X		
031	0939_QC307_210113		13/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	No		X		
032	0939_QC308_210113		13/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	No		X		
033	0939_QC309_210113		13/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	No		X		
034	0939_QC407_210113		13/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	Yes		-		
035	0939_QC408_210113		13/01/2021 12:30 AM	Water	ALS: 2 Non ALS: 0	Yes		-		
036	0939_QC409_210113		13/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	Yes		-		

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

PROJECT MANAGER:
 PRIMARY SAMPLER:

CONTACT PH:
 QUOTE NO: SY/139/19 V3
 SAMPLER MOBILE:
 / ES2019AECOMAU003
 0

Random Sample Temperature on Receipt: °C
 Other comments:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
037	0939_MW4079_210114		14/01/2021 09:19 AM	Water	ALS: 5 Non ALS: 0	No	X			
038	0939_MW4073_210114		14/01/2021 09:25 AM	Water	ALS: 5 Non ALS: 0	No	X			
039	0939_MW4066_210114		14/01/2021 09:43 AM	Water	ALS: 5 Non ALS: 0	No	X			
040	0939_MW4057_210114		14/01/2021 09:46 AM	Water	ALS: 5 Non ALS: 0	No	X			
041	0939_MW4015_210114		14/01/2021 10:16 AM	Water	ALS: 2 Non ALS: 0	No		X		
042	0939_QC109_210114		14/01/2021 10:18 AM	Water	ALS: 2 Non ALS: 0	No		X		
043	0939_QC209_210114	Please forward to NMI	14/01/2021 10:19 AM	Water	ALS: 2 Non ALS: 0	Yes		-		
044	0939_MW2203_210114	Extra volume for lab QC	14/01/2021 12:11 PM	Water	ALS: 4 Non ALS: 0	No		X		
045	0939_MW2197_210114		14/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	No		X		

CHAIN OF CUSTODY
 (ALS) COC#: 17751 ALS Laboratory: EM Melbourne

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

EMAIL INVOICES TO: [REDACTED]

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
046	0939_QC110_210114		14/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	No		X		
047	0939_QC210_210114	Please forward to NMI	14/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	Yes		-		
048	0939_MW2193_210114	Extra volume for lab qc	14/01/2021 12:36 PM	Water	ALS: 4 Non ALS: 0	No		X		
049	0939_MW2194_210114		14/01/2021 12:50 PM	Water	ALS: 2 Non ALS: 0	No		X		
050	0939_MW2149_210114		14/01/2021 01:24 PM	Water	ALS: 2 Non ALS: 0	No		X		
051	0939_MW2499_210114	Extra volume for lab QC	14/01/2021 01:34 PM	Water	ALS: 4 Non ALS: 0	No		X		
052	0939_MW2188_210114		14/01/2021 01:46 PM	Water	ALS: 2 Non ALS: 0	No		X		
053	0939_MW2189_210114		14/01/2021 01:48 PM	Water	ALS: 2 Non ALS: 0	No		X		
054	0939_MW2112_210114		14/01/2021 02:10 PM	Water	ALS: 2 Non ALS: 0	No		X		

**CHAIN OF CUSTODY**

COC#: 17751 ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0**LABORATORY USE ONLY (Circle)**

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

°C

Other comments:

SAMPLE DETAILS**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
055	0939_QC111_210114		14/01/2021 02:10 PM	Water	ALS: 2 Non ALS: 0	No		X		
056	0939_QC211_210114	Please forward to nmi	14/01/2021 02:11 PM	Water	ALS: 2 Non ALS: 0	Yes		-		
057	0939_MW2159_210114		14/01/2021 02:33 PM	Water	ALS: 2 Non ALS: 0	No		X		
058	0939_MW2501_210114		14/01/2021 03:00 PM	Water	ALS: 2 Non ALS: 0	No		X		
059	0939_QC310_210114		14/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	No		X		
060	0939_QC311_210114		14/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	No		X		
061	0939_QC312_210114		14/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	No		X		
062	0939_QC410_210114		14/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	Yes		-		
063	0939_QC411_210114		14/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	Yes		-		

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1
 PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

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

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
064	0939_QC412_210114		14/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	Yes				

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

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

LABORATORY USE ONLY (Circle)

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

PROJECT MANAGER: [REDACTED] CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 PRIMARY SAMPLER: [REDACTED] QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

Random Sample Temperature on Receipt: °C
 Other comments:

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0939_MW4059_210113	HDPE (no PTFE)	20 mL	00352010080117	Grey	No	
001	0939_MW4059_210113	HDPE (no PTFE)	20 mL	00352010080123	Grey	No	
002	0939_MW4077_210113	HDPE (no PTFE)	20 mL	00352010080034	Grey	No	
002	0939_MW4077_210113	HDPE (no PTFE)	20 mL	00352010080133	Grey	No	
003	0939_MW4027_210113	HDPE (no PTFE)	20 mL	00352010079951	Grey	No	
003	0939_MW4027_210113	HDPE (no PTFE)	20 mL	00352010080102	Grey	No	
004	0939_MW4058_210113	HDPE (no PTFE)	20 mL	00352010080179	Grey	No	
004	0939_MW4058_210113	HDPE (no PTFE)	20 mL	00352010079926	Grey	No	
005	0939_MW4078_210113	HDPE (no PTFE)	20 mL	00352010080019	Grey	No	
005	0939_MW4078_210113	HDPE (no PTFE)	20 mL	00352010080035	Grey	No	
006	0939_MW4219_210113	HDPE (no PTFE)	20 mL	00352010079889	Grey	No	
006	0939_MW4219_210113	HDPE (no PTFE)	20 mL	00352010080152	Grey	No	
007	0939_MW4076_210113	HDPE (no PTFE)	20 mL	00352010079950	Grey	No	
007	0939_MW4076_210113	HDPE (no PTFE)	20 mL	00352010079978	Grey	No	
008	0939_MW4064_210113	HDPE (no PTFE)	20 mL	00352010079883	Grey	No	
008	0939_MW4064_210113	HDPE (no PTFE)	20 mL	00352010080097	Grey	No	
009	0939_MW4045_210113	HDPE (no PTFE)	20 mL	00352010079940	Grey	No	
009	0939_MW4045_210113	HDPE (no PTFE)	20 mL	00352010080130	Grey	No	
009	0939_MW4045_210113	HDPE (no PTFE)	20 mL	00352010079968	Grey	No	
009	0939_MW4045_210113	HDPE (no PTFE)	20 mL	00352010080087	Grey	No	
010	0939_MW4070_210113	HDPE (no PTFE)	20 mL	00352010080093	Grey	No	
010	0939_MW4070_210113	HDPE (no PTFE)	20 mL	00352010080011	Grey	No	
011	0939_QC107_210113	HDPE (no PTFE)	20 mL	00352010080002	Grey	No	
011	0939_QC107_210113	HDPE (no PTFE)	20 mL	00352010080068	Grey	No	
012	0939_QC207_210113	HDPE (no PTFE)	20 mL	00352010080088	Grey	No	
012	0939_QC207_210113	HDPE (no PTFE)	20 mL	00352010080046	Grey	No	

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

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1
 PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

LABORATORY USE ONLY (Circle)

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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

013	0939_MW4053_210113	HDPE (no PTFE)	20 mL	00352010079916	Grey	No	
013	0939_MW4053_210113	HDPE (no PTFE)	20 mL	00352010080042	Grey	No	
014	0939_MW4055_210113	HDPE (no PTFE)	20 mL	00352010080065	Grey	No	
014	0939_MW4055_210113	HDPE (no PTFE)	20 mL	00352010079945	Grey	No	
015	0939_MW4052_210113	HDPE (no PTFE)	20 mL	00352010080176	Grey	No	
015	0939_MW4052_210113	HDPE (no PTFE)	20 mL	00352010079957	Grey	No	
016	0939_MW4072_210113	HDPE (no PTFE)	20 mL	00352010079989	Grey	No	
016	0939_MW4072_210113	HDPE (no PTFE)	20 mL	00352010080118	Grey	No	
017	0939_MW4041_210113	HDPE (no PTFE)	20 mL	00352010080058	Grey	No	
017	0939_MW4041_210113	HDPE (no PTFE)	20 mL	00352010080136	Grey	No	
018	0939_MW4074_210113	HDPE (no PTFE)	20 mL	00352010079934	Grey	No	
018	0939_MW4074_210113	HDPE (no PTFE)	20 mL	00352010079903	Grey	No	
019	0939_MW4069_210113	Clear Plastic Bottle - Natural	500 mL	00070519201923	Green	No	
019	0939_MW4069_210113	HDPE (no PTFE)	20 mL	00352010079917	Grey	No	
019	0939_MW4069_210113	HDPE (no PTFE)	20 mL	00352010080128	Grey	No	
019	0939_MW4069_210113	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023326	Purple	No	
019	0939_MW4069_210113	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023325	Purple	No	
020	0939_MW4048_210113	Clear Plastic Bottle - Natural	500 mL	00070519201968	Green	No	
020	0939_MW4048_210113	HDPE (no PTFE)	20 mL	00352010080169	Grey	No	
020	0939_MW4048_210113	HDPE (no PTFE)	20 mL	00352010079892	Grey	No	
020	0939_MW4048_210113	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023316	Purple	No	
020	0939_MW4048_210113	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023317	Purple	No	
021	0939_MW4001_210113	Clear Plastic Bottle - Natural	500 mL	00070519201950	Green	No	
021	0939_MW4001_210113	HDPE (no PTFE)	20 mL	00352010080098	Grey	No	
021	0939_MW4001_210113	HDPE (no PTFE)	20 mL	00352010079971	Grey	No	
021	0939_MW4001_210113	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023338	Purple	No	
021	0939_MW4001_210113	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023345	Purple	No	

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFSOMP
 SITE: SA_0939_PFSOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

EMAIL INVOICES TO: [REDACTED]

022	0939_MW4075_210113	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023358	Purple	No	
022	0939_MW4075_210113	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023363	Purple	No	
022	0939_MW4075_210113	HDPE (no PTFE)	20 mL	00352010080111	Grey	No	
022	0939_MW4075_210113	HDPE (no PTFE)	20 mL	00352010080110	Grey	No	
022	0939_MW4075_210113	Clear Plastic Bottle - Natural	500 mL	00070519201932	Green	No	
023	0939_MW4037_210113	HDPE (no PTFE)	20 mL	00352010080044	Grey	No	
023	0939_MW4037_210113	HDPE (no PTFE)	20 mL	00352010079948	Grey	No	
024	0939_QC108_210113	HDPE (no PTFE)	20 mL	00352010079910	Grey	No	
024	0939_QC108_210113	HDPE (no PTFE)	20 mL	00352010079930	Grey	No	
025	0939_QC208_210113	HDPE (no PTFE)	20 mL	00352010080149	Grey	No	
025	0939_QC208_210113	HDPE (no PTFE)	20 mL	00352010079942	Grey	No	
026	0939_MW20327_210113	HDPE (no PTFE)	20 mL	00352010079899	Grey	No	
026	0939_MW20327_210113	HDPE (no PTFE)	20 mL	00352010080012	Grey	No	
026	0939_MW20327_210113	HDPE (no PTFE)	20 mL	00352010080086	Grey	No	
026	0939_MW20327_210113	HDPE (no PTFE)	20 mL	00352010080054	Grey	No	
027	0939_MW4003_210113	HDPE (no PTFE)	20 mL	00352010079882	Grey	No	
027	0939_MW4003_210113	HDPE (no PTFE)	20 mL	00352010080147	Grey	No	
028	0939_MW4068_210113	HDPE (no PTFE)	20 mL	00352010079895	Grey	No	
028	0939_MW4068_210113	HDPE (no PTFE)	20 mL	00352010080139	Grey	No	
029	0939_MW4035_210113	HDPE (no PTFE)	20 mL	00352010079972	Grey	No	
029	0939_MW4035_210113	HDPE (no PTFE)	20 mL	00352010080173	Grey	No	
030	0939_MW4013_210113	HDPE (no PTFE)	20 mL	00352010080059	Grey	No	
030	0939_MW4013_210113	HDPE (no PTFE)	20 mL	00352010080013	Grey	No	
031	0939_QC307_210113	HDPE (no PTFE)	20 mL	00352010080028	Grey	No	
031	0939_QC307_210113	HDPE (no PTFE)	20 mL	00352010079973	Grey	No	
032	0939_QC308_210113	HDPE (no PTFE)	20 mL	00352010079959	Grey	No	
032	0939_QC308_210113	HDPE (no PTFE)	20 mL	00352010080053	Grey	No	

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFSOMP

SITE: SA_0939_PFSOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER: [REDACTED]

CONTACT PH: [REDACTED]

SAMPLER MOBILE: / ES2019AECOMAU003

PRIMARY SAMPLER: [REDACTED]

QUOTE NO: SY/139/19 V3

0

EMAIL REPORTS TO: [REDACTED]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

EMAIL INVOICES TO: [REDACTED]

033	0939_QC309_210113	HDPE (no PTFE)	20 mL	00352010079922	Grey	No	
033	0939_QC309_210113	HDPE (no PTFE)	20 mL	00352010080144	Grey	No	
034	0939_QC407_210113	HDPE (no PTFE)	20 mL	00352010080124	Grey	No	
034	0939_QC407_210113	HDPE (no PTFE)	20 mL	00352010080060	Grey	No	
035	0939_QC408_210113	HDPE (no PTFE)	20 mL	00352010080075	Grey	No	
035	0939_QC408_210113	HDPE (no PTFE)	20 mL	00352010079918	Grey	No	
036	0939_QC409_210113	HDPE (no PTFE)	20 mL	00352010079881	Grey	No	
036	0939_QC409_210113	HDPE (no PTFE)	20 mL	00352010080165	Grey	No	
037	0939_MW4079_210114	Clear Plastic Bottle - Natural	500 mL	00070519201888	Green	No	
037	0939_MW4079_210114	HDPE (no PTFE)	20 mL	00352010080108	Grey	No	
037	0939_MW4079_210114	HDPE (no PTFE)	20 mL	00352010080024	Grey	No	
037	0939_MW4079_210114	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023362	Purple	No	
037	0939_MW4079_210114	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023359	Purple	No	
038	0939_MW4073_210114	Clear Plastic Bottle - Natural	500 mL	00070519201966	Green	No	
038	0939_MW4073_210114	HDPE (no PTFE)	20 mL	00352010080085	Grey	No	
038	0939_MW4073_210114	HDPE (no PTFE)	20 mL	00352010079976	Grey	No	
038	0939_MW4073_210114	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023321	Purple	No	
038	0939_MW4073_210114	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023319	Purple	No	
039	0939_MW4066_210114	Clear Plastic Bottle - Natural	500 mL	00070519202015	Green	No	
039	0939_MW4066_210114	HDPE (no PTFE)	20 mL	00352010080071	Grey	No	
039	0939_MW4066_210114	HDPE (no PTFE)	20 mL	00352010079946	Grey	No	
039	0939_MW4066_210114	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023296	Purple	No	
039	0939_MW4066_210114	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023295	Purple	No	
040	0939_MW4057_210114	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023314	Purple	No	
040	0939_MW4057_210114	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023315	Purple	No	
040	0939_MW4057_210114	HDPE (no PTFE)	20 mL	00352010080052	Grey	No	
040	0939_MW4057_210114	HDPE (no PTFE)	20 mL	00352010079913	Grey	No	

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

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

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

040	0939_MW4057_210114	Clear Plastic Bottle - Natural	500 mL	00070519201883	Green	No	
041	0939_MW4015_210114	HDPE (no PTFE)	20 mL	00352010080170	Grey	No	
041	0939_MW4015_210114	HDPE (no PTFE)	20 mL	00352010079929	Grey	No	
042	0939_QC109_210114	HDPE (no PTFE)	20 mL	00352010079958	Grey	No	
042	0939_QC109_210114	HDPE (no PTFE)	20 mL	00352010080121	Grey	No	
043	0939_QC209_210114	HDPE (no PTFE)	20 mL	00352010080178	Grey	No	
043	0939_QC209_210114	HDPE (no PTFE)	20 mL	00352010080008	Grey	No	
044	0939_MW2203_210114	HDPE (no PTFE)	20 mL	00352010080132	Grey	No	
044	0939_MW2203_210114	HDPE (no PTFE)	20 mL	00352010080009	Grey	No	
044	0939_MW2203_210114	HDPE (no PTFE)	20 mL	00352010080026	Grey	No	
044	0939_MW2203_210114	HDPE (no PTFE)	20 mL	00352010080129	Grey	No	
045	0939_MW2197_210114	HDPE (no PTFE)	20 mL	00352010080135	Grey	No	
045	0939_MW2197_210114	HDPE (no PTFE)	20 mL	00352010079880	Grey	No	
046	0939_QC110_210114	HDPE (no PTFE)	20 mL	00352010079975	Grey	No	
046	0939_QC110_210114	HDPE (no PTFE)	20 mL	00352010080039	Grey	No	
047	0939_QC210_210114	HDPE (no PTFE)	20 mL	00352010080157	Grey	No	
047	0939_QC210_210114	HDPE (no PTFE)	20 mL	00352010080001	Grey	No	
048	0939_MW2193_210114	HDPE (no PTFE)	20 mL	00352010079909	Grey	No	
048	0939_MW2193_210114	HDPE (no PTFE)	20 mL	00352010079941	Grey	No	
048	0939_MW2193_210114	HDPE (no PTFE)	20 mL	00352010080103	Grey	No	
048	0939_MW2193_210114	HDPE (no PTFE)	20 mL	00352010079924	Grey	No	
049	0939_MW2194_210114	HDPE (no PTFE)	20 mL	00352010079961	Grey	No	
049	0939_MW2194_210114	HDPE (no PTFE)	20 mL	00352010079965	Grey	No	
050	0939_MW2149_210114	HDPE (no PTFE)	20 mL	00352010080120	Grey	No	
050	0939_MW2149_210114	HDPE (no PTFE)	20 mL	00352010080025	Grey	No	
051	0939_MW2499_210114	HDPE (no PTFE)	20 mL	00352010079931	Grey	No	
051	0939_MW2499_210114	HDPE (no PTFE)	20 mL	00352010079974	Grey	No	

CHAIN OF CUSTODY
 ALS COC#: 17751 ALS Laboratory: EM Melbourne

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFSOMP
 SITE: SA_0939_PFSOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

Random Sample Temperature on Receipt: °C
 Other comments:

EMAIL INVOICES TO: [REDACTED]

051	0939_MW2499_210114	HDPE (no PTFE)	20 mL	00352010080099	Grey	No	
051	0939_MW2499_210114	HDPE (no PTFE)	20 mL	00352010080095	Grey	No	
052	0939_MW2188_210114	HDPE (no PTFE)	20 mL	00352010079897	Grey	No	
052	0939_MW2188_210114	HDPE (no PTFE)	20 mL	00352010079994	Grey	No	
053	0939_MW2189_210114	HDPE (no PTFE)	20 mL	00352010079891	Grey	No	
053	0939_MW2189_210114	HDPE (no PTFE)	20 mL	00352010080140	Grey	No	
054	0939_MW2112_210114	HDPE (no PTFE)	20 mL	00352010079949	Grey	No	
054	0939_MW2112_210114	HDPE (no PTFE)	20 mL	00352010079996	Grey	No	
055	0939_QC111_210114	HDPE (no PTFE)	20 mL	00352010080166	Grey	No	
055	0939_QC111_210114	HDPE (no PTFE)	20 mL	00352010079911	Grey	No	
056	0939_QC211_210114	HDPE (no PTFE)	20 mL	00352010079914	Grey	No	
056	0939_QC211_210114	HDPE (no PTFE)	20 mL	00352010079885	Grey	No	
057	0939_MW2159_210114	HDPE (no PTFE)	20 mL	00352010079907	Grey	No	
057	0939_MW2159_210114	HDPE (no PTFE)	20 mL	00352010080167	Grey	No	
058	0939_MW2501_210114	HDPE (no PTFE)	20 mL	00352010080089	Grey	No	
058	0939_MW2501_210114	HDPE (no PTFE)	20 mL	00352010080159	Grey	No	
059	0939_QC310_210114	HDPE (no PTFE)	20 mL	00352010080014	Grey	No	
059	0939_QC310_210114	HDPE (no PTFE)	20 mL	00352010079981	Grey	No	
060	0939_QC311_210114	HDPE (no PTFE)	20 mL	00352010080057	Grey	No	
060	0939_QC311_210114	HDPE (no PTFE)	20 mL	00352010080134	Grey	No	
061	0939_QC312_210114	HDPE (no PTFE)	20 mL	00352010079915	Grey	No	
061	0939_QC312_210114	HDPE (no PTFE)	20 mL	00352010080154	Grey	No	
062	0939_QC410_210114	HDPE (no PTFE)	20 mL	00352010080094	Grey	No	
062	0939_QC410_210114	HDPE (no PTFE)	20 mL	00352010080119	Grey	No	
063	0939_QC411_210114	HDPE (no PTFE)	20 mL	00352010079936	Grey	No	
063	0939_QC411_210114	HDPE (no PTFE)	20 mL	00352010080104	Grey	No	
064	0939_QC412_210114	HDPE (no PTFE)	20 mL	00352010080116	Grey	No	

**CHAIN OF CUSTODY**

ALS COC#: 17751 ALS Laboratory: EM Melbourne

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER: [REDACTED]
PRIMARY SAMPLER: [REDACTED]CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
0

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

064 0939_QC412_210114

HDPE (no PTFE)

20 mL

00352010080101

Grey

No

Total Bottle Count: ALS: 162, Non ALS: 0

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1
 PROJECT MANAGER:
 PRIMARY SAMPLER:
 EMAIL REPORTS TO:
 EMAIL INVOICES TO:


TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:
 CONTACT PH: SAMPLER MOBILE:
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

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

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0939_MW21322_210119		19/01/2021 09:43 AM	Water	ALS: 2 Non ALS: 0	No	X		
002	0939_MW22767_210119		19/01/2021 09:44 AM	Water	ALS: 2 Non ALS: 0	No	X		
003	0939_QC413_210119		19/01/2021 09:45 AM	Water	ALS: 2 Non ALS: 0	Yes	-		

Environmental Division
 Melbourne
 Work Order Reference
EM2100623

 Telephone : -61-3-8549 9600

Received: 20/1/21 12:45
 Carrier: MYTHO 2023 TOLL
 C/note: 168 °C Seal: (N) (N)
 Ice / Icebricks: (N) (N)


RELINQUISHED BY:

 DATE TIME:

RECEIVED BY:

 DATE TIME:

RELINQUISHED BY:

 DATE TIME:

RECEIVED BY:

 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1
 PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:
 CONTACT PH: SAMPLER MOBILE:
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

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

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0939_MW21322_210119	HDPE (no PTFE)	20 mL	00352010079947	Grey	No	
001	0939_MW21322_210119	HDPE (no PTFE)	20 mL	00352010080003	Grey	No	
002	0939_MW22767_210119	HDPE (no PTFE)	20 mL	00352010079979	Grey	No	
002	0939_MW22767_210119	HDPE (no PTFE)	20 mL	00352010079921	Grey	No	
003	0939_QC413_210119	HDPE (no PTFE)	20 mL	00352010080163	Grey	No	
003	0939_QC413_210119	HDPE (no PTFE)	20 mL	00352010080162	Grey	No	

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

Rebatch

Client / Client code: AECOMAU
 Project: 0939 SA PFASOMP
 Project Manager: XXXXXXXXXX
 Date /time sample rec: Tuesday, 9 February 2021
 Date/time Instructions rec: 17/02/2021 13:27
 Due date: Standard
 Due date surcharge:

CS Contact:
 Additional Information:
 PO - 60612561 6.1,
 Quote SY/139/19 V3

Environmental Division
 Melbourne
 Work Order Reference
EM2102479



Telephone : + 61-3-8549 9600

Ma : 343
 BN
 18/2

New Lab ID	Sample information							Analysis							Shortest Holding time expiry			
	Client ID	Sampling Date / Time	Previous Work Order Reference	Previous ALS ID	Tray Number(s)	Container	Number of Containers	TDS, pH	Standard			Leach						
1	0939_SW003_210205	5/02/2021 0:00	EM2101800	1	MG 0275	500ml	1	X										04-Aug-21
2	0939_SW018_210205	5/02/2021 0:00	EM2101800	3	MG 0275	500ml	1	X										04-Aug-21
3	0939_SW050_210205	5/02/2021 0:00	EM2101800	8	MG 0275	500ml	1	X										04-Aug-21
4	0939_SW058_210205	5/02/2021 0:00	EM2101800	12	MG 0275	500ml	1	X										04-Aug-21
5	0939_SW009_210205	5/02/2021 0:00	EM2101800	24	MG 0275	500ml	1	X										04-Aug-21
TOTAL							5											

[REDACTED]
From:

Sent:

Wednesday, 17 February 2021 1:27 PM

To:

Subject:

[EXTERNAL] - Analysis for EM2101800

CAUTION: This email originated from outside of ALS. Do not click links or open attachments unless you recognize the sender and are sure content is relevant to you.

Hi Peter,

Could you please let me know if it will be possible to have samples selected for fresh WATER in batch EM2101800 analysed for pH and TDS please (just noticed the COC had the groundwater suite on it but was for surface water samples)?

Thank you,

[REDACTED]
AECOM

Level 28, 91 King William Street, Adelaide, SA 5000

T +61 8 7131 0252 F +61 8 7223 5499

www.aecom.com

Please consider the environment before printing this email.

From: [REDACTED]
Sent: Wednesday, 17 February 2021 3:12 PM
To: COC Melbourne
Subject: REBATCH - EM2101800 - AECOMAU
Attachments: [EXTERNAL] - Analysis for EM2101800; AECOM - EM2101800.xlsm

[REDACTED]

2-4 Westall Rd
Springvale Vic 3171
Australia

 [Subscribe to EnviroMail™](#)  [Follow us on LinkedIn](#)



See how ALS is making sampling easier! [Register](#) your interest here.

Right Solutions • Right Partner
www.alsglobal.com



CHAIN OF CUSTODY

COC#: 18622 ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFSOMP

SITE: SA_0939_PFSOMP-SW

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

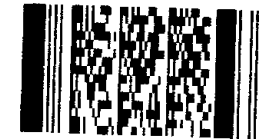
/ ES2019AECOMAU003
0

SAMPLE DETAILS

ANALYSIS REQUIRED

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0939_SW003_210205		05/02/2021 09:08 AM	Water	ALS: 5 Non ALS: 0	No	X			
002	0939_MW2150_210205		05/02/2021 09:56 AM	Water	ALS: 2 Non ALS: 0	No		X		
003	0939_SW018_210205		05/02/2021 10:21 AM	Water	ALS: 5 Non ALS: 0	No	X			
004	0939_SW017_210205		05/02/2021 10:32 AM	Water	ALS: 2 Non ALS: 0	No		X		
005	0939_SW019_210205		05/02/2021 11:01 AM	Water	ALS: 2 Non ALS: 0	No		X		
006	0939_QC101_210205		05/02/2021 11:01 AM	Water	ALS: 2 Non ALS: 0	No		X		
007	0939_SW021_210205		05/02/2021 11:23 AM	Water	ALS: 2 Non ALS: 0	No		X		
008	0939_SW050_210205		05/02/2021 12:12 PM	Water	ALS: 5 Non ALS: 0	No	X			
009	0939_SW054_210205		05/02/2021 12:15 PM	Water	ALS: 2 Non ALS: 0	No		X		

Environmental Division
Melbourne
Work Order Reference
EM2101800



Telephone : + 61-3-8549 9600

SCANNED

Handwritten initials: 05/02

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFASOMP

SITE: SA_0939_PFASOMP-SW

ORDER NO: 60612561 6.1

PROJECT MANAGER:

CONTACT PH:

SAMPLER MOBILE:

PRIMARY SAMPLER:

QUOTE NO: SY/139/19 V3

/ ES2019AECOMAU003
0

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

FREIGHT

SAMPLE DETAILS

ANALYSIS REQUIRED

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
010	0939_SW006_210205		05/02/2021 12:35 PM	Water	ALS: 2 Non ALS: 0	No		X		
011	0939_SW010_210205		05/02/2021 01:29 PM	Water	ALS: 2 Non ALS: 0	No		X		
012	0939_SW058_210205		05/02/2021 01:27 PM	Water	ALS: 5 Non ALS: 0	No	X			
013	0939_SW078_210205		05/02/2021 02:52 PM	Water	ALS: 2 Non ALS: 0	No		X		
014	0939_SW062_210205		05/02/2021 02:52 PM	Water	ALS: 2 Non ALS: 0	No		X		
015	0939_SW059_210205		05/02/2021 02:53 PM	Water	ALS: 2 Non ALS: 0	No		X		
016	0939_SW012_210205		05/02/2021 02:54 PM	Water	ALS: 2 Non ALS: 0	No		X		
017	0939_SW033_210205		05/02/2021 02:55 PM	Water	ALS: 2 Non ALS: 0	No		X		
29 018	0939_SW028_210205		05/02/2021 02:55 PM	Water	ALS: 2 Non ALS: 0	No		X		

Received: 9/11/20 11:00 Carrier: TNT

C/note: 11 20 9635

Temp: 11.9°C Seal: Y/N

Ice / Icebricks / NA



SCANNED

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFSOMP

SITE: SA_0939_PFSOMP-SW

ORDER NO: 60612561 6.1

PROJECT MANAGER:

CONTACT PH:

SAMPLER MOBILE:

PRIMARY SAMPLER:

QUOTE NO: SY/139/19 V3

/ ES2019AECOMAU003
0

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE DETAILS

ANALYSIS REQUIRED

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	0939_SW029_210205		05/02/2021 02:56 PM	Water	ALS: 2 Non ALS: 0	No		X		
020	0939_QC102_210205		05/02/2021 02:58 PM	Water	ALS: 2 Non ALS: 0	No		X		
021	0939_QC103_210205		05/02/2021 02:59 PM	Water	ALS: 2 Non ALS: 0	No		X		
022	0939_SW032_210205		05/02/2021 03:00 PM	Water	ALS: 2 Non ALS: 0	No		X		
023	0939_SW011_210205		05/02/2021 03:00 PM	Water	ALS: 2 Non ALS: 0	No		X		
024	0939_SW009_210205		05/02/2021 03:01 PM	Water	ALS: 5 Non ALS: 0	No	X			
025	0939_QC301_210205		05/02/2021 03:17 PM	Water	ALS: 2 Non ALS: 0	No		X		
026	0939_QC302_210205		05/02/2021 03:19 PM	Water	ALS: 2 Non ALS: 0	No		X		
027	0939_QC402_210205		05/02/2021 03:19 PM	Water	ALS: 2 Non ALS: 0	No		X		

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFASOMP
 SITE: SA_0939_PFASOMP-SW
 ORDER NO: 60612561 6.1

PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY: [Signature]
 DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
028	0939_QC401_210205		05/02/2021 03:20 PM	Water	ALS: 2 Non ALS: 0	No		X		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFSOMP

SITE: SA_0939_PFSOMP-SW

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

DATE TIME:

RECEIVED BY:

DATE TIME:

RELINQUISHED BY:

DATE TIME:

RECEIVED BY:

DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0939_SW003_210205	HDPE (no PTFE)	20 mL	00352010074537	Grey	No	
001	0939_SW003_210205	HDPE (no PTFE)	20 mL	00352010074426	Grey	No	
001	0939_SW003_210205	Clear Plastic Bottle - Natural	500 mL	00070519201074	Green	No	
001	0939_SW003_210205	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180820057984	Purple	No	
001	0939_SW003_210205	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180820058494	Purple	No	
002	0939_MW2150_210205	HDPE (no PTFE)	20 mL	00352010074542	Grey	No	
002	0939_MW2150_210205	HDPE (no PTFE)	20 mL	00352010074526	Grey	No	
003	0939_SW018_210205	Clear Plastic Bottle - Natural	500 mL	00070519201176	Green	No	
003	0939_SW018_210205	HDPE (no PTFE)	20 mL	00352010074480	Grey	No	
003	0939_SW018_210205	HDPE (no PTFE)	20 mL	00352010074552	Grey	No	
003	0939_SW018_210205	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180820058504	Purple	No	
003	0939_SW018_210205	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180820058299	Purple	No	
004	0939_SW017_210205	HDPE (no PTFE)	20 mL	00352010055144	Grey	No	
004	0939_SW017_210205	HDPE (no PTFE)	20 mL	00352010074401	Grey	No	
005	0939_SW019_210205	HDPE (no PTFE)	20 mL	00352010074572	Grey	No	
005	0939_SW019_210205	HDPE (no PTFE)	20 mL	00352010074610	Grey	No	
006	0939_QC101_210205	HDPE (no PTFE)	20 mL	00352010055145	Grey	No	
006	0939_QC101_210205	HDPE (no PTFE)	20 mL	00352010055182	Grey	No	
007	0939_SW021_210205	HDPE (no PTFE)	20 mL	00352010055179	Grey	No	
007	0939_SW021_210205	HDPE (no PTFE)	20 mL	00352010074520	Grey	No	
008	0939_SW050_210205	HDPE (no PTFE)	20 mL	00352010055173	Grey	No	
008	0939_SW050_210205	HDPE (no PTFE)	20 mL	00352010074467	Grey	No	
008	0939_SW050_210205	Clear Plastic Bottle - Natural	500 mL	00070519201106	Green	No	
008	0939_SW050_210205	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180820058374	Purple	No	
008	0939_SW050_210205	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180820058480	Purple	No	
009	0939_SW054_210205	HDPE (no PTFE)	20 mL	00352010074464	Grey	No	

**CHAIN OF CUSTODY**

COC#: 18622 ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFSOMP

SITE: SA_0939_PFSOMP-SW

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

009	0939_SW054_210205	HDPE (no PTFE)	20 mL	00352010055180	Grey	No	
010	0939_SW006_210205	HDPE (no PTFE)	20 mL	00352010074428	Grey	No	
010	0939_SW006_210205	HDPE (no PTFE)	20 mL	00352010074584	Grey	No	
011	0939_SW010_210205	HDPE (no PTFE)	20 mL	00352010074507	Grey	No	
011	0939_SW010_210205	HDPE (no PTFE)	20 mL	00352010074453	Grey	No	
012	0939_SW058_210205	Clear Plastic Bottle - Natural	500 mL	00070519201042	Green	No	
012	0939_SW058_210205	HDPE (no PTFE)	20 mL	00352010074604	Grey	No	
012	0939_SW058_210205	HDPE (no PTFE)	20 mL	00352010055143	Grey	No	
012	0939_SW058_210205	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180820058506	Purple	No	
012	0939_SW058_210205	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180820058166	Purple	No	
013	0939_SW078_210205	HDPE (no PTFE)	20 mL	00352010080078	Grey	No	
013	0939_SW078_210205	HDPE (no PTFE)	20 mL	00352010079995	Grey	No	
014	0939_SW062_210205	HDPE (no PTFE)	20 mL	00352010048955	Grey	No	
014	0939_SW062_210205	HDPE (no PTFE)	20 mL	00352010049031	Grey	No	
015	0939_SW059_210205	HDPE (no PTFE)	20 mL	00352010049149	Grey	No	
015	0939_SW059_210205	HDPE (no PTFE)	20 mL	00352010049182	Grey	No	
016	0939_SW012_210205	HDPE (no PTFE)	20 mL	00352010079927	Grey	No	
016	0939_SW012_210205	HDPE (no PTFE)	20 mL	00352010080037	Grey	No	
017	0939_SW033_210205	HDPE (no PTFE)	20 mL	00352010074519	Grey	No	
017	0939_SW033_210205	HDPE (no PTFE)	20 mL	00352010074424	Grey	No	
018	0939_SW028_210205	} N/R HDPE (no PTFE)	20 mL	00352010080030	Grey	No	
018	0939_SW028_210205	} HDPE (no PTFE)	20 mL	00352010080150	Grey	No	
019	0939_SW029_210205	HDPE (no PTFE)	20 mL	00352010080064	Grey	No	
019	0939_SW029_210205	HDPE (no PTFE)	20 mL	00352010079912	Grey	No	
020	0939_QC102_210205	HDPE (no PTFE)	20 mL	00352010055155	Grey	No	
020	0939_QC102_210205	HDPE (no PTFE)	20 mL	00352010055158	Grey	No	
021	0939_QC103_210205	HDPE (no PTFE)	20 mL	00352010074463	Grey	No	

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFSOMP

SITE: SA_0939_PFSOMP-SW

ORDER NO: 60612561 6.1

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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

021	0939_QC103_210205	HDPE (no PTFE)	20 mL	00352010055171	Grey	No	
022	0939_SW032_210205	HDPE (no PTFE)	20 mL	00352010074551	Grey	No	
022	0939_SW032_210205	HDPE (no PTFE)	20 mL	00352010055137	Grey	No	
023	0939_SW011_210205	HDPE (no PTFE)	20 mL	00352010080021	Grey	No	
023	0939_SW011_210205	HDPE (no PTFE)	20 mL	00352010080038	Grey	No	
024	0939_SW009_210205	HDPE (no PTFE)	20 mL	00352010074462	Grey	No	
024	0939_SW009_210205	HDPE (no PTFE)	20 mL	00352010074514	Grey	No	
024	0939_SW009_210205	Clear Plastic Bottle - Natural	500 mL	00070519201114	Green	No	
024	0939_SW009_210205	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180820058381	Purple	No	
024	0939_SW009_210205	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180820058284	Purple	No	
025	0939_QC301_210205	HDPE (no PTFE)	20 mL	00352010055169	Grey	No	
025	0939_QC301_210205	HDPE (no PTFE)	20 mL	00352010074442	Grey	No	
026	0939_QC302_210205	HDPE (no PTFE)	20 mL	00352010074425	Grey	No	
026	0939_QC302_210205	HDPE (no PTFE)	20 mL	00352010055162	Grey	No	
027	0939_QC402_210205	HDPE (no PTFE)	20 mL	00352010074487	Grey	No	
027	0939_QC402_210205	HDPE (no PTFE)	20 mL	00352010074620	Grey	No	
028	0939_QC401_210205	HDPE (no PTFE)	20 mL	00352010074405	Grey	No	
028	0939_QC401_210205	HDPE (no PTFE)	20 mL	00352010074413	Grey	No	

Total Bottle Count: ALS: 71, Non ALS: 0



ALS Use Only

Custody Document for Submissions via ALS Compass App

Project: SA_0939_PFA50MP Client: AECOM

Project Manager: [Redacted]
Phone: [Redacted]

ALS Compass COG Reference: 18622 # Samples: 28

Sampler: [Redacted]
Phone: [Redacted]

Turnaround Requirements: Standard Urgent

Special Instructions:

Custody:

Relinquished by: [Redacted]	Received by: [Redacted]	Relinquished by:	Received by:
Date / Time: <u>8/2/21</u>	Date / Time: <u>9/2 10-00</u>	Date / Time:	Date / Time:



ALS Use Only

MPW: 0055

Custody Document for Submissions via ALS Compass App

Project: A_0939 IFASAMP Client: AECOM Project Manager: [Redacted] Phone: [Redacted]

ALS Compass COG Reference: [Redacted] # Samples: 1 Sampler: [Redacted] Phone: [Redacted]

Turnaround Requirements: Standard _____ Urgent _____

Special Instructions: # 029
Add this sample to batch EM2101800 (sample missing ~~at site~~ but was on coc original).

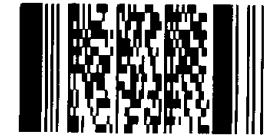
Custody:	
Relinquished by: [Redacted]	Received by: [Redacted]
Date / Time: 11/2/21	Date / Time: 12/2 11-600
Relinquished by:	Received by:
Date / Time:	Date / Time:



FREIGHT

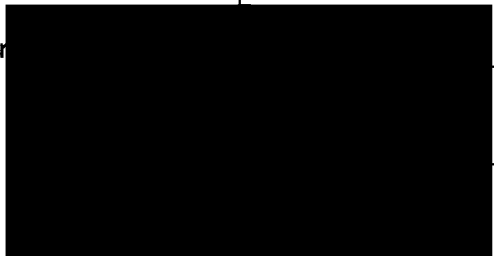
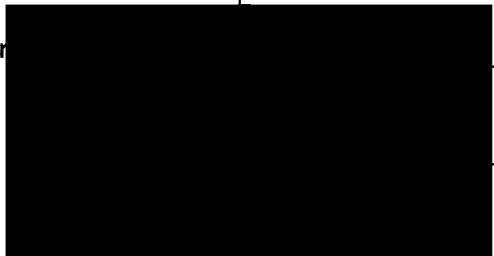


Environmental Division
Melbourne
Work Order Reference
EM2100359




Telephone : + 61-3-8549 9600



Custody Document for Submissions via ALS Compass App

Project: SA-0939-PFASOMP Client: AECOM Department of Defence Project Manager: 
 ALS Compass COC Reference: 17648 # Samples: 83 Sampler: 
 Turnaround Requirements: Standard Urgent

Special Instructions:

Received: 13/01 9:10 Carrier: AAE
 C/note: 05085811
 Temp: °C Seal: (Y)N
 (Ice) Icebricks / NA 

Custody:

Relinquished by: 	Received by: 	Relinquished by:	Received by:
Date / Time: 12/01 4:35pm	Date / Time: 13/01 9:10	Date / Time:	Date / Time:

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

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1
 PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

LABORATORY USE ONLY (Circle)

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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0939_MW2137_210111		11/01/2021 09:31 AM	Water	ALS: 2 Non ALS: 0	No		X		
002	0939_MW2185_210111		11/01/2021 09:57 AM	Water	ALS: 5 Non ALS: 0	No	X			
003	0939_MW2184_210111		11/01/2021 10:10 AM	Water	ALS: 5 Non ALS: 0	No	X			
004	0939_MW2281_210111		11/01/2021 10:32 AM	Water	ALS: 5 Non ALS: 0	No	X			
005	0939_MW2286_210111		11/01/2021 10:38 AM	Water	ALS: 5 Non ALS: 0	No	X			
006	0939_MW2183_210111		11/01/2021 11:03 AM	Water	ALS: 2 Non ALS: 0	No		X		
007	0939_MW2182_210111		11/01/2021 11:02 AM	Water	ALS: 2 Non ALS: 0	No		X		
008	0939_MW2285_210111		11/01/2021 11:18 AM	Water	ALS: 2 Non ALS: 0	No		X		
009	0939_MW2275_210111		11/01/2021 11:23 AM	Water	ALS: 2 Non ALS: 0	No		X		

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

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

LABORATORY USE ONLY (Circle)

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

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1
 PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
010	0939_MW2180_210111		11/01/2021 11:29 AM	Water	ALS: 2 Non ALS: 0	No		X		
011	0939_QC101_210111		11/01/2021 11:33 AM	Water	ALS: 2 Non ALS: 0	No		X		
012	0939_QC201_210111	Please forward to NMI	11/01/2021 11:33 AM	Water	ALS: 2 Non ALS: 0	Yes		-		
013	0939_MW2177_210111		11/01/2021 11:45 AM	Water	ALS: 2 Non ALS: 0	No		X		
014	0939_MW2175_210111		11/01/2021 11:56 AM	Water	ALS: 2 Non ALS: 0	No		X		
015	0939_MW2176_210111		11/01/2021 12:01 PM	Water	ALS: 2 Non ALS: 0	No		X		
016	0939_MW2172_210111		11/01/2021 12:13 PM	Water	ALS: 2 Non ALS: 0	No		X		
017	0939_MW2173_210111		11/01/2021 12:19 PM	Water	ALS: 2 Non ALS: 0	No		X		
018	0939_MW2145_210111		11/01/2021 12:41 PM	Water	ALS: 2 Non ALS: 0	No		X		

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

PROJECT MANAGER:
 PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

EMAIL REPORTS TO:

EMAIL INVOICES TO:

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	0939_MW2129_210111		11/01/2021 12:47 PM	Water	ALS: 2 Non ALS: 0	No		X		
020	0939_MW2169_210111		11/01/2021 12:55 PM	Water	ALS: 2 Non ALS: 0	No		X		
021	0939_MW2139_210111		11/01/2021 01:23 PM	Water	ALS: 2 Non ALS: 0	No		X		
022	0939_MW2166_210111		11/01/2021 01:36 PM	Water	ALS: 2 Non ALS: 0	No		X		
023	0939_QC102_210111		11/01/2021 01:45 PM	Water	ALS: 2 Non ALS: 0	No		X		
024	0939_QC202_210111	Please forward to NMI	11/01/2021 01:46 PM	Water	ALS: 2 Non ALS: 0	Yes		-		
025	0939_MW2394_210111	Extra sample volume for lab QC	11/01/2021 02:01 PM	Water	ALS: 4 Non ALS: 0	No		X		
026	0939_MW2411_210111	Extra sample volume for lab QC	11/01/2021 02:14 PM	Water	ALS: 4 Non ALS: 0	No		X		
027	0939_MW2126_210111		11/01/2021 02:31 PM	Water	ALS: 5 Non ALS: 0	No	X			

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1
 PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
028	0939_MW2358_210111		11/01/2021 02:35 PM	Water	ALS: 5 Non ALS: 0	No	X			
029	0939_MW2162_210111		11/01/2021 02:49 PM	Water	ALS: 2 Non ALS: 0	No		X		
030	0939_MW2202_210111		11/01/2021 03:23 PM	Water	ALS: 2 Non ALS: 0	No		X		
031	0939_MW2201_210111		11/01/2021 03:24 PM	Water	ALS: 2 Non ALS: 0	No		X		
032	0939_MW2120_210111		11/01/2021 03:58 PM	Water	ALS: 5 Non ALS: 0	No	X			
033	0939_QC103_210111		11/01/2021 04:00 PM	Water	ALS: 5 Non ALS: 0	No	X			
034	0939_QC203_210111	Please forward to NMI	11/01/2021 04:01 PM	Water	ALS: 5 Non ALS: 0	Yes	-			
035	0939_MW2270_210111		11/01/2021 04:16 PM	Water	ALS: 5 Non ALS: 0	No	X			
036	0939_MW2200_210111		11/01/2021 04:25 PM	Water	ALS: 5 Non ALS: 0	No	X			

CHAIN OF CUSTODY
 ALS COC#: 17648 ALS Laboratory: EM Melbourne

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1
 PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
037	0939_MW2116_210112		12/01/2021 09:44 AM	Water	ALS: 2 Non ALS: 0	No		X		
038	0939_MW2130_210112		12/01/2021 09:53 AM	Water	ALS: 2 Non ALS: 0	No		X		
039	0939_MW2210_210112		12/01/2021 10:03 AM	Water	ALS: 2 Non ALS: 0	No		X		
040	0939_MW2131_210112	Extra volume for lab QC	12/01/2021 10:06 AM	Water	ALS: 4 Non ALS: 0	No		X		
041	0939_MW2528_210112		12/01/2021 10:22 AM	Water	ALS: 2 Non ALS: 0	No		X		
042	0939_MW2209_210112		12/01/2021 10:31 AM	Water	ALS: 2 Non ALS: 0	No		X		
043	0939_MW2157_210112		12/01/2021 10:38 AM	Water	ALS: 2 Non ALS: 0	No		X		
044	0939_MW2114_210112		12/01/2021 10:47 AM	Water	ALS: 2 Non ALS: 0	No		X		
045	0939_MW2490_210112		12/01/2021 11:04 AM	Water	ALS: 2 Non ALS: 0	No		X		

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
046	0939_MW2158_210112		12/01/2021 11:20 AM	Water	ALS: 5 Non ALS: 0	No	X			
047	0939_MW2148_210112		12/01/2021 11:33 AM	Water	ALS: 5 Non ALS: 0	No	X			
048	0939_QC104_210112		12/01/2021 11:46 AM	Water	ALS: 5 Non ALS: 0	No	X			
049	0939_QC204_210112	Please forward toNMI	12/01/2021 11:47 AM	Water	ALS: 5 Non ALS: 0	Yes	-			
050	0939_MW2272_210112		12/01/2021 11:49 AM	Water	ALS: 5 Non ALS: 0	No	X			
051	0939_MW2284_210112		12/01/2021 11:59 AM	Water	ALS: 5 Non ALS: 0	No	X			
052	0661_MW2325_210112		12/01/2021 12:17 PM	Water	ALS: 2 Non ALS: 0	No		X		
053	0939_MW2218_210112		12/01/2021 12:34 PM	Water	ALS: 2 Non ALS: 0	No		X		
054	0939_MW2134_210112		12/01/2021 12:37 PM	Water	ALS: 2 Non ALS: 0	No		X		

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

PROJECT MANAGER:
 PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

EMAIL REPORTS TO:

EMAIL INVOICES TO:

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
055	0939_MW2216_210112		12/01/2021 12:57 PM	Water	ALS: 2 Non ALS: 0	No		X		
056	0939_MW2135_210112		12/01/2021 01:02 PM	Water	ALS: 2 Non ALS: 0	No		X		
057	0939_MW4218_210112		12/01/2021 02:02 PM	Water	ALS: 2 Non ALS: 0	No		X		
058	0939_MW4061_210112		12/01/2021 02:26 PM	Water	ALS: 2 Non ALS: 0	No		X		
059	0939_QC105_210112		12/01/2021 02:28 PM	Water	ALS: 2 Non ALS: 0	No		X		
060	0939_QC205_210112	Please forward to NMI	12/01/2021 02:29 PM	Water	ALS: 2 Non ALS: 0	Yes		-		
061	0939_MW4065_210112		12/01/2021 02:39 PM	Water	ALS: 2 Non ALS: 0	No		X		
062	0939_MW4009_210112		12/01/2021 02:56 PM	Water	ALS: 2 Non ALS: 0	No		X		
063	0939_MW4022_210112		12/01/2021 03:02 PM	Water	ALS: 2 Non ALS: 0	No		X		

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: C

Other comments:

SAMPLE DETAILS

ANALYSIS REQUIRED

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED			ADDITIONAL INFORMATION
							Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	
064	0939_MW4020_210112		12/01/2021 03:11 PM	Water	ALS: 2 Non ALS: 0	No		X		
065	0939_MW4021_210112	Extra volume for lab QC	12/01/2021 03:18 PM	Water	ALS: 4 Non ALS: 0	No		X		
066	0939_MW4071_210112	Extra volume for lab QC	12/01/2021 03:39 PM	Water	ALS: 4 Non ALS: 0	No		X		
067	0939_MW4024_210112	Extra volume for lab QC	12/01/2021 03:44 PM	Water	ALS: 4 Non ALS: 0	No		X		
068	0939_MW4023_210112	Extra volume for lab QC	12/01/2021 03:55 PM	Water	ALS: 4 Non ALS: 0	No		X		
069	0939_MW4060_210112		12/01/2021 04:07 PM	Water	ALS: 2 Non ALS: 0	No		X		
070	0939_QC106_210112		12/01/2021 04:08 PM	Water	ALS: 2 Non ALS: 0	No		X		
071	0939_QC206_210112	Please forward to NMI	12/01/2021 04:08 PM	Water	ALS: 2 Non ALS: 0	Yes		-		
072	0939_QC301_210111		11/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	No		X		

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
073	0939_QC302_210111		11/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	No		X		
074	0939_QC303_210111		11/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	No		X		
075	0939_QC304_210112		12/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	No		X		
076	0939_QC305_210112		12/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	No		X		
077	0939_QC306_210112		12/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	No		X		
078	0939_QC401_210111		11/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	Yes		-		
079	0939_QC402_210111		12/01/2021 05:00 PM	Water	ALS: 2 Non ALS: 0	Yes		-		
080	0939_QC403_210111		11/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	Yes		-		
081	0939_QC404_210112		12/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	Yes		-		

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
082	0939_QC405_210112		12/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	Yes		-		
083	0939_QC406_210112		12/01/2021 04:27 PM	Water	ALS: 2 Non ALS: 0	Yes		-		

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFSOMP

SITE: SA_0939_PFSOMP

ORDER NO: 60612561 6.1

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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

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

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0939_MW2137_210111	HDPE (no PTFE)	20 mL	00352010048948	Grey	No	
001	0939_MW2137_210111	HDPE (no PTFE)	20 mL	00352010049129	Grey	No	
002	0939_MW2185_210111	HDPE (no PTFE)	20 mL	00352010049066	Grey	No	
002	0939_MW2185_210111	HDPE (no PTFE)	20 mL	00352010048911	Grey	No	
002	0939_MW2185_210111	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023327	Purple	No	
002	0939_MW2185_210111	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023322	Purple	No	
002	0939_MW2185_210111	Clear Plastic Bottle - Natural	500 mL	00070519201864	Green	No	
003	0939_MW2184_210111	Clear Plastic Bottle - Natural	500 mL	00070519201886	Green	No	
003	0939_MW2184_210111	HDPE (no PTFE)	20 mL	00352010049190	Grey	No	
003	0939_MW2184_210111	HDPE (no PTFE)	20 mL	00352010049014	Grey	No	
003	0939_MW2184_210111	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023342	Purple	No	
003	0939_MW2184_210111	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023341	Purple	No	
004	0939_MW2281_210111	HDPE (no PTFE)	20 mL	00352010049033	Grey	No	
004	0939_MW2281_210111	HDPE (no PTFE)	20 mL	00352010048988	Grey	No	
004	0939_MW2281_210111	Clear Plastic Bottle - Natural	500 mL	00070519201876	Green	No	
004	0939_MW2281_210111	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023323	Purple	No	
004	0939_MW2281_210111	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023324	Purple	No	
005	0939_MW2286_210111	Clear Plastic Bottle - Natural	500 mL	00070519201890	Green	No	
005	0939_MW2286_210111	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023310	Purple	No	
005	0939_MW2286_210111	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023311	Purple	No	
005	0939_MW2286_210111	HDPE (no PTFE)	20 mL	00352010049099	Grey	No	
005	0939_MW2286_210111	HDPE (no PTFE)	20 mL	00352010049110	Grey	No	
006	0939_MW2183_210111	HDPE (no PTFE)	20 mL	00352010049175	Grey	No	
006	0939_MW2183_210111	HDPE (no PTFE)	20 mL	00352010049156	Grey	No	
007	0939_MW2182_210111	HDPE (no PTFE)	20 mL	00352010058129	Grey	No	
007	0939_MW2182_210111	HDPE (no PTFE)	20 mL	00352010057991	Grey	No	

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFSOMP

SITE: SA_0939_PFSOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

008	0939_MW2285_210111	HDPE (no PTFE)	20 mL	00352010049104	Grey	No	
008	0939_MW2285_210111	HDPE (no PTFE)	20 mL	00352010049061	Grey	No	
009	0939_MW2275_210111	HDPE (no PTFE)	20 mL	00352010049004	Grey	No	
009	0939_MW2275_210111	HDPE (no PTFE)	20 mL	00352010048929	Grey	No	
010	0939_MW2180_210111	HDPE (no PTFE)	20 mL	00352010049057	Grey	No	
010	0939_MW2180_210111	HDPE (no PTFE)	20 mL	00352010049169	Grey	No	
011	0939_QC101_210111	HDPE (no PTFE)	20 mL	00352010049015	Grey	No	
011	0939_QC101_210111	HDPE (no PTFE)	20 mL	00352010048904	Grey	No	
012	0939_QC201_210111	HDPE (no PTFE)	20 mL	00350019184664	Grey	No	
012	0939_QC201_210111	HDPE (no PTFE)	20 mL	00350019184752	Grey	No	
013	0939_MW2177_210111	HDPE (no PTFE)	20 mL	00352010048931	Grey	No	
013	0939_MW2177_210111	HDPE (no PTFE)	20 mL	00352010048978	Grey	No	
014	0939_MW2175_210111	HDPE (no PTFE)	20 mL	00352010049000	Grey	No	
014	0939_MW2175_210111	HDPE (no PTFE)	20 mL	00352010049018	Grey	No	
015	0939_MW2176_210111	HDPE (no PTFE)	20 mL	00352005000391	Grey	No	
015	0939_MW2176_210111	HDPE (no PTFE)	20 mL	00352005000376	Grey	No	
016	0939_MW2172_210111	HDPE (no PTFE)	20 mL	00352010058137	Grey	No	
016	0939_MW2172_210111	HDPE (no PTFE)	20 mL	00352010057961	Grey	No	
017	0939_MW2173_210111	HDPE (no PTFE)	20 mL	00352010049027	Grey	No	
017	0939_MW2173_210111	HDPE (no PTFE)	20 mL	00352010048979	Grey	No	
018	0939_MW2145_210111	HDPE (no PTFE)	20 mL	00352010049122	Grey	No	
018	0939_MW2145_210111	HDPE (no PTFE)	20 mL	00352010049098	Grey	No	
019	0939_MW2129_210111	HDPE (no PTFE)	20 mL	00352010049047	Grey	No	
019	0939_MW2129_210111	HDPE (no PTFE)	20 mL	00352010048993	Grey	No	
020	0939_MW2169_210111	HDPE (no PTFE)	20 mL	00352005000337	Grey	No	
020	0939_MW2169_210111	HDPE (no PTFE)	20 mL	00352005000548	Grey	No	
021	0939_MW2139_210111	HDPE (no PTFE)	20 mL	00352010049134	Grey	No	

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

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFSOMP
 SITE: SA_0939_PFSOMP
 ORDER NO: 60612561 6.1
 PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:
 CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

LABORATORY USE ONLY (Circle)

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

021	0939_MW2139_210111	HDPE (no PTFE)	20 mL	00352010049092	Grey	No	
022	0939_MW2166_210111	HDPE (no PTFE)	20 mL	00352010048919	Grey	No	
022	0939_MW2166_210111	HDPE (no PTFE)	20 mL	00352010049021	Grey	No	
023	0939_QC102_210111	HDPE (no PTFE)	20 mL	00352010058004	Grey	No	
023	0939_QC102_210111	HDPE (no PTFE)	20 mL	00352010058236	Grey	No	
024	0939_QC202_210111	HDPE (no PTFE)	20 mL	00352010048972	Grey	No	
024	0939_QC202_210111	HDPE (no PTFE)	20 mL	00352010049158	Grey	No	
025	0939_MW2394_210111	HDPE (no PTFE)	20 mL	00352010058020	Grey	No	
025	0939_MW2394_210111	HDPE (no PTFE)	20 mL	00352010058072	Grey	No	
025	0939_MW2394_210111	HDPE (no PTFE)	20 mL	00352010049020	Grey	No	
025	0939_MW2394_210111	HDPE (no PTFE)	20 mL	00352010048939	Grey	No	
026	0939_MW2411_210111	HDPE (no PTFE)	20 mL	00352010058100	Grey	No	
026	0939_MW2411_210111	HDPE (no PTFE)	20 mL	00352010058255	Grey	No	
026	0939_MW2411_210111	HDPE (no PTFE)	20 mL	00352010058201	Grey	No	
026	0939_MW2411_210111	HDPE (no PTFE)	20 mL	00352010057999	Grey	No	
027	0939_MW2126_210111	Clear Plastic Bottle - Natural	500 mL	00070519201929	Green	No	
027	0939_MW2126_210111	HDPE (no PTFE)	20 mL	00352010058143	Grey	No	
027	0939_MW2126_210111	HDPE (no PTFE)	20 mL	00352010058083	Grey	No	
027	0939_MW2126_210111	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023343	Purple	No	
027	0939_MW2126_210111	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023334	Purple	No	
028	0939_MW2358_210111	Clear Plastic Bottle - Natural	500 mL	00070519201894	Green	No	
028	0939_MW2358_210111	HDPE (no PTFE)	20 mL	00352010058146	Grey	No	
028	0939_MW2358_210111	HDPE (no PTFE)	20 mL	00352010057983	Grey	No	
028	0939_MW2358_210111	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023361	Purple	No	
028	0939_MW2358_210111	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023360	Purple	No	
029	0939_MW2162_210111	HDPE (no PTFE)	20 mL	00352010058080	Grey	No	
029	0939_MW2162_210111	HDPE (no PTFE)	20 mL	00352010058269	Grey	No	

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFSOMP

SITE: SA_0939_PFSOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

030	0939_MW2202_210111	HDPE (no PTFE)	20 mL	00352010048973	Grey	No	
030	0939_MW2202_210111	HDPE (no PTFE)	20 mL	00352010049017	Grey	No	
031	0939_MW2201_210111	HDPE (no PTFE)	20 mL	00352010049125	Grey	No	
031	0939_MW2201_210111	HDPE (no PTFE)	20 mL	00352010048937	Grey	No	
032	0939_MW2120_210111	Clear Plastic Bottle - Natural	500 mL	00070519201859	Green	No	
032	0939_MW2120_210111	HDPE (no PTFE)	20 mL	00352010049089	Grey	No	
032	0939_MW2120_210111	HDPE (no PTFE)	20 mL	00352010049189	Grey	No	
032	0939_MW2120_210111	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023329	Purple	No	
032	0939_MW2120_210111	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023330	Purple	No	
033	0939_QC103_210111	Clear Plastic Bottle - Natural	500 mL	00070519201885	Green	No	
033	0939_QC103_210111	HDPE (no PTFE)	20 mL	00352010049165	Grey	No	
033	0939_QC103_210111	HDPE (no PTFE)	20 mL	00352010048897	Grey	No	
033	0939_QC103_210111	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023313	Purple	No	
033	0939_QC103_210111	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023355	Purple	No	
034	0939_QC203_210111	Clear Plastic Bottle - Natural	500 mL	00070519201860	Green	No	
034	0939_QC203_210111	HDPE (no PTFE)	20 mL	00352010058208	Grey	No	
034	0939_QC203_210111	HDPE (no PTFE)	20 mL	00352010058209	Grey	No	
034	0939_QC203_210111	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023339	Purple	No	
034	0939_QC203_210111	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023344	Purple	No	
035	0939_MW2270_210111	Clear Plastic Bottle - Natural	500 mL	00070519201898	Green	No	
035	0939_MW2270_210111	HDPE (no PTFE)	20 mL	00352010058075	Grey	No	
035	0939_MW2270_210111	HDPE (no PTFE)	20 mL	00352010057978	Grey	No	
035	0939_MW2270_210111	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023356	Purple	No	
035	0939_MW2270_210111	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023365	Purple	No	
036	0939_MW2200_210111	Clear Plastic Bottle - Natural	500 mL	00070519201934	Green	No	
036	0939_MW2200_210111	HDPE (no PTFE)	20 mL	00352010058274	Grey	No	
036	0939_MW2200_210111	HDPE (no PTFE)	20 mL	00352010058217	Grey	No	



CHAIN OF CUSTODY

COC#: 17648 ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFSOMP

SITE: SA_0939_PFSOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

036	0939_MW2200_210111	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023337	Purple	No	
036	0939_MW2200_210111	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023340	Purple	No	
037	0939_MW2116_210112	HDPE (no PTFE)	20 mL	00352010048928	Grey	No	
037	0939_MW2116_210112	HDPE (no PTFE)	20 mL	00352010049178	Grey	No	
038	0939_MW2130_210112	HDPE (no PTFE)	20 mL	00352010058098	Grey	No	
038	0939_MW2130_210112	HDPE (no PTFE)	20 mL	00352010058076	Grey	No	
039	0939_MW2210_210112	HDPE (no PTFE)	20 mL	00352005000366	Grey	No	
039	0939_MW2210_210112	HDPE (no PTFE)	20 mL	00352005000356	Grey	No	
040	0939_MW2131_210112	HDPE (no PTFE)	20 mL	00352010057979	Grey	No	
040	0939_MW2131_210112	HDPE (no PTFE)	20 mL	00352010058028	Grey	No	
040	0939_MW2131_210112	HDPE (no PTFE)	20 mL	00352010058240	Grey	No	
040	0939_MW2131_210112	HDPE (no PTFE)	20 mL	00352010058213	Grey	No	
041	0939_MW2528_210112	HDPE (no PTFE)	20 mL	00352010049193	Grey	No	
041	0939_MW2528_210112	HDPE (no PTFE)	20 mL	00352010048975	Grey	No	
042	0939_MW2209_210112	HDPE (no PTFE)	20 mL	00352010049025	Grey	No	
042	0939_MW2209_210112	HDPE (no PTFE)	20 mL	00352010049133	Grey	No	
043	0939_MW2157_210112	HDPE (no PTFE)	20 mL	00352010049115	Grey	No	
043	0939_MW2157_210112	HDPE (no PTFE)	20 mL	00352010049030	Grey	No	
044	0939_MW2114_210112	HDPE (no PTFE)	20 mL	00352010058248	Grey	No	
044	0939_MW2114_210112	HDPE (no PTFE)	20 mL	00352010058195	Grey	No	
045	0939_MW2490_210112	HDPE (no PTFE)	20 mL	00352010058230	Grey	No	
045	0939_MW2490_210112	HDPE (no PTFE)	20 mL	00352010058238	Grey	No	
046	0939_MW2158_210112	Clear Plastic Bottle - Natural	500 mL	00070519201978	Green	No	
046	0939_MW2158_210112	HDPE (no PTFE)	20 mL	00352010049105	Grey	No	
046	0939_MW2158_210112	HDPE (no PTFE)	20 mL	00352010049094	Grey	No	
046	0939_MW2158_210112	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023347	Purple	No	
046	0939_MW2158_210112	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023336	Purple	No	

**CHAIN OF CUSTODY**

COC#: 17648 ALS Laboratory: EM Melbourne

RELINQUISHED BY:**RECEIVED BY:****RELINQUISHED BY:****RECEIVED BY:**

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFSOMP

SITE: SA_0939_PFSOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: C

Other comments:

047	0939_MW2148_210112	Clear Plastic Bottle - Natural	500 mL	00070519202102	Green	No	
047	0939_MW2148_210112	HDPE (no PTFE)	20 mL	00352010049138	Grey	No	
047	0939_MW2148_210112	HDPE (no PTFE)	20 mL	00352010058167	Grey	No	
047	0939_MW2148_210112	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023332	Purple	No	
047	0939_MW2148_210112	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023368	Purple	No	
048	0939_QC104_210112	Clear Plastic Bottle - Natural	500 mL	00070519201858	Green	No	
048	0939_QC104_210112	HDPE (no PTFE)	20 mL	00352010049076	Grey	No	
048	0939_QC104_210112	HDPE (no PTFE)	20 mL	00352010049013	Grey	No	
048	0939_QC104_210112	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023328	Purple	No	
048	0939_QC104_210112	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023331	Purple	No	
049	0939_QC204_210112	Clear Plastic Bottle - Natural	500 mL	00070519201904	Green	No	
049	0939_QC204_210112	HDPE (no PTFE)	20 mL	00352010049024	Grey	No	
049	0939_QC204_210112	HDPE (no PTFE)	20 mL	00352010058216	Grey	No	
049	0939_QC204_210112	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023346	Purple	No	
049	0939_QC204_210112	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023352	Purple	No	
050	0939_MW2272_210112	Clear Plastic Bottle - Natural	500 mL	00070519201882	Green	No	
050	0939_MW2272_210112	HDPE (no PTFE)	20 mL	00352010058128	Grey	No	
050	0939_MW2272_210112	HDPE (no PTFE)	20 mL	00352010058247	Grey	No	
050	0939_MW2272_210112	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023335	Purple	No	
050	0939_MW2272_210112	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023348	Purple	No	
051	0939_MW2284_210112	Clear Plastic Bottle - Natural	500 mL	00070519201941	Green	No	
051	0939_MW2284_210112	HDPE (no PTFE)	20 mL	00352010058091	Grey	No	
051	0939_MW2284_210112	HDPE (no PTFE)	20 mL	00352010057985	Grey	No	
051	0939_MW2284_210112	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023357	Purple	No	
051	0939_MW2284_210112	Amber DOC Filtered- Sulfuric Preserved	40 mL	00180220023364	Purple	No	
052	0661_MW2325_210112	HDPE (no PTFE)	20 mL	00352010058221	Grey	No	
052	0661_MW2325_210112	HDPE (no PTFE)	20 mL	00352010057992	Grey	No	

**CHAIN OF CUSTODY**

COC#: 17648

ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFSOMP

SITE: SA_0939_PFSOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003

0

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

C

Other comments:

053	0939_MW2218_210112	HDPE (no PTFE)	20 mL	00352010048965	Grey	No	
053	0939_MW2218_210112	HDPE (no PTFE)	20 mL	00352010049079	Grey	No	
054	0939_MW2134_210112	HDPE (no PTFE)	20 mL	00352010048998	Grey	No	
054	0939_MW2134_210112	HDPE (no PTFE)	20 mL	00352010049045	Grey	No	
055	0939_MW2216_210112	HDPE (no PTFE)	20 mL	00350019184789	Grey	No	
055	0939_MW2216_210112	HDPE (no PTFE)	20 mL	00350019184583	Grey	No	
056	0939_MW2135_210112	HDPE (no PTFE)	20 mL	00352005001164	Grey	No	
056	0939_MW2135_210112	HDPE (no PTFE)	20 mL	00352005000936	Grey	No	
057	0939_MW4218_210112	HDPE (no PTFE)	20 mL	00352010079977	Grey	No	
057	0939_MW4218_210112	HDPE (no PTFE)	20 mL	00352010080033	Grey	No	
058	0939_MW4061_210112	HDPE (no PTFE)	20 mL	00352010079888	Grey	No	
058	0939_MW4061_210112	HDPE (no PTFE)	20 mL	00352010080172	Grey	No	
059	0939_QC105_210112	HDPE (no PTFE)	20 mL	00352010080137	Grey	No	
059	0939_QC105_210112	HDPE (no PTFE)	20 mL	00352010079992	Grey	No	
060	0939_QC205_210112	HDPE (no PTFE)	20 mL	00352010080083	Grey	No	
060	0939_QC205_210112	HDPE (no PTFE)	20 mL	00352010080090	Grey	No	
061	0939_MW4065_210112	HDPE (no PTFE)	20 mL	00352010080125	Grey	No	
061	0939_MW4065_210112	HDPE (no PTFE)	20 mL	00352010080005	Grey	No	
062	0939_MW4009_210112	HDPE (no PTFE)	20 mL	00352010080109	Grey	No	
062	0939_MW4009_210112	HDPE (no PTFE)	20 mL	00352010080072	Grey	No	
063	0939_MW4022_210112	HDPE (no PTFE)	20 mL	00352010080076	Grey	No	
063	0939_MW4022_210112	HDPE (no PTFE)	20 mL	00352010079890	Grey	No	
064	0939_MW4020_210112	HDPE (no PTFE)	20 mL	00352010079920	Grey	No	
064	0939_MW4020_210112	HDPE (no PTFE)	20 mL	00352010080156	Grey	No	
065	0939_MW4021_210112	HDPE (no PTFE)	20 mL	00352010079928	Grey	No	
065	0939_MW4021_210112	HDPE (no PTFE)	20 mL	00352010079919	Grey	No	
065	0939_MW4021_210112	HDPE (no PTFE)	20 mL	00352010079933	Grey	No	

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFSOMP

SITE: SA_0939_PFSOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

065	0939_MW4021_210112	HDPE (no PTFE)	20 mL	00352010079952	Grey	No	
066	0939_MW4071_210112	HDPE (no PTFE)	20 mL	00352010079967	Grey	No	
066	0939_MW4071_210112	HDPE (no PTFE)	20 mL	00352010080067	Grey	No	
066	0939_MW4071_210112	HDPE (no PTFE)	20 mL	00352010079902	Grey	No	
066	0939_MW4071_210112	HDPE (no PTFE)	20 mL	00352010080148	Grey	No	
067	0939_MW4024_210112	HDPE (no PTFE)	20 mL	00352010079938	Grey	No	
067	0939_MW4024_210112	HDPE (no PTFE)	20 mL	00352010080106	Grey	No	
067	0939_MW4024_210112	HDPE (no PTFE)	20 mL	00352010079896	Grey	No	
067	0939_MW4024_210112	HDPE (no PTFE)	20 mL	00352010080015	Grey	No	
068	0939_MW4023_210112	HDPE (no PTFE)	20 mL	00352010079983	Grey	No	
068	0939_MW4023_210112	HDPE (no PTFE)	20 mL	00352010079923	Grey	No	
068	0939_MW4023_210112	HDPE (no PTFE)	20 mL	00352010080051	Grey	No	
068	0939_MW4023_210112	HDPE (no PTFE)	20 mL	00352010080142	Grey	No	
069	0939_MW4060_210112	HDPE (no PTFE)	20 mL	00352010079955	Grey	No	
069	0939_MW4060_210112	HDPE (no PTFE)	20 mL	00352010080081	Grey	No	
070	0939_QC106_210112	HDPE (no PTFE)	20 mL	00352010080073	Grey	No	
070	0939_QC106_210112	HDPE (no PTFE)	20 mL	00352010079988	Grey	No	
071	0939_QC206_210112	HDPE (no PTFE)	20 mL	00352010080131	Grey	No	
071	0939_QC206_210112	HDPE (no PTFE)	20 mL	00352010080112	Grey	No	
072	0939_QC301_210111	HDPE (no PTFE)	20 mL	00352010080050	Grey	No	
072	0939_QC301_210111	HDPE (no PTFE)	20 mL	00352010080145	Grey	No	
073	0939_QC302_210111	HDPE (no PTFE)	20 mL	00352010080080	Grey	No	
073	0939_QC302_210111	HDPE (no PTFE)	20 mL	00352010080084	Grey	No	
074	0939_QC303_210111	HDPE (no PTFE)	20 mL	00352010080126	Grey	No	
074	0939_QC303_210111	HDPE (no PTFE)	20 mL	00352010080155	Grey	No	
075	0939_QC304_210112	HDPE (no PTFE)	20 mL	00352010080045	Grey	No	
075	0939_QC304_210112	HDPE (no PTFE)	20 mL	00352010079904	Grey	No	

**CHAIN OF CUSTODY**

COC#: 17648

ALS Laboratory: EM Melbourne

RELINQUISHED BY:**RECEIVED BY:****RELINQUISHED BY:****RECEIVED BY:**

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFSOMP

SITE: SA_0939_PFSOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003

0

LABORATORY USE ONLY (Circle)

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

C

Other comments:

076	0939_QC305_210112	HDPE (no PTFE)	20 mL	00352010080063	Grey	No	
076	0939_QC305_210112	HDPE (no PTFE)	20 mL	00352010080049	Grey	No	
077	0939_QC306_210112	HDPE (no PTFE)	20 mL	00352010079884	Grey	No	
077	0939_QC306_210112	HDPE (no PTFE)	20 mL	00352010080047	Grey	No	
078	0939_QC401_210111	HDPE (no PTFE)	20 mL	00352010080100	Grey	No	
078	0939_QC401_210111	HDPE (no PTFE)	20 mL	00352010080066	Grey	No	
079	0939_QC402_210111	HDPE (no PTFE)	20 mL	00352010079986	Grey	No	
079	0939_QC402_210111	HDPE (no PTFE)	20 mL	00352010079984	Grey	No	
080	0939_QC403_210111	HDPE (no PTFE)	20 mL	00352010080017	Grey	No	
080	0939_QC403_210111	HDPE (no PTFE)	20 mL	00352010079898	Grey	No	
081	0939_QC404_210112	HDPE (no PTFE)	20 mL	00352010080127	Grey	No	
081	0939_QC404_210112	HDPE (no PTFE)	20 mL	00352010080061	Grey	No	
082	0939_QC405_210112	HDPE (no PTFE)	20 mL	00352010080010	Grey	No	
082	0939_QC405_210112	HDPE (no PTFE)	20 mL	00352010080040	Grey	No	
083	0939_QC406_210112	HDPE (no PTFE)	20 mL	00352010079887	Grey	No	
083	0939_QC406_210112	HDPE (no PTFE)	20 mL	00352010080082	Grey	No	

Total Bottle Count: ALS: 231, Non ALS: 0

AECO93) 210115/1

due 28/1/21 ✓

CHAIN OF CUSTODY

Att:
Due Date: 14/01/2021
Purchase Order #: 5501
ALS Batch #: EM2100359
PLEASE RETURN ESKY TO ALS MELBOURNE

From: Australian Laboratory Services Pty Ltd
To: National Measurement Institute
1/153 Bertie St
Port Melbourne, VIC 3207
PH: [REDACTED]
Please email results to: subresults.mel@alsglobal.com in PDF and XML format

LABORATORY PARAMETERS

* analysis to be confirmed by client

PPAS - water
GROUNDWATER TEST

* See attached.



ALS sample	SAMPLE IDENTIFICATION		CONTAINER DATA #			analysis to be confirmed by client	LABORATORY PARAMETERS	COMMENTS
	SAMPLE ID.		DATE	TYPE	NO.			
	0939 QC201 210111	N21/000914				X	✓	
	0939 QC202 210111	N21/000915				X	✓	
	0939 QC203 210111	N21/000916				X	✓	
	0939 QC204 210112	N21/000917				X	✓	
	0939 QC205 210112	N21/000918				X	✓	
	0939 QC206 210112	N21/000919				X	✓	

water ↓

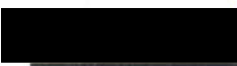
RECEIVED
15 JAN 2021
BY: P. 8-50

14 JAN '21 15:10

NOTES: 1. Please ensure that a signed copy is emailed back immediately to subresults.mel@alsglobal.com acknowledging receipt.
2. Contact Samantha Smith if the requested TAT cannot be met 03 9549 9605

RELINQUISHED BY (SIGN / PRINT): [REDACTED]	DATE: 14/01 11:20	RECEIVED BY (SIGN / PRINT):	DATE:
OF: ALS	TIME:	OF:	(ARRIVAL TEMP: deg.C) TIME:
RELINQUISHED BY (SIGN / PRINT):	DATE:	RECEIVED BY (SIGN / PRINT):	DATE:
OF:	TIME:	OF:	(ARRIVAL TEMP: deg.C) TIME:

GROUNDWATER TESTS



From: [Redacted]
Sent: Monday, 18 January 2021 4:47 PM
To: [Redacted]
Subject: Project 0939



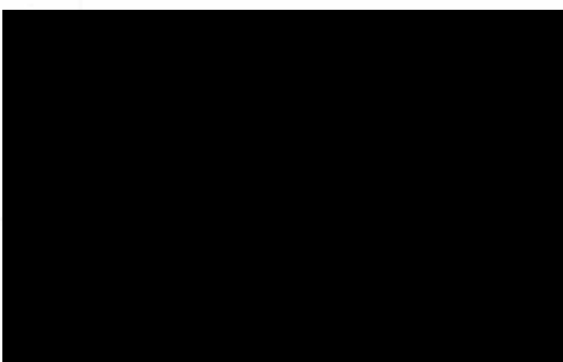
Please see below groundwater suite

18/1/2020

pH
Total Dissolved Solids (TDS)
Total Suspended Solids (TSS)
Major Cations: Ca, Mg, Na, K
Alkalinity: including Bicarbonate, Carbonate, Hydroxide & Total as CaCO ₃
Sulphate - (Turbidimetric) as SO ₄
Chloride
Ionic Balance (requires: Ca, Mg, Na, K, SO ₄ , Cl, Alkalinity)
Dissolved Organic Carbon (DOC)
PFAS - Full Suite (28 analytes)

+ Fluoride

Thanks



CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFSOMP
 SITE: SA_0939_PFSOMP
 ORDER NO: 60612561 6.1

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

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

RELINQUISHED BY: [REDACTED]
 DATE TIME: 19/01 11:20

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

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

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
010	0939_MW2180_210111		11/01/2021 11:29 AM	Water	ALS: 2 Non ALS: 0	No		X		
011	0939_QC101_210111		11/01/2021 11:33 AM	Water	ALS: 2 Non ALS: 0	No		X		
012	0939_QC201_210111	Please forward to NMI	11/01/2021 11:33 AM	Water	ALS: 2 Non ALS: 0	Yes		X		N21/000914
013	0939_MW2177_210111		11/01/2021 11:45 AM	Water	ALS: 2 Non ALS: 0	No		X		
014	0939_MW2175_210111		11/01/2021 11:56 AM	Water	ALS: 2 Non ALS: 0	No		X		
015	0939_MW2176_210111		11/01/2021 12:01 PM	Water	ALS: 2 Non ALS: 0	No		X		
016	0939_MW2172_210111		11/01/2021 12:13 PM	Water	ALS: 2 Non ALS: 0	No		X		
017	0939_MW2173_210111		11/01/2021 12:19 PM	Water	ALS: 2 Non ALS: 0	No		X		
018	0939_MW2145_210111		11/01/2021 12:41 PM	Water	ALS: 2 Non ALS: 0	No		X		

RECEIVED
 15 JAN 2021
 BY: [Signature]

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFSOMP
 SITE: SA_0939_PFSOMP
 ORDER NO: 60612561 6.1

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

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

RELINQUISHED BY: [REDACTED]
 DATE TIME: 14/01 11:20

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

CONTACT PH: SAMPLER MOBILE:
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

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

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	0939_MW2129_210111		11/01/2021 12:47 PM	Water	ALS: 2 Non ALS: 0	No		X		
020	0939_MW2169_210111		11/01/2021 12:55 PM	Water	ALS: 2 Non ALS: 0	No		X		
021	0939_MW2139_210111		11/01/2021 01:23 PM	Water	ALS: 2 Non ALS: 0	No		X		
022	0939_MW2166_210111		11/01/2021 01:36 PM	Water	ALS: 2 Non ALS: 0	No		X		
023	0939_QC102_210111		11/01/2021 01:45 PM	Water	ALS: 2 Non ALS: 0	No		X		
024	0939_QC202_210111	Please forward to NMI	11/01/2021 01:46 PM	Water	ALS: 2 Non ALS: 0	Yes		<i>[Signature]</i>		N21/000915
025	0939_MW2394_210111	Extra sample volume for lab QC	11/01/2021 02:01 PM	Water	ALS: 4 Non ALS: 0	No		X		
026	0939_MW2411_210111	Extra sample volume for lab QC	11/01/2021 02:14 PM	Water	ALS: 4 Non ALS: 0	No		X		
027	0939_MW2126_210111		11/01/2021 02:31 PM	Water	ALS: 5 Non ALS: 0	No	X			

RECEIVED
 15 JAN 2021
 BY: *[Signature]*

RELINQUISHED BY: [Redacted]
 DATE TIME: 11/01 11:20

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:
 CONTACT PH: SAMPLER MOBILE:
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

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

PROJECT MANAGER: [Redacted]
 PRIMARY SAMPLER: [Redacted]
 EMAIL REPORTS TO: [Redacted]
 EMAIL INVOICES TO: [Redacted]

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
028	0939_MW2358_210111		11/01/2021 02:35 PM	Water	ALS: 5 Non ALS: 0	No	X			
029	0939_MW2162_210111		11/01/2021 02:49 PM	Water	ALS: 2 Non ALS: 0	No		X		
030	0939_MW2202_210111		11/01/2021 03:23 PM	Water	ALS: 2 Non ALS: 0	No		X		
031	0939_MW2201_210111		11/01/2021 03:24 PM	Water	ALS: 2 Non ALS: 0	No		X		
032	0939_MW2120_210111		11/01/2021 03:58 PM	Water	ALS: 5 Non ALS: 0	No	X			
033	0939_QC103_210111		11/01/2021 04:00 PM	Water	ALS: 5 Non ALS: 0	No	X			
034	0939_QC203_210111	Please forward to NMI	11/01/2021 04:01 PM	Water	ALS: 5 Non ALS: 0	Yes	<i>[Signature]</i>			N21/000916
035	0939_MW2270_210111		11/01/2021 04:16 PM	Water	ALS: 5 Non ALS: 0	No	X			
036	0939_MW2200_210111		11/01/2021 04:25 PM	Water	ALS: 5 Non ALS: 0	No	X			

RECEIVED
 15 JAN 2021
 BY: *[Signature]*

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1
 PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

RELINQUISHED BY: [REDACTED]
 DATE TIME: 12/01 11:26

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:
 CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

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

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
046	0939_MW2158_210112		12/01/2021 11:20 AM	Water	ALS: 5 Non ALS: 0	No	X			
047	0939_MW2148_210112		12/01/2021 11:33 AM	Water	ALS: 5 Non ALS: 0	No	X			
048	0939_QC104_210112		12/01/2021 11:46 AM	Water	ALS: 5 Non ALS: 0	No	X			
049	0939_QC204_210112	Please forward to NMI	12/01/2021 11:47 AM	Water	ALS: 5 Non ALS: 0	Yes	<i>[Handwritten Signature]</i>		N21/000917	
050	0939_MW2272_210112		12/01/2021 11:49 AM	Water	ALS: 5 Non ALS: 0	No	X			
051	0939_MW2284_210112		12/01/2021 11:59 AM	Water	ALS: 5 Non ALS: 0	No	X			
052	0661_MW2325_210112		12/01/2021 12:17 PM	Water	ALS: 2 Non ALS: 0	No		X		
053	0939_MW2218_210112		12/01/2021 12:34 PM	Water	ALS: 2 Non ALS: 0	No		X		
054	0939_MW2134_210112		12/01/2021 12:37 PM	Water	ALS: 2 Non ALS: 0	No		X		

RECEIVED
 15 JAN 2021
 BY: *[Handwritten Signature]*



CHAIN OF CUSTODY

COC#: 17648

ALS Laboratory: EM Melbourne

RELINQUISHED BY: [Redacted]
DATE TIME: 14/01 11:20RECEIVED BY:
DATE TIME:RELINQUISHED BY:
DATE TIME:RECEIVED BY:
DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFSOMP

SITE: SA_0939_PFSOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER: [Redacted]
PRIMARY SAMPLER: [Redacted]

EMAIL REPORTS TO: [Redacted]

EMAIL INVOICES TO: ancom.anz@aecom.com

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH: [Redacted] SAMPLER MOBILE: [Redacted]
QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
0**LABORATORY USE ONLY (Circle)**

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

SAMPLE DETAILS**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED			ADDITIONAL INFORMATION
							Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	
055	0939_MW2216_210112		12/01/2021 12:57 PM	Water	ALS: 2 Non ALS: 0	No		X		
056	0939_MW2135_210112		12/01/2021 01:02 PM	Water	ALS: 2 Non ALS: 0	No		X		
057	0939_MW4218_210112		12/01/2021 02:02 PM	Water	ALS: 2 Non ALS: 0	No		X		
058	0939_MW4061_210112		12/01/2021 02:26 PM	Water	ALS: 2 Non ALS: 0	No		X		
059	0939_QC105_210112		12/01/2021 02:28 PM	Water	ALS: 2 Non ALS: 0	No		X		
060	0939_QC205_210112	Please forward to NMI	12/01/2021 02:29 PM	Water	ALS: 2 Non ALS: 0	Yes		X		
061	0939_MW4065_210112		12/01/2021 02:39 PM	Water	ALS: 2 Non ALS: 0	No		X		
062	0939_MW4009_210112		12/01/2021 02:56 PM	Water	ALS: 2 Non ALS: 0	No		X		
063	0939_MW4022_210112		12/01/2021 03:02 PM	Water	ALS: 2 Non ALS: 0	No		X		

RECEIVED
15 JAN 2021
BY: *Ru 8-50*



CHAIN OF CUSTODY

COC#: 17648 ALS Laboratory: EM Melbourne



RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER

PRIMARY SAMPLER

EMAIL REPORTS TO

EMAIL INVOICES TO

DATE TIME:

14/01 15:20

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE DETAILS

ANALYSIS REQUIRED

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED			ADDITIONAL INFORMATION
							Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	
064	0939_MW4020_210112		12/01/2021 03:11 PM	Water	ALS: 2 Non ALS: 0	No		X		
065	0939_MW4021_210112	Extra volume for lab QC	12/01/2021 03:18 PM	Water	ALS: 4 Non ALS: 0	No		X		
066	0939_MW4071_210112	Extra volume for lab QC	12/01/2021 03:39 PM	Water	ALS: 4 Non ALS: 0	No		X		
067	0939_MW4024_210112	Extra volume for lab QC	12/01/2021 03:44 PM	Water	ALS: 4 Non ALS: 0	No		X		
068	0939_MW4023_210112	Extra volume for lab QC	12/01/2021 03:55 PM	Water	ALS: 4 Non ALS: 0	No		X		
069	0939_MW4060_210112		12/01/2021 04:07 PM	Water	ALS: 2 Non ALS: 0	No		X		
070	0939_QC106_210112		12/01/2021 04:08 PM	Water	ALS: 2 Non ALS: 0	No		X		
071	0939_QC206_210112	Please forward to NMI	12/01/2021 04:08 PM	Water	ALS: 2 Non ALS: 0	Yes				
072	0939_QC301_210111		11/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	No		X		

RECEIVED
15 JAN 2021

BY: R 8.50

Handwritten signature

N21/000919

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY: *[Signature]*

RECEIVED BY: *[Signature]*

DATE TIME:

DATE TIME:

DATE TIME: 19/1

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

CONTACT PH:

SAMPLER MOBILE:

PRIMARY SAMPLER:

QUOTE NO: SY/139/19 V3

/ ES2019AECOMAU003
0

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt:

Other comments:

*due 29/1/21 ✓
AECO 031 210121*

SAMPLE DETAILS

ANALYSIS REQUIRED

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
010	0939_MW4070_210113		13/01/2021 11:20 AM	Water	ALS: 2 Non ALS: 0	No		X		
011	0939_QC107_210113		13/01/2021 11:21 AM	Water	ALS: 2 Non ALS: 0	No		X		
012	0939_QC207_210113	Please forward to NMI	13/01/2021 11:21 AM	Water	ALS: 2 Non ALS: 0	Yes		-		N21/001447
013	0939_MW4053_210113		13/01/2021 11:04 AM	Water	ALS: 2 Non ALS: 0	No		X		
014	0939_MW4055_210113		13/01/2021 11:39 AM	Water	ALS: 2 Non ALS: 0	No		X		
015	0939_MW4052_210113		13/01/2021 11:53 AM	Water	ALS: 2 Non ALS: 0	No		X		
016	0939_MW4072_210113		13/01/2021 12:10 PM	Water	ALS: 2 Non ALS: 0	No		X		
017	0939_MW4041_210113		13/01/2021 12:22 PM	Water	ALS: 2 Non ALS: 0	No		X		
018	0939_MW4074_210113		13/01/2021 12:33 PM	Water	ALS: 2 Non ALS: 0	No		X		

RECEIVED
21 JAN 2021

BY: *Kr.* 10:15 *C*

TAT: 28/01
Initial: LA

20 JAN '21 15:11

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY: *[Signature]*
 DATE TIME: 19/1

RECEIVED BY:
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFSOMP
 SITE: SA_0939_PFSOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS: 5 Days
 Biohazard info:

LABORATORY USE ONLY (Circle)

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

PROJECT MANAGER: [Redacted]
 PRIMARY SAMPLER: [Redacted]

CONTACT PH: [Redacted] SAMPLER MOBILE: [Redacted]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU0030

EMAIL REPORTS TO: [Redacted]

EMAIL INVOICES TO: [Redacted]

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	0939_MW4069_210113		13/01/2021 01:53 PM	Water	ALS: 5 Non ALS: 0	No	X			
020	0939_MW4048_210113		13/01/2021 02:20 PM	Water	ALS: 5 Non ALS: 0	No	X			
021	0939_MW4001_210113		13/01/2021 02:33 PM	Water	ALS: 5 Non ALS: 0	No	X			
022	0939_MW4075_210113		13/01/2021 02:35 PM	Water	ALS: 5 Non ALS: 0	No	X			
023	0939_MW4037_210113		13/01/2021 02:56 PM	Water	ALS: 2 Non ALS: 0	No		X		
024	0939_QC108_210113		13/01/2021 02:55 PM	Water	ALS: 2 Non ALS: 0	No		X		
025	0939_QC208_210113	Please forward to NMI	13/01/2021 02:55 PM	Water	ALS: 2 Non ALS: 0	Yes		-		
026	0939_MW20327_210113	Extra volume for lab QC	13/01/2021 03:13 PM	Water	ALS: 4 Non ALS: 0	No		X		
027	0939_MW4003_210113		13/01/2021 03:25 PM	Water	ALS: 2 Non ALS: 0	No		X		

* Not received

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY: *LD*

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME: *19/1*

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
037	0939_MW4079_210114		14/01/2021 09:19 AM	Water	ALS: 5 Non ALS: 0	No	X			
038	0939_MW4073_210114		14/01/2021 09:25 AM	Water	ALS: 5 Non ALS: 0	No	X			
039	0939_MW4066_210114		14/01/2021 09:43 AM	Water	ALS: 5 Non ALS: 0	No	X			
040	0939_MW4057_210114		14/01/2021 09:46 AM	Water	ALS: 5 Non ALS: 0	No	X			
041	0939_MW4015_210114		14/01/2021 10:16 AM	Water	ALS: 2 Non ALS: 0	No		X		
042	0939_QC109_210114		14/01/2021 10:18 AM	Water	ALS: 2 Non ALS: 0	No		X		
043	0939_QC209_210114	Please forward to NMI	14/01/2021 10:19 AM	Water	ALS: 2 Non ALS: 0	Yes		-		
044	0939_MW2203_210114	Extra volume for lab QC	14/01/2021 12:11 PM	Water	ALS: 4 Non ALS: 0	No		X		
045	0939_MW2197_210114		14/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	No		X		

**Not received*

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY: <i>LD</i>	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME: <i>19/1</i>	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: 0939_SA_PFSOMP
 SITE: SA_0939_PFSOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

LABORATORY USE ONLY (Circle)

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

PROJECT MANAGER: [REDACTED] CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 PRIMARY SAMPLER: [REDACTED] QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0
 EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

Random Sample Temperature on Receipt: °C
 Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
046	0939_QC110_210114		14/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	No		X		
047	0939_QC210_210114	Please forward to NMI	14/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	Yes		-		
048	0939_MW2193_210114	Extra volume for lab qc	14/01/2021 12:36 PM	Water	ALS: 4 Non ALS: 0	No		X		
049	0939_MW2194_210114		14/01/2021 12:50 PM	Water	ALS: 2 Non ALS: 0	No		X		
050	0939_MW2149_210114		14/01/2021 01:24 PM	Water	ALS: 2 Non ALS: 0	No		X		
051	0939_MW2499_210114	Extra volume for lab QC	14/01/2021 01:34 PM	Water	ALS: 4 Non ALS: 0	No		X		
052	0939_MW2188_210114		14/01/2021 01:46 PM	Water	ALS: 2 Non ALS: 0	No		X		
053	0939_MW2189_210114		14/01/2021 01:48 PM	Water	ALS: 2 Non ALS: 0	No		X		
054	0939_MW2112_210114		14/01/2021 02:10 PM	Water	ALS: 2 Non ALS: 0	No		X		





CHAIN OF CUSTODY

ALS COC#: 17751 ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY: *[Signature]*

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME: 19/1

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: 0939_SA_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER: [Redacted]

PRIMARY SAMPLER: [Redacted]

EMAIL REPORTS TO: [Redacted]

EMAIL INVOICES TO: [Redacted]

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH:


SAMPLER MOBILE:

QUOTE NO: SY/139/19 V3

/ ES2019AECOMAU003
0

SAMPLE DETAILS

ANALYSIS REQUIRED

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Ground Waters - Fresh WATER	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
055	0939_QC111_210114		14/01/2021 02:10 PM	Water	ALS: 2 Non ALS: 0	No		X		
056	0939_QC211_210114	Please forward to nmi	14/01/2021 02:11 PM	Water	ALS: 2 Non ALS: 0	Yes		-	 N21/001449	
057	0939_MW2159_210114		14/01/2021 02:33 PM	Water	ALS: 2 Non ALS: 0	No		X		
058	0939_MW2501_210114		14/01/2021 03:00 PM	Water	ALS: 2 Non ALS: 0	No		X		
059	0939_QC310_210114		14/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	No		X		
060	0939_QC311_210114		14/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	No		X		
061	0939_QC312_210114		14/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	No		X		
062	0939_QC410_210114		14/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	Yes		-		
063	0939_QC411_210114		14/01/2021 12:30 PM	Water	ALS: 2 Non ALS: 0	Yes		-		

AECOM PROJECT - CHAIN OF CUSTODY

CLIENT: **AECOM Australia Pty Ltd**
 ADDRESS: Level 28, 91 King William St
 Adelaide
 SA 5000
 PHONE NO: 08 7223 5400
 FAX NO: 08 7223 5499

LABORATORY: **NMI**
 ADDRESS: 1/153 Bertie St
 Port Melbourne VIC 3207
 PHONE NO: (03) 9644 4888
 FAX NO:

Email report to the below & site coordinator:


FOR LABORATORY USE ONLY

AECC03/210204/1
Due: 11/2/21 AO

Lab Quote Number - EN/104/17

PROJECT ID/ PROJECT NAME: **SA_0939_PFASOMP**





Purchase Order No.: 60612561 6.1

COMMENTS:

Specifications:
 All results to be provided in ESDAT format
 SRN in Excel format.
 Use only "Project ID" for naming ESdat files

 Please provide results in ESDAT and AECOM-DoD
 format

ANALYSIS REQUIRED

LAB ID	LOCATION	MATRIX	SAMPLE TYPE	SAMPLE ID	Date	CONTAINER TYPE AND PRESERVATIVE	FIELD FILTERED	TOTAL NUMBER OF CONTAINERS	PFAS (28 analytes)	HOLD
 N21/002496	0939	Water	QAQC	0939_QC208_210113	13/01/2021	PFAS	-	2	x	
 N21/002497	0939	Water	QAQC	0939_QC209_210114	14/01/2021	PFAS	-	2	x	
TOTAL										

Custody Seal ? Y N NA
 Samples Cold ? Y N NA
 Comments:

RELINQUISHED BY: DATE:
 RECEIVED BY: DATE:

CHECKED: TIME:
 CHECKED: TIME:
 CONTAINER TYPE AND PRESERVATIVE CODES
P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar
S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS Sulphuric Acid Preserved Glass Bottle;
Z = Zinc acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; O = Other

7

due 11/2/21 on ✓

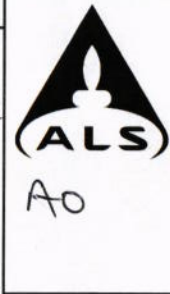
CHAIN OF CUSTODY

LABORATORY PARAMETERS

Att:
 Due Date: 2/02/2021
 Purchase Order #: 5597
 ALS Batch #: EM2100517

From: Australian Laboratory Services Pty Ltd (ABN 84 009 936 029)
 2-4 Westall Rd
 Springvale VIC 3171
 PH: 03 8549 9600
 FAX: 03 8549 9601
To: National Measurement Institute
 1/153 Bertie St
 Port Melbourne, VIC 3207
 PH: (03) 9644 4888

AUSLOA/2102
 04



PLEASE RETURN ESKY TO ALS MELBOURNE

Please email results to: subresults.mel@alsglobal.com in PDF and XML format

ALS sample	SAMPLE IDENTIFICATION	CONTAINER DATA #			PPAS (full screen)	COMMENTS
		DATE	TYPE	NO.		
25	0939_QC208_210113	13/01/21	W	1	x	
43	0939_QC209_210114	14/01/21	W	1	x	

RECEIVED
 04 FEB 2021
 BY: AO 8:55 C

NOTES:
 1. Please ensure that a signed copy is emailed back immediately to subresults.mel@alsglobal.com acknowledging receipt.
 2. Contact Samantha Smith if the requested TAT cannot be met 03 9549 9605

RELINQUISHED BY (SIGN / PRINT): [redacted]	DATE: 2/2	RECEIVED BY (SIGN / PRINT):	DATE:
OF: ALS	TIME:	OF: (ARRIVAL TEMP: deg.C) TIME:	
RELINQUISHED BY (SIGN / PRINT):	DATE:	RECEIVED BY (SIGN / PRINT):	DATE:
OF:	TIME:	OF: (ARRIVAL TEMP: deg.C) TIME:	

3 FEB '21 7:53

[REDACTED]

From: [REDACTED]
Sent: Thursday, 4 February 2021 3:31 PM
To: [REDACTED]
Subject: RE: Forwarded samples from ALS [SEC=OFFICIAL:Sensitive]
Attachments: COC Missing samples for NMI.xlsx

[REDACTED]

I've attached a proper COC for them. Please let me know if there is anything else I can provide. I know that the last batch of samples for this project were under reference AEEO03 as well.

Thanks again,

[REDACTED]

Please consider the environment before printing this email.

[REDACTED]

Sent: Thursday, 4 February 2021 2:43 PM

[REDACTED]

Cc: NMI - ASB - Lab Services - North Ryde <NMI-ASB-LabServices-NorthRyde@measurement.gov.au>
Subject: [EXTERNAL] RE: Forwarded samples from ALS [SEC=OFFICIAL:Sensitive]

[REDACTED]

Yes we did receive 2 water samples today from ALS for PFAS.

The samples are

0939_QC208_210113

0939_QC209_210114

And there is no mention of a project number.

The accompanying COC was ALS and there is no mention of Aecom.

Can you please confirm that these are the 2 samples and please send through the correct paperwork.

Cheers

Regards

[REDACTED]

National Measurement Institute
105 Delhi Road
North Ryde NSW 2113
Australia



Australia Government
Department of Industry, Science,
Energy and Resources

National
Measurement
Institute

The department acknowledges the traditional owners of the country throughout Australia and their continuing connection to land, sea and community. We pay our respect to them and their cultures and to the elders past and present.

For customer enquiries e-mail customerservice@measurement.gov.au or phone **1300 722 845**.



If unwell – seek
medical advice



Social-distance



Wash hands



Clean surfaces



Stay connected



Be kind

Be supportive. Be informed. Be safe. Be kind. COVID-19

OFFICIAL: Sensitive

[Redacted]
Sent: Thursday, 4 February 2021 2:56 PM

[Redacted]
Subject: Forwarded samples from ALS

[Redacted]
I'm hoping to follow up on some samples that were forwarded from ALS on Tuesday this week to see if they have been received yet. I know the COC likely has the typo issue in it so thought I better follow it up. It was for project SA_0939_PFASOMP for the two samples that weren't received.

Thank you,

[Redacted signature block]

Please consider the environment before printing this email.

AECOM PROJECT - CHAIN OF CUSTODY

CLIENT: **AECOM Australia Pty Ltd**
 ADDRESS: Level 28, 91 King William St
 Adelaide
 SA 5000
 PHONE NO: 08 7223 5400
 FAX NO: 08 7223 5499

LABORATORY: **NMI**
 ADDRESS: 1/153 Bertie St
 Port Melbourne VIC 3207
 PHONE NO: (03) 9644 4888
 FAX NO:
Lab Quote Number - AECO03

Email report to the below & site coordinator:


FOR LABORATORY USE ONLY
due 17/2/21 ✓
AECO03 / 210210 Am

PROJECT ID/ PROJECT NAME: **SA_0939_PFASOMP**
 Purchase Order No.: 60612561 6.1



COMMENTS:

Specifications:
 All results to be provided in ESDAT format
 SRN in Excel format.
 Use only "Project ID" for naming ESdat files
 Please provide results in ESDAT and AECOM-DoD format

ANALYSIS REQUIRED										
LAB ID	LOCATION	MATRIX	SAMPLE TYPE	SAMPLE ID	Date	CONTAINER TYPE AND PRESERVATIVE	FIELD FILTERED	TOTAL NUMBER OF CONTAINERS	PFAS (28 analytes)	HOLD
N21/002932	0939	Water	QAQC	0939_QC201_210105	5/02/2021	PFAS	-	2	x	
N21/002933	0939	Water	QAQC	0939_QC202_210105	5/02/2021	PFAS	-	2	x	
N21/002934	0939	Water	QAQC	0939_QC203_210105	5/02/2021	PFAS	-	2	x	
TOTAL										

RECEIVED
 10 FEB 2021
 BY: *P. J. 9.05*

Custody Seal ? Y N NA
 Samples Cold ? Y N NA
 Comments:

RELINQUISHED BY: _____
 DATE: _____
 RECEIVED BY: _____
 DATE: _____

CONTAINER TYPE AND PRESERVATIVE CODES
 P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar
 S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS Sulphuric Acid Preserved Glass Bottle;
 Z = Zinc acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; O = Other

9 FEB '21 16:02

Appendix E

Laboratory Certificates

Appendix E Laboratory Certificates



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM2100359
Amendment : 1

Client : AECOM Australia Pty Ltd
Contact : KIM TREGLOWN
Address :
Laboratory : Environmental Division Melbourne
Contact : Christopher Redford

E-mail :
Telephone :
Facsimile :

Project : 0939_SA_PFASOMP
Order number : 60612561 6.1
C-O-C number : 17648
Site : SA_0939_PFASOMP
Sampler :
Page : 1 of 4
Quote number : ES2019AECOMAU0030 (SY/139/19 V3)
QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 13-Jan-2021 09:10
Client Requested Due Date : 21-Jan-2021
Issue Date : 21-Jan-2021
Scheduled Reporting Date : 21-Jan-2021

Delivery Details

Mode of Delivery : Carrier
No. of coolers/boxes : 2
Receipt Detail :
Security Seal : Intact.
Temperature : 9.8°C - Ice present
No. of samples received / analysed : 77 / 77

General Comments

- This report contains the following information:
- Sample Container(s)/Preservation Non-Compliances
- Summary of Sample(s) and Requested Analysis
- Proactive Holding Time Report
- Requested Deliverables
Please direct any queries related to sample condition / numbering / breakages to Client Services.
Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
Analytical work for this work order will be conducted at ALS Springvale.
Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.
Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis.



Sample Container(s)/Preservation Non-Compliances

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

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

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

EM2100359-025	: 11-Jan-2021 13:31	: 0939_MW2394_210111 - Extra sample volume for lab QC
EM2100359-026	: 11-Jan-2021 13:44	: 0939_MW2411_210111 - Extra sample volume for lab QC
EM2100359-040	: 12-Jan-2021 09:36	: 0939_MW2131_210112 - Extra volume for lab QC
EM2100359-065	: 12-Jan-2021 14:48	: 0939_MW4021_210112 - Extra volume for lab QC
EM2100359-066	: 12-Jan-2021 15:09	: 0939_MW4071_210112 - Extra volume for lab QC
EM2100359-067	: 12-Jan-2021 15:14	: 0939_MW4024_210112 - Extra volume for lab QC
EM2100359-068	: 12-Jan-2021 15:25	: 0939_MW4023_210112 - Extra volume for lab QC

Summary of Sample(s) and Requested Analysis

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

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

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA025H Suspended Solids - Standard Level	WATER - EN055 - PG Ionic Balance by ED037P, ED041G, ED045G &	WATER - EP002 Dissolved Organic Carbon (DOC)	WATER - EP231X PFAS - Full Suite (28 analytes)	WATER - NT-01 & 02A Ca, Mg, Na, K, Cl, SO4, Alkalinity & Fluoride
EM2100359-001	11-Jan-2021 09:01	0939_MW2137_210111				✓	
EM2100359-002	11-Jan-2021 09:27	0939_MW2185_210111	✓	✓	✓	✓	✓
EM2100359-003	11-Jan-2021 09:40	0939_MW2184_210111	✓	✓	✓	✓	✓
EM2100359-004	11-Jan-2021 10:02	0939_MW2281_210111	✓	✓	✓	✓	✓
EM2100359-005	11-Jan-2021 10:08	0939_MW2286_210111	✓	✓	✓	✓	✓
EM2100359-006	11-Jan-2021 10:33	0939_MW2183_210111				✓	
EM2100359-007	11-Jan-2021 10:32	0939_MW2182_210111				✓	
EM2100359-008	11-Jan-2021 10:48	0939_MW2285_210111				✓	
EM2100359-009	11-Jan-2021 10:53	0939_MW2275_210111				✓	
EM2100359-010	11-Jan-2021 10:59	0939_MW2180_210111				✓	
EM2100359-011	11-Jan-2021 11:03	0939_QC101_210111				✓	
EM2100359-013	11-Jan-2021 11:15	0939_MW2177_210111				✓	
EM2100359-014	11-Jan-2021 11:26	0939_MW2175_210111				✓	
EM2100359-015	11-Jan-2021 11:31	0939_MW2176_210111				✓	
EM2100359-016	11-Jan-2021 11:43	0939_MW2172_210111				✓	
EM2100359-017	11-Jan-2021 11:49	0939_MW2173_210111				✓	
EM2100359-018	11-Jan-2021 12:11	0939_MW2145_210111				✓	
EM2100359-019	11-Jan-2021 12:17	0939_MW2129_210111				✓	
EM2100359-020	11-Jan-2021 12:25	0939_MW2169_210111				✓	
EM2100359-021	11-Jan-2021 12:53	0939_MW2139_210111				✓	
EM2100359-022	11-Jan-2021 13:06	0939_MW2166_210111				✓	
EM2100359-023	11-Jan-2021 13:15	0939_QC102_210111				✓	
EM2100359-025	11-Jan-2021 13:31	0939_MW2394_210111 ...				✓	
EM2100359-026	11-Jan-2021 13:44	0939_MW2411_210111 ...				✓	
EM2100359-027	11-Jan-2021 14:01	0939_MW2126_210111	✓	✓	✓	✓	✓
EM2100359-028	11-Jan-2021 14:05	0939_MW2358_210111	✓	✓	✓	✓	✓
EM2100359-029	11-Jan-2021 14:19	0939_MW2162_210111				✓	
EM2100359-030	11-Jan-2021 14:53	0939_MW2202_210111				✓	



			WATER - EA025H Suspended Solids - Standard Level	WATER - EN065 - PG Ionic Balance by ED037P, ED041G, ED045G &	WATER - EP002 Dissolved Organic Carbon (DOC)	WATER - EP231X PFAS - Full Suite (28 analytes)	WATER - NT-01 & 02A Ca, Mg, Na, K, Cl, SO4, Alkalinity & Fluoride
EM2100359-031	11-Jan-2021 14:54	0939_MW2201_210111				✓	
EM2100359-032	11-Jan-2021 15:28	0939_MW2120_210111	✓	✓	✓	✓	✓
EM2100359-033	11-Jan-2021 15:30	0939_QC103_210111	✓	✓	✓	✓	✓
EM2100359-035	11-Jan-2021 15:46	0939_MW2270_210111	✓	✓	✓	✓	✓
EM2100359-036	11-Jan-2021 15:55	0939_MW2200_210111	✓	✓	✓	✓	✓
EM2100359-037	12-Jan-2021 09:14	0939_MW2116_210112				✓	
EM2100359-038	12-Jan-2021 09:23	0939_MW2130_210112				✓	
EM2100359-039	12-Jan-2021 09:33	0939_MW2210_210112				✓	
EM2100359-040	12-Jan-2021 09:36	0939_MW2131_210112 ...				✓	
EM2100359-041	12-Jan-2021 09:52	0939_MW2528_210112				✓	
EM2100359-042	12-Jan-2021 10:01	0939_MW2209_210112				✓	
EM2100359-043	12-Jan-2021 10:08	0939_MW2157_210112				✓	
EM2100359-044	12-Jan-2021 10:17	0939_MW2114_210112				✓	
EM2100359-045	12-Jan-2021 10:34	0939_MW2490_210112				✓	
EM2100359-046	12-Jan-2021 10:50	0939_MW2158_210112	✓	✓	✓	✓	✓
EM2100359-047	12-Jan-2021 11:03	0939_MW2148_210112	✓	✓	✓	✓	✓
EM2100359-048	12-Jan-2021 11:16	0939_QC104_210112	✓	✓	✓	✓	✓
EM2100359-050	12-Jan-2021 11:19	0939_MW2272_210112	✓	✓	✓	✓	✓
EM2100359-051	12-Jan-2021 11:29	0939_MW2284_210112	✓	✓	✓	✓	✓
EM2100359-052	12-Jan-2021 11:47	0661_MW2325_210112				✓	
EM2100359-053	12-Jan-2021 12:04	0939_MW2218_210112				✓	
EM2100359-054	12-Jan-2021 12:07	0939_MW2134_210112				✓	
EM2100359-055	12-Jan-2021 12:27	0939_MW2216_210112				✓	
EM2100359-056	12-Jan-2021 12:32	0939_MW2135_210112				✓	
EM2100359-057	12-Jan-2021 13:32	0939_MW4218_210112				✓	
EM2100359-058	12-Jan-2021 13:56	0939_MW4061_210112				✓	
EM2100359-059	12-Jan-2021 13:58	0939_QC105_210112				✓	
EM2100359-061	12-Jan-2021 14:09	0939_MW4065_210112				✓	
EM2100359-062	12-Jan-2021 14:26	0939_MW4009_210112				✓	
EM2100359-063	12-Jan-2021 14:32	0939_MW4022_210112				✓	
EM2100359-064	12-Jan-2021 14:41	0939_MW4020_210112				✓	
EM2100359-065	12-Jan-2021 14:48	0939_MW4021_210112 ...				✓	
EM2100359-066	12-Jan-2021 15:09	0939_MW4071_210112 ...				✓	
EM2100359-067	12-Jan-2021 15:14	0939_MW4024_210112 ...				✓	
EM2100359-068	12-Jan-2021 15:25	0939_MW4023_210112 ...				✓	
EM2100359-069	12-Jan-2021 15:37	0939_MW4060_210112				✓	
EM2100359-070	12-Jan-2021 15:38	0939_QC106_210112				✓	
EM2100359-072	11-Jan-2021 12:00	0939_QC301_210111				✓	
EM2100359-073	11-Jan-2021 12:00	0939_QC302_210111				✓	
EM2100359-074	11-Jan-2021 12:00	0939_QC303_210111				✓	
EM2100359-075	12-Jan-2021 12:00	0939_QC304_210112				✓	



			WATER - EA025H Suspended Solids - Standard Level	WATER - EN055 - PG Ionic Balance by ED037P, ED041G, ED045G &	WATER - EP002 Dissolved Organic Carbon (DOC)	WATER - EP231X PFAS - Full Suite (28 analytes)	WATER - NT-01 & 02A Ca, Mg, Na, K, Cl, SO4, Alkalinity & Fluoride
EM2100359-076	12-Jan-2021 12:00	0939_QC305_210112				✓	
EM2100359-077	12-Jan-2021 12:00	0939_QC306_210112				✓	
EM2100359-078	11-Jan-2021 12:00	0939_QC401_210111				✓	
EM2100359-079	12-Jan-2021 16:30	0939_QC402_210111				✓	
EM2100359-080	11-Jan-2021 12:00	0939_QC403_210111				✓	
EM2100359-081	12-Jan-2021 12:00	0939_QC404_210112				✓	
EM2100359-082	12-Jan-2021 12:00	0939_QC405_210112				✓	
EM2100359-083	12-Jan-2021 15:57	0939_QC406_210112				✓	

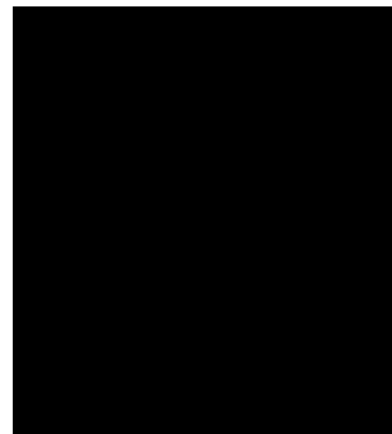
Proactive Holding Time Report

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

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV) Email
- [REDACTED]
- EDI Format - ESDAT (ESDAT) Email
- [REDACTED]
- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ENMRG (ENMRG) Email
- EDI Format - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM2100359	Page	: 1 of 18
Amendment	: 1		
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: [REDACTED]	Telephone	: [REDACTED]
Project	: 0939_SA_PFASOMP	Date Samples Received	: 13-Jan-2021
Site	: SA_0939_PFASOMP	Issue Date	: 22-Jan-2021
Sampler	: [REDACTED]	No. of samples received	: 77
Order number	: 60612561 6.1	No. of samples analysed	: 77

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EP231A: Perfluoroalkyl Sulfonic Acids	EM2100359--040	0939_MW2131_210112 Extra	Perfluorooctane sulfonic acid (PFOS)	1763-23-1	28.4 %	0% - 20%	RPD exceeds LOR based limits
EP231B: Perfluoroalkyl Carboxylic Acids	EM2100359--040	0939_MW2131_210112 Extra	Perfluoroheptanoic acid (PFHpA)	375-85-9	23.5 %	0% - 20%	RPD exceeds LOR based limits
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EM2100359--040	0939_MW2131_210112 Extra	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	25.5 %	0% - 20%	RPD exceeds LOR based limits
EP231P: PFAS Sums	EM2100359--040	0939_MW2131_210112 Extra	Sum of PFAS	----	26.0 %	0% - 20%	RPD exceeds LOR based limits
EP231P: PFAS Sums	EM2100359--040	0939_MW2131_210112 Extra	Sum of PFHxS and PFOS	355-46-4/1763-23-1	27.3 %	0% - 20%	RPD exceeds LOR based limits
EP231P: PFAS Sums	EM2100359--040	0939_MW2131_210112 Extra	Sum of PFAS (WA DER List)	----	26.0 %	0% - 20%	RPD exceeds LOR based limits

Laboratory Control Spike (LCS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	QC-3461411-002	----	Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	70.9 %	71.0-127%	Recovery less than lower control limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids	QC-3474160-002	----	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	135 %	70.0-130%	Recovery greater than upper control limit

Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	EM2100359--068	0939_MW4023_210112 Extra	Perfluorohexane sulfonic acid (PFHxS)	355-46-4	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP231A: Perfluoroalkyl Sulfonic Acids	EM2100359--026	0939_MW2411_210111 Extra	Perfluorooctane sulfonic acid (PFOS)	1763-23-1	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP231B: Perfluoroalkyl Carboxylic Acids	EM2100359--068	0939_MW4023_210112 Extra	Perfluorobutanoic acid (PFBA)	375-22-4	51.1 %	73.0-129%	Recovery less than lower data quality objective

Regular Sample Surrogates

Sub-Matrix: **SURFACE WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP231S: PFAS Surrogate	EM2100359-037	0939_MW2116_210112	13C4-PFOS	----	20.5 %	65.0-140 %	Recovery less than lower data quality objective

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Method					



Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	4	95	4.21	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	2	95	2.11	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA025: Total Suspended Solids dried at 104 ± 2°C								
Clear Plastic Bottle - Natural (EA025H)								
0939_MW2185_210111, 0939_MW2281_210111, 0939_MW2126_210111, 0939_MW2120_210111, 0939_MW2270_210111,	0939_MW2184_210111, 0939_MW2286_210111, 0939_MW2358_210111, 0939_QC103_210111, 0939_MW2200_210111	11-Jan-2021	----	----	----	18-Jan-2021	18-Jan-2021	✓
Clear Plastic Bottle - Natural (EA025H)								
0939_MW2158_210112, 0939_QC104_210112, 0939_MW2284_210112	0939_MW2148_210112, 0939_MW2272_210112,	12-Jan-2021	----	----	----	18-Jan-2021	19-Jan-2021	✓
ED037P: Alkalinity by PC Titrator								
Clear Plastic Bottle - Natural (ED037-P)								
0939_MW2185_210111, 0939_MW2281_210111, 0939_MW2126_210111, 0939_MW2120_210111, 0939_MW2270_210111,	0939_MW2184_210111, 0939_MW2286_210111, 0939_MW2358_210111, 0939_QC103_210111, 0939_MW2200_210111	11-Jan-2021	----	----	----	15-Jan-2021	25-Jan-2021	✓
Clear Plastic Bottle - Natural (ED037-P)								
0939_MW2158_210112, 0939_QC104_210112, 0939_MW2284_210112	0939_MW2148_210112, 0939_MW2272_210112,	12-Jan-2021	----	----	----	15-Jan-2021	26-Jan-2021	✓



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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural (ED041G) 0939_MW2185_210111, 0939_MW2281_210111, 0939_MW2126_210111, 0939_MW2120_210111, 0939_MW2270_210111,	0939_MW2184_210111, 0939_MW2286_210111, 0939_MW2358_210111, 0939_QC103_210111, 0939_MW2200_210111	11-Jan-2021	----	----	----	15-Jan-2021	08-Feb-2021	✓
Clear Plastic Bottle - Natural (ED041G) 0939_MW2158_210112, 0939_QC104_210112, 0939_MW2284_210112	0939_MW2148_210112, 0939_MW2272_210112,	12-Jan-2021	----	----	----	15-Jan-2021	09-Feb-2021	✓
ED045G: Chloride by Discrete Analyser								
Clear Plastic Bottle - Natural (ED045G) 0939_MW2185_210111, 0939_MW2281_210111, 0939_MW2126_210111, 0939_MW2120_210111, 0939_MW2270_210111,	0939_MW2184_210111, 0939_MW2286_210111, 0939_MW2358_210111, 0939_QC103_210111, 0939_MW2200_210111	11-Jan-2021	----	----	----	15-Jan-2021	08-Feb-2021	✓
Clear Plastic Bottle - Natural (ED045G) 0939_MW2158_210112, 0939_QC104_210112, 0939_MW2284_210112	0939_MW2148_210112, 0939_MW2272_210112,	12-Jan-2021	----	----	----	15-Jan-2021	09-Feb-2021	✓
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Natural (ED093F) 0939_MW2185_210111, 0939_MW2281_210111, 0939_MW2126_210111, 0939_MW2120_210111, 0939_MW2270_210111,	0939_MW2184_210111, 0939_MW2286_210111, 0939_MW2358_210111, 0939_QC103_210111, 0939_MW2200_210111	11-Jan-2021	----	----	----	15-Jan-2021	18-Jan-2021	✓
Clear Plastic Bottle - Natural (ED093F) 0939_MW2158_210112, 0939_QC104_210112, 0939_MW2284_210112	0939_MW2148_210112, 0939_MW2272_210112,	12-Jan-2021	----	----	----	15-Jan-2021	19-Jan-2021	✓



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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P)								
0939_MW2185_210111, 0939_MW2281_210111, 0939_MW2126_210111, 0939_MW2120_210111, 0939_MW2270_210111,	0939_MW2184_210111, 0939_MW2286_210111, 0939_MW2358_210111, 0939_QC103_210111, 0939_MW2200_210111	11-Jan-2021	----	----	----	15-Jan-2021	08-Feb-2021	✓
Clear Plastic Bottle - Natural (EK040P)								
0939_MW2158_210112, 0939_QC104_210112, 0939_MW2284_210112	0939_MW2148_210112, 0939_MW2272_210112,	12-Jan-2021	----	----	----	15-Jan-2021	09-Feb-2021	✓
EP002: Dissolved Organic Carbon (DOC)								
Amber DOC Filtered- Sulfuric Preserved (EP002)								
0939_MW2185_210111, 0939_MW2281_210111, 0939_MW2126_210111, 0939_MW2120_210111, 0939_MW2270_210111,	0939_MW2184_210111, 0939_MW2286_210111, 0939_MW2358_210111, 0939_QC103_210111, 0939_MW2200_210111	11-Jan-2021	----	----	----	18-Jan-2021	08-Feb-2021	✓
Amber DOC Filtered- Sulfuric Preserved (EP002)								
0939_MW2158_210112, 0939_QC104_210112, 0939_MW2284_210112	0939_MW2148_210112, 0939_MW2272_210112,	12-Jan-2021	----	----	----	18-Jan-2021	09-Feb-2021	✓



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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
0939_MW2216_210112, 0939_MW4218_210112, 0939_QC105_210112, 0939_MW4009_210112, 0939_MW4020_210112, 0939_MW4060_210112, 0939_MW4071_210112 - Extra volume for lab QC, 0939_MW4023_210112 - Extra volume for lab QC, 0939_QC305_210112,	0939_MW2135_210112, 0939_MW4061_210112, 0939_MW4065_210112, 0939_MW4022_210112, 0939_MW4021_210112 - Extra volume for lab QC, 0939_MW4024_210112 - Extra volume for lab QC, 0939_QC106_210112, 0939_QC304_210112, 0939_QC306_210112	12-Jan-2021	18-Jan-2021	11-Jul-2021	✓	18-Jan-2021	11-Jul-2021	✓	
HDPE (no PTFE) (EP231X) 0939_QC402_210111, 0939_QC405_210112,	0939_QC404_210112, 0939_QC406_210112	12-Jan-2021	22-Jan-2021	11-Jul-2021	✓	22-Jan-2021	11-Jul-2021	✓	



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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
0939_MW2216_210112, 0939_MW4218_210112, 0939_QC105_210112, 0939_MW4009_210112, 0939_MW4020_210112, 0939_MW4060_210112, 0939_MW4071_210112 - Extra volume for lab QC, 0939_MW4023_210112 - Extra volume for lab QC, 0939_QC305_210112,	0939_MW2135_210112, 0939_MW4061_210112, 0939_MW4065_210112, 0939_MW4022_210112, 0939_MW4021_210112 - Extra volume for lab QC, 0939_MW4024_210112 - Extra volume for lab QC, 0939_QC106_210112, 0939_QC304_210112, 0939_QC306_210112	12-Jan-2021	18-Jan-2021	11-Jul-2021	✓	18-Jan-2021	11-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_QC402_210111, 0939_QC405_210112,	0939_QC404_210112, 0939_QC406_210112	12-Jan-2021	22-Jan-2021	11-Jul-2021	✓	22-Jan-2021	11-Jul-2021	✓



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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
EP231C: Perfluoroalkyl Sulfonamides - Continued									
0939_MW2216_210112, 0939_MW4218_210112, 0939_QC105_210112, 0939_MW4009_210112, 0939_MW4020_210112, 0939_MW4060_210112, 0939_MW4071_210112 - Extra volume for lab QC, 0939_MW4023_210112 - Extra volume for lab QC, 0939_QC305_210112,	0939_MW2135_210112, 0939_MW4061_210112, 0939_MW4065_210112, 0939_MW4022_210112, 0939_MW4021_210112 - Extra volume for lab QC, 0939_MW4024_210112 - Extra volume for lab QC, 0939_QC106_210112, 0939_QC304_210112, 0939_QC306_210112	12-Jan-2021	18-Jan-2021	11-Jul-2021	✓	18-Jan-2021	11-Jul-2021	✓	
HDPE (no PTFE) (EP231X) 0939_QC402_210111, 0939_QC405_210112,	0939_QC404_210112, 0939_QC406_210112	12-Jan-2021	22-Jan-2021	11-Jul-2021	✓	22-Jan-2021	11-Jul-2021	✓	



Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
0939_MW2216_210112, 0939_MW4218_210112, 0939_QC105_210112, 0939_MW4009_210112, 0939_MW4020_210112, 0939_MW4060_210112, 0939_MW4071_210112 - Extra volume for lab QC, 0939_MW4023_210112 - Extra volume for lab QC, 0939_QC305_210112,	0939_MW2135_210112, 0939_MW4061_210112, 0939_MW4065_210112, 0939_MW4022_210112, 0939_MW4021_210112 - Extra volume for lab QC, 0939_MW4024_210112 - Extra volume for lab QC, 0939_QC106_210112, 0939_QC304_210112, 0939_QC306_210112	12-Jan-2021	18-Jan-2021	11-Jul-2021	✓	18-Jan-2021	11-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_QC402_210111, 0939_QC405_210112,	0939_QC404_210112, 0939_QC406_210112	12-Jan-2021	22-Jan-2021	11-Jul-2021	✓	22-Jan-2021	11-Jul-2021	✓



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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
EP231P: PFAS Sums - Continued									
0939_MW2216_210112, 0939_MW4218_210112, 0939_QC105_210112, 0939_MW4009_210112, 0939_MW4020_210112, 0939_MW4060_210112, 0939_MW4071_210112 - Extra volume for lab QC, 0939_MW4023_210112 - Extra volume for lab QC, 0939_QC305_210112,	0939_MW2135_210112, 0939_MW4061_210112, 0939_MW4065_210112, 0939_MW4022_210112, 0939_MW4021_210112 - Extra volume for lab QC, 0939_MW4024_210112 - Extra volume for lab QC, 0939_QC106_210112, 0939_QC304_210112, 0939_QC306_210112	12-Jan-2021	18-Jan-2021	11-Jul-2021	✓	18-Jan-2021	11-Jul-2021	✓	
HDPE (no PTFE) (EP231X)									
0939_QC402_210111, 0939_QC405_210112,	0939_QC404_210112, 0939_QC406_210112	12-Jan-2021	22-Jan-2021	11-Jul-2021	✓	22-Jan-2021	11-Jul-2021	✓	



Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Organic Carbon	EP002	2	15	13.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	95	4.21	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Organic Carbon	EP002	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	6	95	6.32	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Organic Carbon	EP002	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	6	95	6.32	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Organic Carbon	EP002	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	95	2.11	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of 'non-filterable' residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) on a settled supernatant aliquot of the sample using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride.in the presence of ferric ions the librated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm APHA seal method 2 017-1-L
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM Schedule B(3)
Dissolved Organic Carbon	EP002	WATER	In house: Referenced to APHA 5310 B. This method is compliant with NEPM Schedule B(3). Samples are combusted at high temperature in the presence of an oxidative catalyst. The evolved carbon dioxide is quantified using an IR detector.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
---------------------	--------	--------	---------------------



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

QUALITY CONTROL REPORT

Work Order	: EM2100359	Page	: 1 of 18
Amendment	: 1		
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: KIM TREGLOWN	Contact	: Christopher Redford
Address			
Telephone			
Project	: 0939_SA_PFASOMP	Date Samples Received	: 13-Jan-2021
Order number	: 60612561 6.1	Date Analysis Commenced	: 14-Jan-2021
C-O-C number	: 17648	Issue Date	: 22-Jan-2021
Sampler			
Site	: SA_0939_PFASOMP		
Quote number	: SY/139/19 V3		
No. of samples received	: 77		
No. of samples analysed	: 77		



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

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

This Quality Control Report contains the following information:

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 3465188)									
EM2100335-003	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	156	149	4.60	0% - 20%
EM2100359-028	0939_MW2358_210111	EA025H: Suspended Solids (SS)	----	5	mg/L	1810	1800	0.624	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 3463093)									
EM2100359-046	0939_MW2158_210112	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	734	728	0.930	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	734	728	0.930	0% - 20%
EM2100316-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1 ppm	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1 ppm	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	242 ppm	241	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	242 ppm	241	0.00	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 3461337)									
EM2100234-008	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	0.00	No Limit
EM2100359-032	0939_MW2120_210111	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	52	53	2.08	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 3461338)									
EM2100234-008	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	<1	<1	0.00	No Limit
EM2100359-032	0939_MW2120_210111	ED045G: Chloride	16887-00-6	1	mg/L	98	97	0.00	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 3462772)									
EM2100356-002	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	93	94	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	6	6	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	29	29	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	25	25	0.00	0% - 20%
EM2100359-002	0939_MW2185_210111	ED093F: Calcium	7440-70-2	1	mg/L	63	61	3.94	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	119	115	3.38	0% - 20%



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED093F: Dissolved Major Cations (QC Lot: 3462772) - continued									
EM2100359-002	0939_MW2185_210111	ED093F: Sodium	7440-23-5	1	mg/L	1360	1320	2.49	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	28	27	0.00	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 3462773)									
EM2100359-048	0939_QC104_210112	ED093F: Calcium	7440-70-2	1	mg/L	30	30	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	55	55	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	1040	1040	0.139	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	17	17	0.00	0% - 50%
EM2100413-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	2540	2570	0.894	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	2030	2060	1.32	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	29200	29600	1.47	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	853	869	1.85	0% - 20%
EK040P: Fluoride by PC Titrator (QC Lot: 3463094)									
EM2100359-046	0939_MW2158_210112	EK040P: Fluoride	16984-48-8	0.1	mg/L	1.7	1.6	0.00	0% - 50%
EM2100316-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.7 ppm	0.8	0.00	No Limit
EP002: Dissolved Organic Carbon (DOC) (QC Lot: 3465582)									
EM2100359-002	0939_MW2185_210111	EP002: Dissolved Organic Carbon	----	1	mg/L	2	2	0.00	No Limit
EM2100359-036	0939_MW2200_210111	EP002: Dissolved Organic Carbon	----	1	mg/L	22	22	0.00	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3462497)									
EM2100359-025	0939_MW2394_210111 Extra sample volume for lab QC	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.01	0.01	0.00	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.05	0.09	58.9	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit		
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3462933)									
EM2100359-040	0939_MW2131_210112 Extra volume for lab QC	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	106	# 141	28.4	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.65	0.74	13.0	0% - 20%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.97	1.08	9.99	0% - 20%
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	11.7	13.9	17.2	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.42	0.64	40.3	0% - 50%
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.04	<0.04	0.00	No Limit		
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3465357)									
EM2100359-067	0939_MW4024_210112 Extra volume for lab QC	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.40	0.49	19.2	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.05	0.06	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.05	0.06	21.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3465357) - continued									
EM2100359-067	0939_MW4024_210112 Extra volume for lab QC	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.50	0.60	17.6	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.04	0.04	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EM2100359-066	0939_MW4071_210112 Extra volume for lab QC	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.01	0.02	0.00	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3462497)									
EM2100359-025	0939_MW2394_210111 Extra sample volume for lab QC	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit		
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3462933)									
EM2100359-040	0939_MW2131_210112 Extra volume for lab QC	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	5.97	7.07	16.9	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	3.08	3.63	16.3	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	6.48	7.46	14.1	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	2.24	# 2.83	23.5	0% - 20%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.11	0.15	32.3	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.04	<0.04	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.04	<0.04	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.04	<0.04	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.04	<0.04	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.10	<0.09	0.00	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	0.8	1.3	50.1	No Limit		
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3465357)									



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3465357) - continued									
EM2100359-067	0939_MW4024_210112 Extra volume for lab QC	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.02	0.02	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.08	0.10	14.2	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit		
EM2100359-066	0939_MW4071_210112 Extra volume for lab QC	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit		
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3462497)									
EM2100359-025	0939_MW2394_210111 Extra sample volume for lab QC	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3462933)									
EM2100359-040	0939_MW2131_210112 Extra volume for lab QC	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	0.34	0.53	42.8	0% - 50%
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.04	<0.04	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.04	<0.04	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.10	<0.09	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.10	<0.09	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.10	<0.09	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.10	<0.09	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3465357)									
EM2100359-067	0939_MW4024_210112 Extra volume for lab QC	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EM2100359-066	0939_MW4071_210112 Extra volume for lab QC	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3465357) - continued									
EM2100359-066	0939_MW4071_210112 Extra volume for lab QC	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3462497)									
EM2100359-025	0939_MW2394_210111 Extra sample volume for lab QC	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3462933)									
EM2100359-040	0939_MW2131_210112 Extra volume for lab QC	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	1.66	# 2.14	25.5	0% - 20%
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3465357)									
EM2100359-067	0939_MW4024_210112 Extra volume for lab QC	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EM2100359-066	0939_MW4071_210112 Extra volume for lab QC	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 3462497)									



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231P: PFAS Sums (QC Lot: 3462497) - continued									
EM2100359-025	0939_MW2394_210111 Extra sample volume for lab QC	EP231X: Sum of PFAS	----	0.01	µg/L	0.06	0.10	50.0	0% - 50%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.06	0.10	50.0	0% - 50%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.06	0.10	50.0	0% - 50%
EP231P: PFAS Sums (QC Lot: 3462933)									
EM2100359-040	0939_MW2131_210112 Extra volume for lab QC	EP231X: Sum of PFAS	----	0.01	µg/L	140	# 182	26.0	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	118	# 155	27.3	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	138	# 180	26.0	0% - 20%
EP231P: PFAS Sums (QC Lot: 3465357)									
EM2100359-067	0939_MW4024_210112 Extra volume for lab QC	EP231X: Sum of PFAS	----	0.01	µg/L	1.14	1.37	18.3	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.90	1.09	19.1	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	1.05	1.27	19.0	0% - 20%
EM2100359-066	0939_MW4071_210112 Extra volume for lab QC	EP231X: Sum of PFAS	----	0.01	µg/L	0.01	0.02	66.7	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.01	0.02	66.7	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.01	0.02	66.7	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

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

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 3465188)									
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	107	91.0	109	
				<5	1000 mg/L	100	90.3	109	
ED037P: Alkalinity by PC Titrator (QCLot: 3463093)									
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	104	85.0	116	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3461337)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	107	85.8	117	
				<1	500 mg/L	104	80.0	120	
ED045G: Chloride by Discrete Analyser (QCLot: 3461338)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	102	85.0	115	
				<1	1000 mg/L	105	85.0	122	
ED093F: Dissolved Major Cations (QCLot: 3462772)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	5 mg/L	98.7	88.2	117	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	5 mg/L	96.6	85.6	114	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	100	90.0	114	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	99.1	82.8	115	
ED093F: Dissolved Major Cations (QCLot: 3462773)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	5 mg/L	106	88.2	117	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	5 mg/L	103	85.6	114	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	106	90.0	114	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	105	82.8	115	
EK040P: Fluoride by PC Titrator (QCLot: 3463094)									
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	100	80.8	118	
EP002: Dissolved Organic Carbon (DOC) (QCLot: 3465582)									
EP002: Dissolved Organic Carbon	----	1	mg/L	<1	100 mg/L	97.7	83.0	115	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3461411)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	82.2	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	# 70.9	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	77.7	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	73.4	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	68.7	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	71.8	53.0	142	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3462497)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	97.7	72.0	130	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3462497) - continued									
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	94.9	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	106	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	78.7	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	87.9	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	65.7	53.0	142	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3462933)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	101	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	107	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	119	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	101	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	112	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	95.3	53.0	142	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3465357)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	72.3	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	100	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	81.5	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	78.0	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	79.2	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	77.8	53.0	142	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3465742)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	74.0	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	92.0	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	74.6	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	72.3	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	68.6	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	68.4	53.0	142	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3474160)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	91.1	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	123	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	98.9	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	98.8	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	103	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	100	53.0	142	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3461411)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	82.9	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	79.2	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	82.8	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	85.2	72.0	130	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB)	Laboratory Control Spike (LCS) Report				
				Report	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
				Result		LCS	Low	High	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3461411) - continued									
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	80.4	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	83.8	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	73.2	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	79.2	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	82.0	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	82.3	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	95.3	71.0	132	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3462497)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	113	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	98.2	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.3	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	107	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	111	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	98.5	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	92.9	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.7	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	80.6	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	128	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	86.2	71.0	132	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3462933)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	112	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	95.4	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	94.5	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	119	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	122	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	96.1	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	101	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	97.4	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	85.0	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	81.9	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	90.9	71.0	132	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3465357)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	94.2	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	79.3	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	74.0	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	91.8	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	75.4	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	74.2	69.0	130	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB)	Laboratory Control Spike (LCS) Report				
				Report	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
				Result		LCS	Low	High	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3465357) - continued									
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	78.8	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	81.3	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	77.2	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	73.9	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	75.3	71.0	132	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3465742)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	86.0	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	73.6	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	72.2	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	78.1	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	75.5	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	71.8	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	71.2	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	71.2	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	72.4	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	65.5	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	71.9	71.0	132	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3474160)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	120	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	90.2	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.2	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	95.4	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	93.8	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	91.7	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	92.7	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	105	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	98.9	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	123	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	113	71.0	132	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3461411)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	85.5	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	91.0	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	73.1	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	87.2	70.0	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	82.6	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	78.1	65.0	136	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
					LCS	Low	High		
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3461411) - continued									
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	73.4	61.0	135	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3462497)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.0	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	96.8	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	84.0	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.8	70.0	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	99.1	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	85.5	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	88.3	61.0	135	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3462933)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	93.4	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	70.9	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	71.3	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	76.6	70.0	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	101	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	95.0	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	81.1	61.0	135	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3465357)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	82.4	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	72.9	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	70.4	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	79.8	70.0	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	81.6	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	82.4	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	80.9	61.0	135	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3465742)									



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3465742) - continued									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	69.6	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	72.8	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	71.4	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	75.5	70.0	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	71.3	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	68.5	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	62.4	61.0	135	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3474160)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	90.1	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	108	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	94.2	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	108	70.0	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	96.3	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	107	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	92.4	61.0	135	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3461411)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	79.1	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	81.2	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	77.3	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	73.3	70.0	130	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3462497)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	96.7	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	107	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	104	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	125	70.0	130	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3462933)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	87.8	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	99.8	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	100.0	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	78.9	70.0	130	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3465357)									



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3465357) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	85.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	85.2	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	86.0	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	73.6	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3465742)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	81.6	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	77.5	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	86.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	73.1	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3474160)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	95.7	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	106	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	107	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	# 135	70.0	130
EP231P: PFAS Sums (QCLot: 3461411)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 3462497)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 3462933)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 3465357)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 3465742)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EP231P: PFAS Sums (QCLot: 3465742) - continued								
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 3474160)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

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

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Recovery Limits (%)	
					MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3461337)							
EM2100316-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	83.4	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 3461338)							
EM2100316-001	Anonymous	ED045G: Chloride	16887-00-6	400 mg/L	85.7	70.0	142
EK040P: Fluoride by PC Titrator (QCLot: 3463094)							
EM2100359-003	0939_MW2184_210111	EK040P: Fluoride	16984-48-8	5 mg/L	104	70.0	130
EP002: Dissolved Organic Carbon (DOC) (QCLot: 3465582)							
EM2100359-003	0939_MW2184_210111	EP002: Dissolved Organic Carbon	----	100 mg/L	110	75.0	117
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3462497)							
EM2100359-026	0939_MW2411_210111 Extra sample volume for lab QC	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	94.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	107	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	106	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	87.4	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	# Not Determined	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	78.1	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3465357)							
EM2100359-068	0939_MW4023_210112 Extra volume for lab QC	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	89.7	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	71.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	# Not Determined	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	86.2	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	67.3	65.0	140



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3465357) - continued							
EM2100359-068	0939_MW4023_210112 Extra volume for lab QC	EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	87.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3462497)							
EM2100359-026	0939_MW2411_210111 Extra sample volume for lab QC	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	127	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	99.2	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	96.5	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	124	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	101	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	103	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	109	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	104	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	91.6	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	140	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	95.7	71.0	132		
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3465357)							
EM2100359-068	0939_MW4023_210112 Extra volume for lab QC	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	# 51.1	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	86.7	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	87.3	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	101	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	96.6	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	91.0	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	94.0	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	94.1	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	86.4	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	85.9	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	84.8	71.0	132		
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3462497)							
EM2100359-026	0939_MW2411_210111 Extra sample volume for lab QC	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	100	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	99.1	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	114	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	81.4	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	118	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	88.1	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	94.8	61.0	135



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3465357)							
EM2100359-068	0939_MW4023_210112 Extra volume for lab QC	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	90.1	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	92.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	86.1	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	86.7	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	86.6	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	91.9	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	81.2	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3462497)							
EM2100359-026	0939_MW2411_210111 Extra sample volume for lab QC	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	94.1	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	96.4	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	120	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	119	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3465357)							
EM2100359-068	0939_MW4023_210112 Extra volume for lab QC	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	102	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	99.3	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	93.5	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	82.9	70.0	130

CERTIFICATE OF ANALYSIS

Work Order : EM2100359 Amendment : 1 Client : AECOM Australia Pty Ltd Contact : KIM TREGLOWN Address : [REDACTED] Telephone : +61 08 8981 2698 Project : 0939_SA_PFASOMP Order number : 60612561 6.1 C-O-C number : 17648 Sampler : [REDACTED] Site : SA_0939_PFASOMP Quote number : SY/139/19 V3 No. of samples received : 77 No. of samples analysed : 77	Page : 1 of 44 Laboratory : Environmental Division Melbourne Contact : Christopher Redford Address : [REDACTED] Telephone : [REDACTED] Date Samples Received : 13-Jan-2021 09:10 Date Analysis Commenced : 14-Jan-2021 Issue Date : 22-Jan-2021 18:40
--	--



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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	Position	Accreditation Category
[REDACTED]	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

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

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

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

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

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

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

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

- EP231X: Samples (EM2100359) required dilution due to matrix interferences. LOR values have been adjusted accordingly.
- EP231X: Poor duplicate precision observed for sample EM2100359-040. Confirmed by re-analysis.
- EP231X: Poor surrogate recovery for sample EM2100359-037 due to sample matrix interference. Confirmed by re-analysis.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- ED093F:EM2100359 # 50 has been confirmed for major cations by re-preparation and re-analysis.
- ED093F: EM2100359#5 has been confirmed for major cations by re-preparation and re-analysis
- EA025: EM2100359 #32, 33, 47 and 48 SS has been confirmed by re-prep and reanalysis.
- Ionic Balance out of acceptable limits for sample #32, 33 and 50 due to analytes not quantified in this report.
- Ionic Balance out of acceptable limits for sample #5 due to analytes not quantified in this report. Major anions and cations have been confirmed by re-prep and reanalysis.
- Amendment (21/1/21):This report has been amended to report EP231X on samples 78-83
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0939_MW2183_21011 1	0939_MW2182_21011 1	0939_MW2180_21011 1	0939_QC101_210111	0939_MW2126_21011 1
Sampling date / time				11-Jan-2021 10:33	11-Jan-2021 10:32	11-Jan-2021 10:59	11-Jan-2021 11:03	11-Jan-2021 14:01	
Compound	CAS Number	LOR	Unit	EM2100359-006 Result	EM2100359-007 Result	EM2100359-010 Result	EM2100359-011 Result	EM2100359-027 Result	
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L	----	----	----	----	1690	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	----	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	----	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	----	490	
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	----	490	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	----	872	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	----	----	----	----	3160	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	----	----	----	----	183	
Magnesium	7439-95-4	1	mg/L	----	----	----	----	214	
Sodium	7440-23-5	1	mg/L	----	----	----	----	1580	
Potassium	7440-09-7	1	mg/L	----	----	----	----	28	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	----	----	----	----	0.6	
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	----	----	----	----	117	
∅ Total Cations	----	0.01	meq/L	----	----	----	----	96.2	
∅ Ionic Balance	----	0.01	%	----	----	----	----	9.80	
EP002: Dissolved Organic Carbon (DOC)									
Dissolved Organic Carbon	----	1	mg/L	----	----	----	----	2	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.13	<0.02	0.70	0.64	0.08	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.14	<0.02	2.95	2.83	0.08	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	1.41	0.06	74.8	65.5	0.82	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.09	<0.02	7.43	6.88	0.04	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	2.14	0.03	62.8	64.0	0.41	



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2183_21011 1	0939_MW2182_21011 1	0939_MW2180_21011 1	0939_QC101_210111	0939_MW2126_21011 1
Sampling date / time				11-Jan-2021 10:33	11-Jan-2021 10:32	11-Jan-2021 10:59	11-Jan-2021 11:03	11-Jan-2021 14:01
Compound	CAS Number	LOR	Unit	EM2100359-006 Result	EM2100359-007 Result	EM2100359-010 Result	EM2100359-011 Result	EM2100359-027 Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	1.1	0.3	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.03	<0.02	1.22	1.22	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.21	<0.02	7.97	7.62	0.12
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.03	<0.02	1.09	0.99	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.07	<0.01	8.01	7.26	0.03
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.10	0.09	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.04	0.04	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2183_21011 1	0939_MW2182_21011 1	0939_MW2180_21011 1	0939_QC101_210111	0939_MW2126_21011 1
Sampling date / time				11-Jan-2021 10:33	11-Jan-2021 10:32	11-Jan-2021 10:59	11-Jan-2021 11:03	11-Jan-2021 14:01
Compound	CAS Number	LOR	Unit	EM2100359-006	EM2100359-007	EM2100359-010	EM2100359-011	EM2100359-027
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	4.25	0.09	168	157	1.58
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	3.55	0.09	138	130	1.23
Sum of PFAS (WA DER List)	----	0.01	µg/L	4.02	0.09	158	148	1.46
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	86.7	83.6	66.0	69.8	94.2
13C8-PFOA	----	0.02	%	99.9	101	99.8	97.0	98.3



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2358_21011 1	0939_MW2120_21011 1	0939_MW2490_21011 2	0939_MW4061_21011 2	0939_QC105_210112
Sampling date / time				11-Jan-2021 14:05	11-Jan-2021 15:28	12-Jan-2021 10:34	12-Jan-2021 13:56	12-Jan-2021 13:58
Compound	CAS Number	LOR	Unit	EM2100359-028 Result	EM2100359-032 Result	EM2100359-045 Result	EM2100359-058 Result	EM2100359-059 Result
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	----	674	----	----	----
Suspended Solids (SS)	----	5	mg/L	1810	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	713	320	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	713	320	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	791	52	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	2780	98	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	140	30	----	----	----
Magnesium	7439-95-4	1	mg/L	192	27	----	----	----
Sodium	7440-23-5	1	mg/L	1530	98	----	----	----
Potassium	7440-09-7	1	mg/L	31	14	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.8	1.5	----	----	----
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	109	10.2	----	----	----
∅ Total Cations	----	0.01	meq/L	90.1	8.34	----	----	----
∅ Ionic Balance	----	0.01	%	9.54	10.2	----	----	----
EP002: Dissolved Organic Carbon (DOC)								
Dissolved Organic Carbon	----	1	mg/L	28	<1	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	25.8	0.62	159	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	35.1	0.78	316	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	265	5.94	2270	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	17.0	0.99	160	<0.02	<0.02



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2358_21011 1	0939_MW2120_21011 1	0939_MW2490_21011 2	0939_MW4061_21011 2	0939_QC105_210112
Sampling date / time				11-Jan-2021 14:05	11-Jan-2021 15:28	12-Jan-2021 10:34	12-Jan-2021 13:56	12-Jan-2021 13:58
Compound	CAS Number	LOR	Unit	EM2100359-028	EM2100359-032	EM2100359-045	EM2100359-058	EM2100359-059
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	177	36.0	3270	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.04	0.36	0.17	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	2.0	0.2	17.9	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	9.38	0.28	61.0	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	47.5	1.46	336	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	8.08	0.24	48.1	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	10.5	0.85	132	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.04	<0.02	0.43	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.04	<0.02	<0.04	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.04	<0.02	<0.04	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.04	<0.02	<0.04	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.04	<0.02	<0.04	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.09	<0.05	<0.10	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.04	0.74	0.28	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.09	<0.05	<0.10	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.09	<0.05	<0.10	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.09	<0.05	<0.10	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.09	<0.05	<0.10	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.04	<0.02	<0.04	<0.02	<0.02



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2358_21011 1	0939_MW2120_21011 1	0939_MW2490_21011 2	0939_MW4061_21011 2	0939_QC105_210112
Sampling date / time				11-Jan-2021 14:05	11-Jan-2021 15:28	12-Jan-2021 10:34	12-Jan-2021 13:56	12-Jan-2021 13:58
Compound	CAS Number	LOR	Unit	EM2100359-028 Result	EM2100359-032 Result	EM2100359-045 Result	EM2100359-058 Result	EM2100359-059 Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.04	<0.02	<0.04	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	597	48.5	6770	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	442	41.9	5540	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	545	45.6	6290	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	115	82.2	67.8	104	102
13C8-PFOA	----	0.02	%	96.0	96.7	89.6	94.8	96.9



Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID		0939_MW4060_21011 2	0939_QC301_210111	----	----	----
Sampling date / time				12-Jan-2021 15:37	11-Jan-2021 12:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM2100359-069	EM2100359-072	-----	-----	-----	-----	-----
				Result	Result	---	---	---	---	---
EP231A: Perfluoroalkyl Sulfonic Acids										
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids										
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides										
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----	----	----



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4060_21011 2	0939_QC301_210111	----	----	----
Sampling date / time				12-Jan-2021 15:37	11-Jan-2021 12:00	----	----	----
Compound	CAS Number	LOR	Unit	EM2100359-069	EM2100359-072	-----	-----	-----
				Result	Result	---	---	---
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	95.4	100	----	----	----
13C8-PFOA	----	0.02	%	98.4	102	----	----	----



Analytical Results

Sub-Matrix: SURFACE WATER
 (Matrix: WATER)

Sample ID

				0939_MW2201_21011 1	0939_MW2270_21011 1	0939_MW2116_21011 2	0939_MW4071_21011 2 Extra volume for lab QC	----
Sampling date / time				11-Jan-2021 14:54	11-Jan-2021 15:46	12-Jan-2021 09:14	12-Jan-2021 15:09	----
Compound	CAS Number	LOR	Unit	EM2100359-031 Result	EM2100359-035 Result	EM2100359-037 Result	EM2100359-066 Result	----- ----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	----	942	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	<1	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	347	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	----	347	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	647	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	----	3140	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	----	226	----	----	----
Magnesium	7439-95-4	1	mg/L	----	240	----	----	----
Sodium	7440-23-5	1	mg/L	----	1340	----	----	----
Potassium	7440-09-7	1	mg/L	----	25	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	----	0.5	----	----	----
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	----	109	----	----	----
∅ Total Cations	----	0.01	meq/L	----	90.0	----	----	----
∅ Ionic Balance	----	0.01	%	----	9.56	----	----	----
EP002: Dissolved Organic Carbon (DOC)								
Dissolved Organic Carbon	----	1	mg/L	----	2	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.08	348	<0.02	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.08	436	<0.02	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.10	0.65	3710	<0.02	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.02	304	<0.02	----



Analytical Results

Sub-Matrix: SURFACE WATER
 (Matrix: WATER)

Sample ID

				0939_MW2201_21011 1	0939_MW2270_21011 1	0939_MW2116_21011 2	0939_MW4071_21011 2 Extra volume for lab QC	----
Sampling date / time				11-Jan-2021 14:54	11-Jan-2021 15:46	12-Jan-2021 09:14	12-Jan-2021 15:09	----
Compound	CAS Number	LOR	Unit	EM2100359-031 Result	EM2100359-035 Result	EM2100359-037 Result	EM2100359-066 Result	----- ----
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.84	0.24	7320	0.01	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.45	<0.02	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	53.7	<0.1	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	143	<0.02	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.11	734	<0.02	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	100	<0.02	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.03	219	<0.01	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	1.06	<0.02	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.17	<0.02	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.04	<0.02	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.04	<0.02	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.04	<0.02	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.09	<0.05	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	3.92	<0.02	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.09	<0.05	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.09	<0.05	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.09	<0.05	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.09	<0.05	----



Analytical Results

Sub-Matrix: SURFACE WATER
 (Matrix: WATER)

Sample ID

				0939_MW2201_21011 1	0939_MW2270_21011 1	0939_MW2116_21011 2	0939_MW4071_21011 2 Extra volume for lab QC	----
Sampling date / time				11-Jan-2021 14:54	11-Jan-2021 15:46	12-Jan-2021 09:14	12-Jan-2021 15:09	----
Compound	CAS Number	LOR	Unit	EM2100359-031 Result	EM2100359-035 Result	EM2100359-037 Result	EM2100359-066 Result	----- ----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.04	<0.02	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.04	<0.02	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.33	<0.05	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.17	<0.05	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	0.94	1.21	13400	0.01	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.94	0.89	11000	0.01	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.94	1.11	12600	0.01	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	99.1	91.6	20.5	96.4	----
13C8-PFOA	----	0.02	%	93.8	93.5	83.1	96.7	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_MW2137_21011 1	0939_MW2185_21011 1	0939_MW2184_21011 1	0939_MW2281_21011 1	0939_MW2286_21011 1
Sampling date / time					11-Jan-2021 09:01	11-Jan-2021 09:27	11-Jan-2021 09:40	11-Jan-2021 10:02	11-Jan-2021 10:08
Compound	CAS Number	LOR	Unit		EM2100359-001	EM2100359-002	EM2100359-003	EM2100359-004	EM2100359-005
				Result	Result	Result	Result	Result	Result
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L	----	79	664	<5	332	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	<1	<1	<1	<1	461
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	<1	<1	<1	<1	77
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	620	399	385	<1	
Total Alkalinity as CaCO3	----	1	mg/L	----	620	399	385	537	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	881	544	591	36	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	----	1880	654	3360	941	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	----	63	18	310	133	
Magnesium	7439-95-4	1	mg/L	----	119	37	305	<1	
Sodium	7440-23-5	1	mg/L	----	1360	632	1240	433	
Potassium	7440-09-7	1	mg/L	----	28	16	29	25	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	----	1.6	4.0	0.4	0.2	
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	----	83.8	37.7	115	38.0	
∅ Total Cations	----	0.01	meq/L	----	72.8	31.8	95.2	26.1	
∅ Ionic Balance	----	0.01	%	----	7.00	8.48	9.30	18.6	
EP002: Dissolved Organic Carbon (DOC)									
Dissolved Organic Carbon	----	1	mg/L	----	2	2	<1	4	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	1.20	0.28	<0.02	0.14	0.04	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	1.51	0.26	<0.02	0.07	0.06	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	14.2	2.99	0.09	0.94	0.63	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.58	0.20	<0.02	0.07	0.03	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	11.8	5.24	0.19	2.00	0.64	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_MW2137_21011 1	0939_MW2185_21011 1	0939_MW2184_21011 1	0939_MW2281_21011 1	0939_MW2286_21011 1
Sampling date / time					11-Jan-2021 09:01	11-Jan-2021 09:27	11-Jan-2021 09:40	11-Jan-2021 10:02	11-Jan-2021 10:08
Compound	CAS Number	LOR	Unit	EM2100359-001	EM2100359-002	EM2100359-003	EM2100359-004	EM2100359-005	EM2100359-005
				Result	Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	32.3	9.71	0.28	3.37	1.46	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	26.0	8.23	0.28	2.94	1.27	
Sum of PFAS (WA DER List)	----	0.01	µg/L	30.2	9.25	0.28	3.23	1.37	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	81.2	81.8	83.1	79.6	83.1	
13C8-PFOA	----	0.02	%	101	103	100	100	101	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_MW2285_21011 1	0939_MW2275_21011 1	0939_MW2177_21011 1	0939_MW2175_21011 1	0939_MW2176_21011 1
Sampling date / time				11-Jan-2021 10:48	11-Jan-2021 10:53	11-Jan-2021 11:15	11-Jan-2021 11:26	11-Jan-2021 11:31	
Compound	CAS Number	LOR	Unit	EM2100359-008 Result	EM2100359-009 Result	EM2100359-013 Result	EM2100359-014 Result	EM2100359-015 Result	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.09	0.11	0.04	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.19	0.04	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.05	0.70	3.06	0.20	<0.02	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.28	<0.02	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.12	0.08	4.20	0.07	<0.02	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.08	<0.02	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.15	0.55	0.02	<0.02	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.06	<0.02	<0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.05	0.15	<0.01	<0.02	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_MW2285_21011 1	0939_MW2275_21011 1	0939_MW2177_21011 1	0939_MW2175_21011 1	0939_MW2176_21011 1
Sampling date / time					11-Jan-2021 10:48	11-Jan-2021 10:53	11-Jan-2021 11:15	11-Jan-2021 11:26	11-Jan-2021 11:31
Compound	CAS Number	LOR	Unit	EM2100359-008	EM2100359-009	EM2100359-013	EM2100359-014	EM2100359-015	EM2100359-015
				Result	Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.10	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	0.17	1.17	8.68	0.37	<0.02	<0.02
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.17	0.78	7.26	0.27	<0.02	<0.02
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.17	1.17	8.21	0.33	<0.02	<0.02
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	87.5	84.3	90.1	77.9	99.8	99.8
13C8-PFOA	----	0.02	%	100.0	101	98.3	77.7	102	102



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_MW2172_21011 1	0939_MW2173_21011 1	0939_MW2145_21011 1	0939_MW2129_21011 1	0939_MW2169_21011 1
Sampling date / time				11-Jan-2021 11:43	11-Jan-2021 11:49	11-Jan-2021 12:11	11-Jan-2021 12:17	11-Jan-2021 12:25	
Compound	CAS Number	LOR	Unit	EM2100359-016 Result	EM2100359-017 Result	EM2100359-018 Result	EM2100359-019 Result	EM2100359-020 Result	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.08	0.40	0.03	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.06	2.04	0.05	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.10	0.04	0.76	32.1	0.45	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.04	0.71	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.03	0.04	0.88	8.29	0.07	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	0.54	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.10	4.47	0.04	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	0.75	<0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.03	1.35	<0.01	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_MW2172_21011 1	0939_MW2173_21011 1	0939_MW2145_21011 1	0939_MW2129_21011 1	0939_MW2169_21011 1
Sampling date / time				11-Jan-2021 11:43	11-Jan-2021 11:49	11-Jan-2021 12:11	11-Jan-2021 12:17	11-Jan-2021 12:25	
Compound	CAS Number	LOR	Unit	EM2100359-016 Result	EM2100359-017 Result	EM2100359-018 Result	EM2100359-019 Result	EM2100359-020 Result	
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	0.13	0.08	1.95	50.6	0.64	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.13	0.08	1.64	40.4	0.52	
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.13	0.08	1.85	47.9	0.59	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	104	110	85.8	96.1	97.6	
13C8-PFOA	----	0.02	%	92.7	99.3	93.9	96.4	98.3	



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				0939_MW2139_21011 1	0939_MW2166_21011 1	0939_QC102_210111	0939_MW2394_21011 1 Extra sample volume for lab QC	0939_MW2411_21011 1 Extra sample volume for lab QC
Sampling date / time				11-Jan-2021 12:53	11-Jan-2021 13:06	11-Jan-2021 13:15	11-Jan-2021 13:31	11-Jan-2021 13:44
Compound	CAS Number	LOR	Unit	EM2100359-021 Result	EM2100359-022 Result	EM2100359-023 Result	EM2100359-025 Result	EM2100359-026 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.11
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.11
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.17	<0.02	<0.02	0.05	0.54
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.03
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	0.01	1.38
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.04
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.04
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.15
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				0939_MW2139_21011 1	0939_MW2166_21011 1	0939_QC102_210111	0939_MW2394_21011 1 Extra sample volume for lab QC	0939_MW2411_21011 1 Extra sample volume for lab QC
Sampling date / time				11-Jan-2021 12:53	11-Jan-2021 13:06	11-Jan-2021 13:15	11-Jan-2021 13:31	11-Jan-2021 13:44
Compound	CAS Number	LOR	Unit	EM2100359-021 Result	EM2100359-022 Result	EM2100359-023 Result	EM2100359-025 Result	EM2100359-026 Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	0.17	<0.01	<0.01	0.06	2.41
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.17	<0.01	<0.01	0.06	1.92
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.17	<0.01	<0.01	0.06	2.23
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	84.8	95.8	95.3	97.9	99.6
13C8-PFOA	----	0.02	%	99.9	97.9	91.7	95.0	97.6



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_MW2162_21011 1	0939_MW2202_21011 1	0939_QC103_210111	0939_MW2200_21011 1	0939_MW2130_21011 2
Sampling date / time				11-Jan-2021 14:19	11-Jan-2021 14:53	11-Jan-2021 15:30	11-Jan-2021 15:55	12-Jan-2021 09:23	
Compound	CAS Number	LOR	Unit	EM2100359-029 Result	EM2100359-030 Result	EM2100359-033 Result	EM2100359-036 Result	EM2100359-038 Result	
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L	----	----	2050	----	----	
Suspended Solids (SS)	----	5	mg/L	----	----	----	247	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	<1	283	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	<1	79	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	319	<1	----	
Total Alkalinity as CaCO3	----	1	mg/L	----	----	319	363	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	53	1260	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	----	----	95	2660	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	----	----	30	245	----	
Magnesium	7439-95-4	1	mg/L	----	----	27	<1	----	
Sodium	7440-23-5	1	mg/L	----	----	97	1670	----	
Potassium	7440-09-7	1	mg/L	----	----	14	206	----	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	----	----	1.5	0.2	----	
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	----	----	10.2	108	----	
∅ Total Cations	----	0.01	meq/L	----	----	8.30	90.1	----	
∅ Ionic Balance	----	0.01	%	----	----	10.1	9.26	----	
EP002: Dissolved Organic Carbon (DOC)									
Dissolved Organic Carbon	----	1	mg/L	----	----	<1	22	----	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.09	<0.02	0.65	9.08	11.4	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.08	<0.02	0.82	14.4	14.2	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	1.03	<0.02	5.49	85.6	90.3	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.04	<0.02	1.05	4.89	14.0	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_MW2162_21011 1	0939_MW2202_21011 1	0939_QC103_210111	0939_MW2200_21011 1	0939_MW2130_21011 2
Sampling date / time					11-Jan-2021 14:19	11-Jan-2021 14:53	11-Jan-2021 15:30	11-Jan-2021 15:55	12-Jan-2021 09:23
Compound	CAS Number	LOR	Unit	EM2100359-029	EM2100359-030	EM2100359-033	EM2100359-036	EM2100359-038	EM2100359-038
				Result	Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.55	<0.01	33.4	49.8	420	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.32	0.05	0.86	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.2	2.7	8.9	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.29	3.54	14.7	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.09	<0.02	1.48	15.7	73.4	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.25	2.87	12.8	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.03	<0.01	0.84	4.34	20.8	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.60	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.15	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.04	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.04	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.04	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.10	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	1.02	<0.02	0.32	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.10	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.10	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.10	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.10	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.04	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_MW2162_21011 1	0939_MW2202_21011 1	0939_QC103_210111	0939_MW2200_21011 1	0939_MW2130_21011 2
Sampling date / time					11-Jan-2021 14:19	11-Jan-2021 14:53	11-Jan-2021 15:30	11-Jan-2021 15:55	12-Jan-2021 09:23
Compound	CAS Number	LOR	Unit	EM2100359-029	EM2100359-030	EM2100359-033	EM2100359-036	EM2100359-038	EM2100359-038
				Result	Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.04
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.75
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.35
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	1.91	<0.01	45.8	193	684	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	1.58	<0.01	38.9	135	510	
Sum of PFAS (WA DER List)	----	0.01	µg/L	1.79	<0.01	42.6	174	653	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	88.9	88.4	84.4	81.8	97.4	
13C8-PFOA	----	0.02	%	96.9	103	96.0	103	91.2	



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				0939_MW2210_21011 2	0939_MW2131_21011 2 Extra volume for lab QC	0939_MW2528_21011 2	0939_MW2209_21011 2	0939_MW2157_21011 2
		Sampling date / time		12-Jan-2021 09:33	12-Jan-2021 09:36	12-Jan-2021 09:52	12-Jan-2021 10:01	12-Jan-2021 10:08
Compound	CAS Number	LOR	Unit	EM2100359-039	EM2100359-040	EM2100359-041	EM2100359-042	EM2100359-043
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	10.5	0.65	2.73	<0.02	0.53
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	8.85	0.97	1.74	<0.02	0.72
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	58.1	11.7	12.9	<0.02	3.75
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	8.99	0.42	1.27	<0.02	0.38
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	109	106	48.5	0.08	8.56
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.04	<0.04	0.28	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	1.5	0.8	11.1	<0.1	0.2
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	2.78	3.08	5.36	<0.02	0.16
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	13.4	6.48	9.58	<0.02	0.84
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	2.25	2.24	1.04	<0.02	0.14
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	3.61	5.97	2.15	<0.01	0.27
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.04	0.11	0.21	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.04	<0.04	0.10	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.04	<0.04	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.04	<0.04	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.04	<0.04	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.10	<0.10	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.04	0.34	0.17	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.10	<0.10	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				0939_MW2210_21011 2	0939_MW2131_21011 2 Extra volume for lab QC	0939_MW2528_21011 2	0939_MW2209_21011 2	0939_MW2157_21011 2
Sampling date / time				12-Jan-2021 09:33	12-Jan-2021 09:36	12-Jan-2021 09:52	12-Jan-2021 10:01	12-Jan-2021 10:08
Compound	CAS Number	LOR	Unit	EM2100359-039	EM2100359-040	EM2100359-041	EM2100359-042	EM2100359-043
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.10	<0.10	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.10	<0.10	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.10	<0.10	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.04	<0.04	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.04	<0.04	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	1.66	0.28	<0.05	0.06
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.10	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	219	140	97.5	0.08	15.6
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	167	118	61.4	0.08	12.3
Sum of PFAS (WA DER List)	----	0.01	µg/L	201	138	93.7	0.08	14.5
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	112	75.0	85.0	94.6	97.1
13C8-PFOA	----	0.02	%	91.9	75.2	96.5	99.3	96.8



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_MW2114_21011 2	0939_MW2158_21011 2	0939_MW2148_21011 2	0939_QC104_210112	0939_MW2272_21011 2
Sampling date / time					12-Jan-2021 10:17	12-Jan-2021 10:50	12-Jan-2021 11:03	12-Jan-2021 11:16	12-Jan-2021 11:19
Compound	CAS Number	LOR	Unit	EM2100359-044	EM2100359-046	EM2100359-047	EM2100359-048	EM2100359-050	EM2100359-050
				Result	Result	Result	Result	Result	Result
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L	----	----	127	195	----	----
Suspended Solids (SS)	----	5	mg/L	----	282	----	----	203	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	<1	<1	<1	1030	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	<1	<1	<1	76	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	734	332	330	<1	----
Total Alkalinity as CaCO3	----	1	mg/L	----	734	332	330	1100	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	719	203	191	95	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	----	1490	1760	1730	1030	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	----	33	32	30	103	----
Magnesium	7439-95-4	1	mg/L	----	64	58	55	<1	----
Sodium	7440-23-5	1	mg/L	----	1210	1030	1040	696	----
Potassium	7440-09-7	1	mg/L	----	20	17	17	238	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	----	1.7	3.5	3.6	0.3	----
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	----	71.7	60.5	59.4	53.0	----
∅ Total Cations	----	0.01	meq/L	----	60.0	51.6	51.7	41.5	----
∅ Ionic Balance	----	0.01	%	----	8.81	7.94	6.91	12.2	----
EP002: Dissolved Organic Carbon (DOC)									
Dissolved Organic Carbon	----	1	mg/L	----	7	<1	1	27	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	12.3	60.6	23.8	23.5	19.7	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	13.3	67.6	32.9	34.8	23.3	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	63.9	455	205	201	120	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	6.91	49.6	13.0	12.7	8.58	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_MW2114_21011 2	0939_MW2158_21011 2	0939_MW2148_21011 2	0939_QC104_210112	0939_MW2272_21011 2
Sampling date / time					12-Jan-2021 10:17	12-Jan-2021 10:50	12-Jan-2021 11:03	12-Jan-2021 11:16	12-Jan-2021 11:19
Compound	CAS Number	LOR	Unit	EM2100359-044	EM2100359-046	EM2100359-047	EM2100359-048	EM2100359-050	EM2100359-050
				Result	Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.36	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	236	2220	491	483	302	302
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	168	1820	361	353	187	187
Sum of PFAS (WA DER List)	----	0.01	µg/L	216	2100	445	435	270	270
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	106	67.8	92.0	99.2	97.2	97.2
13C8-PFOA	----	0.02	%	92.0	88.5	95.1	98.4	87.4	87.4



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_MW2284_21011 2	0661_MW2325_21011 2	0939_MW2218_21011 2	0939_MW2134_21011 2	0939_MW2216_21011 2
Sampling date / time				12-Jan-2021 11:29	12-Jan-2021 11:47	12-Jan-2021 12:04	12-Jan-2021 12:07	12-Jan-2021 12:27	
Compound	CAS Number	LOR	Unit	EM2100359-051 Result	EM2100359-052 Result	EM2100359-053 Result	EM2100359-054 Result	EM2100359-055 Result	
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L	3260	----	----	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	702	----	----	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	121	----	----	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	824	----	----	----	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	348	----	----	----	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	1340	----	----	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	2	----	----	----	----	
Magnesium	7439-95-4	1	mg/L	176	----	----	----	----	
Sodium	7440-23-5	1	mg/L	800	----	----	----	----	
Potassium	7440-09-7	1	mg/L	187	----	----	----	----	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.3	----	----	----	----	
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	61.5	----	----	----	----	
∅ Total Cations	----	0.01	meq/L	54.2	----	----	----	----	
∅ Ionic Balance	----	0.01	%	6.35	----	----	----	----	
EP002: Dissolved Organic Carbon (DOC)									
Dissolved Organic Carbon	----	1	mg/L	18	----	----	----	----	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	3.60	<0.02	<0.02	<0.02	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	3.75	<0.02	<0.02	<0.02	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	25.2	<0.02	0.16	0.03	<0.02	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	1.58	<0.02	0.02	<0.02	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	17.8	<0.01	0.82	0.02	<0.01	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_MW2284_21011 2	0661_MW2325_21011 2	0939_MW2218_21011 2	0939_MW2134_21011 2	0939_MW2216_21011 2
Sampling date / time					12-Jan-2021 11:29	12-Jan-2021 11:47	12-Jan-2021 12:04	12-Jan-2021 12:07	12-Jan-2021 12:27
Compound	CAS Number	LOR	Unit	EM2100359-051	EM2100359-052	EM2100359-053	EM2100359-054	EM2100359-055	EM2100359-055
				Result	Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	65.3	<0.01	1.00	0.05	0.05	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	43.0	<0.01	0.98	0.05	0.05	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	59.8	<0.01	0.98	0.05	0.05	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	79.8	80.4	93.0	81.4	81.4	95.7
13C8-PFOA	----	0.02	%	86.3	98.3	99.2	97.0	97.0	94.3



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_MW2135_21011 2	0939_MW4218_21011 2	0939_MW4065_21011 2	0939_MW4009_21011 2	0939_MW4022_21011 2
Sampling date / time				12-Jan-2021 12:32	12-Jan-2021 13:32	12-Jan-2021 14:09	12-Jan-2021 14:26	12-Jan-2021 14:32	
Compound	CAS Number	LOR	Unit	EM2100359-056 Result	EM2100359-057 Result	EM2100359-061 Result	EM2100359-062 Result	EM2100359-063 Result	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_MW2135_21011 2	0939_MW4218_21011 2	0939_MW4065_21011 2	0939_MW4009_21011 2	0939_MW4022_21011 2
Sampling date / time				12-Jan-2021 12:32	12-Jan-2021 13:32	12-Jan-2021 14:09	12-Jan-2021 14:26	12-Jan-2021 14:32	
Compound	CAS Number	LOR	Unit	EM2100359-056 Result	EM2100359-057 Result	EM2100359-061 Result	EM2100359-062 Result	EM2100359-063 Result	
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	99.0	93.4	91.0	104	104	
13C8-PFOA	----	0.02	%	92.2	88.4	89.9	92.8	98.9	



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				0939_MW4020_21011 2	0939_MW4021_21011 2 Extra volume for lab QC	0939_MW4024_21011 2 Extra volume for lab QC	0939_MW4023_21011 2 Extra volume for lab QC	0939_QC106_210112
Sampling date / time				12-Jan-2021 14:41	12-Jan-2021 14:48	12-Jan-2021 15:14	12-Jan-2021 15:25	12-Jan-2021 15:38
Compound	CAS Number	LOR	Unit	EM2100359-064 Result	EM2100359-065 Result	EM2100359-067 Result	EM2100359-068 Result	EM2100359-070 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.05	0.04	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.05	0.06	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.50	0.88	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.04	0.07	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.40	0.68	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.08	0.12	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.02	0.03	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				0939_MW4020_21011 2	0939_MW4021_21011 2 Extra volume for lab QC	0939_MW4024_21011 2 Extra volume for lab QC	0939_MW4023_21011 2 Extra volume for lab QC	0939_QC106_210112
Sampling date / time				12-Jan-2021 14:41	12-Jan-2021 14:48	12-Jan-2021 15:14	12-Jan-2021 15:25	12-Jan-2021 15:38
Compound	CAS Number	LOR	Unit	EM2100359-064 Result	EM2100359-065 Result	EM2100359-067 Result	EM2100359-068 Result	EM2100359-070 Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	1.14	1.88	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.90	1.56	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	1.05	1.75	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	90.5	95.0	97.0	104	84.3
13C8-PFOA	----	0.02	%	83.7	88.6	89.4	90.3	88.2



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_QC302_210111	0939_QC303_210111	0939_QC304_210112	0939_QC305_210112	0939_QC306_210112
Sampling date / time				11-Jan-2021 12:00	11-Jan-2021 12:00	12-Jan-2021 12:00	12-Jan-2021 12:00	12-Jan-2021 12:00	
Compound	CAS Number	LOR	Unit	EM2100359-073	EM2100359-074	EM2100359-075	EM2100359-076	EM2100359-077	
				Result	Result	Result	Result	Result	
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	90.1	97.1	94.1	88.2	94.1	
13C8-PFOA	----	0.02	%	95.8	91.8	94.3	94.1	102	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_QC401_210111	0939_QC402_210111	0939_QC403_210111	0939_QC404_210112	0939_QC405_210112
Sampling date / time				11-Jan-2021 12:00	12-Jan-2021 16:30	11-Jan-2021 12:00	12-Jan-2021 12:00	12-Jan-2021 12:00	
Compound	CAS Number	LOR	Unit	EM2100359-078	EM2100359-079	EM2100359-080	EM2100359-081	EM2100359-082	
				Result	Result	Result	Result	Result	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_QC401_210111	0939_QC402_210111	0939_QC403_210111	0939_QC404_210112	0939_QC405_210112
Sampling date / time				11-Jan-2021 12:00	12-Jan-2021 16:30	11-Jan-2021 12:00	12-Jan-2021 12:00	12-Jan-2021 12:00	
Compound	CAS Number	LOR	Unit	EM2100359-078	EM2100359-079	EM2100359-080	EM2100359-081	EM2100359-082	
				Result	Result	Result	Result	Result	
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	101	94.4	87.9	99.8	115	
13C8-PFOA	----	0.02	%	91.5	96.8	83.2	86.7	94.0	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		0939_QC406_210112	----	----	----	----
		Sampling date / time		12-Jan-2021 15:57	----	----	----	----
Compound	CAS Number	LOR	Unit	EM2100359-083	-----	-----	-----	-----
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID	0939_QC406_210112	----	----	----	----
		Sampling date / time	12-Jan-2021 15:57	----	----	----	----
Compound	CAS Number	LOR	Unit	EM2100359-083	-----	-----	-----
				Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued							
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----
EP231P: PFAS Sums							
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----
EP231S: PFAS Surrogate							
13C4-PFOS	----	0.02	%	99.0	----	----	----
13C8-PFOA	----	0.02	%	93.4	----	----	----



Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM2100500

Client : AECOM Australia Pty Ltd Laboratory : Environmental Division Melbourne
Contact : KIM TREGLOWN Contact : Christopher Redford
Address : [Redacted]

E-mail : kim.treglown@aecom.com E-mail : Christopher.Redford@ALSGlobal.com
Telephone : [Redacted] Facsimile : +61-3-8549 9626

Project : 0939_SA_PFASOMP Page : 1 of 3
Order number : 60612561 6.1 Quote number : ES2019AECOMAU0030 (SY/139/19 V3)
C-O-C number : 17898 QC Level : NEPM 2013 B3 & ALS QC Standard
Site : SA_0939_PFASOMP
Sampler : [Redacted]

Dates

Date Samples Received : 20-Jan-2021 12:45 Issue Date : 20-Jan-2021
Client Requested Due Date : 28-Jan-2021 Scheduled Reporting Date : 28-Jan-2021

Delivery Details

Mode of Delivery : Carrier Security Seal : Not Available
No. of coolers/boxes : 1 Temperature : 16.8°C
Receipt Detail : No. of samples received / analysed : 1 / 1

General Comments

- This report contains the following information:
- Sample Container(s)/Preservation Non-Compliances
- Summary of Sample(s) and Requested Analysis
- Proactive Holding Time Report
- Requested Deliverables
The scheduled reporting date has been extended due to a public holiday.
Please direct any queries related to sample condition / numbering / breakages to Client Services.
Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
Analytical work for this work order will be conducted at ALS Springvale.
Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.
Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

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

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

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
EM2100500-001	15-Jan-2021 10:36	0939_MW15586_210115	✓

Proactive Holding Time Report

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



Requested Deliverables

APCORP

- A4 - AU Tax Invoice (INV) [REDACTED]	Email	[REDACTED]
- *AU Certificate of Analysis - NATA (COA)	Email	[REDACTED]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ENMRG (ENMRG)	Email	
- EDI Format - ESDAT (ESDAT)	Email	
- EDI Format - XTab (XTAB)	Email	
- EDI Format - ESDAT (ESDAT) [REDACTED]	Email	[REDACTED]
- *AU Certificate of Analysis - NATA (COA)	Email	[REDACTED]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ENMRG (ENMRG)	Email	
- EDI Format - ESDAT (ESDAT)	Email	
- EDI Format - XTab (XTAB)	Email	
- *AU Certificate of Analysis - NATA (COA)	Email	[REDACTED]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ENMRG (ENMRG)	Email	
- EDI Format - ESDAT (ESDAT)	Email	
- EDI Format - XTab (XTAB)	Email	
- *AU Certificate of Analysis - NATA (COA)	Email	[REDACTED]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ENMRG (ENMRG)	Email	
- EDI Format - ESDAT (ESDAT)	Email	
- EDI Format - XTab (XTAB)	Email	

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM2100500	Page	: 1 of 4
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: [REDACTED]	Telephone	: [REDACTED]
Project	: 0939_SA_PFASOMP	Date Samples Received	: 20-Jan-2021
Site	: SA_0939_PFASOMP	Issue Date	: 25-Jan-2021
Sampler	: [REDACTED]	No. of samples received	: 1
Order number	: 60612561 6.1	No. of samples analysed	: 1

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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



Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	1	16	6.25	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	16	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0939_MW15586_210115	15-Jan-2021	22-Jan-2021	14-Jul-2021	✔	22-Jan-2021	14-Jul-2021	✔
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0939_MW15586_210115	15-Jan-2021	22-Jan-2021	14-Jul-2021	✔	22-Jan-2021	14-Jul-2021	✔
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0939_MW15586_210115	15-Jan-2021	22-Jan-2021	14-Jul-2021	✔	22-Jan-2021	14-Jul-2021	✔
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0939_MW15586_210115	15-Jan-2021	22-Jan-2021	14-Jul-2021	✔	22-Jan-2021	14-Jul-2021	✔
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0939_MW15586_210115	15-Jan-2021	22-Jan-2021	14-Jul-2021	✔	22-Jan-2021	14-Jul-2021	✔



Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	6.25	10.00	✘	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	5.00	✘	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

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

QUALITY CONTROL REPORT

Work Order	: EM2100500	Page	: 1 of 5
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: [REDACTED]	Contact	: [REDACTED]
Address	: [REDACTED]		
Telephone	: +61 08 8981 2698	Telephone	: +61 2 8784 8555
Project	: 0939_SA_PFASOMP	Date Samples Received	: 20-Jan-2021
Order number	: 60612561 6.1	Date Analysis Commenced	: 22-Jan-2021
C-O-C number	: 17898	Issue Date	: 25-Jan-2021
Sampler	: [REDACTED]		
Site	: SA_0939_PFASOMP		
Quote number	: SY/139/19 V3		
No. of samples received	: 1		
No. of samples analysed	: 1		



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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Accreditation Category
[REDACTED]	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3474488)									
EM2100736-008	Anonymous	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3474488)									
EM2100736-008	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3474488)									
EM2100736-008	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3474488) - continued									
EM2100736-008	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3474488)									
EM2100736-008	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 3474488)									
EM2100736-008	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

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

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3474488)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	95.0	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	123	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	96.9	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	98.6	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.6	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	100	53.0	142	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3474488)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	114	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.1	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	96.8	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	97.0	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.9	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	95.8	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	91.1	71.0	132	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3474488)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	96.8	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	97.8	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	102	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	101	70.0	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	101	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	105	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	102	61.0	135	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3474488)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	104	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	106	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	100	67.0	138	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3474488) - continued									
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	87.3	70.0	130	
EP231P: PFAS Sums (QCLot: 3474488)									
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----	
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----	
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----	

Matrix Spike (MS) Report

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

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

CERTIFICATE OF ANALYSIS

Work Order	: EM2100500	Page	: 1 of 5
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: KIM TREGLOWN	Contact	: Christopher Bedford
Address	[REDACTED]		

Telephone	: [REDACTED]	Telephone	: [REDACTED]
Project	: 0939_SA_PFASOMP	Date Samples Received	: 20-Jan-2021 12:45
Order number	: 60612561 6.1	Date Analysis Commenced	: 22-Jan-2021
C-O-C number	: 17898	Issue Date	: 25-Jan-2021 19:55
Sampler	: [REDACTED]		
Site	: SA_0939_PFASOMP		
Quote number	: SY/139/19 V3		
No. of samples received	: 1		
No. of samples analysed	: 1		



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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	Position	Accreditation Category
[REDACTED]	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

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

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

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

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

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

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

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

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



Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID		0939_MW15586_2101 15	----	----	----	----
Sampling date / time			15-Jan-2021 10:36		----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM2100500-001	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----	----



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

0939_MW15586_2101
15

Sampling date / time

15-Jan-2021 10:36

Compound

CAS Number

LOR

Unit

EM2100500-001

Result

EP231C: Perfluoroalkyl Sulfonamides - Continued

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

EP231D: (n:2) Fluorotelomer Sulfonic Acids

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

EP231P: PFAS Sums

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

EP231S: PFAS Surrogate

13C4-PFOS	----	0.02	%	107	----	----	----	----
13C8-PFOA	----	0.02	%	99.1	----	----	----	----



Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM2100517

Client : AECOM Australia Pty Ltd Laboratory : Environmental Division Melbourne
Contact : [REDACTED] Contact : [REDACTED]
Address : [REDACTED]
E-mail : [REDACTED] E-mail : [REDACTED]
Telephone : [REDACTED] Telephone : [REDACTED]
Facsimile : [REDACTED] Facsimile : [REDACTED]
Project : 0939_SA_PFASOMP Page : 1 of 4
Order number : 60612561 6.1 Quote number : ES2019AECOMAU0030 (SY/139/19 V3)
C-O-C number : 17751 QC Level : NEPM 2013 B3 & ALS QC Standard
Site : SA_0939_PFASOMP
Sampler : [REDACTED]

Dates

Date Samples Received : 15-Jan-2021 10:30 Issue Date : 18-Jan-2021
Client Requested Due Date : 22-Jan-2021 Scheduled Reporting Date : **22-Jan-2021**

Delivery Details

Mode of Delivery : Carrier Security Seal : Intact.
No. of coolers/boxes : 1 Temperature : 8.9°C - Ice present
Receipt Detail : No. of samples received / analysed : 59 / 53

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

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

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

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

EM2100517-009 : 13-Jan-2021 10:39 : 0939_MW4045_210113 - Extra volume for lab QC
 EM2100517-026 : 13-Jan-2021 14:43 : 0939_MW20327_210113 - Extra volume for lab QC
 EM2100517-044 : 14-Jan-2021 11:41 : 0939_MW2203_210114 - Extra volume for lab QC
 EM2100517-048 : 14-Jan-2021 12:06 : 0939_MW2193_210114 - Extra volume for lab qc
 EM2100517-051 : 14-Jan-2021 13:04 : 0939_MW2499_210114 - Extra volume for lab QC

Summary of Sample(s) and Requested Analysis

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

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

Matrix: **WATER**

Laboratory sample ID Sampling date / time Sample ID

Laboratory sample ID	Sampling date / time	Sample ID	(On Hold) WATER	No analysis requested	WATER - EA025H Suspended Solids - Standard Level	WATER - EN055 - PG Ionic Balance by ED037P, ED041G, ED045G & WATER - EP002	Dissolved Organic Carbon (DOC)	WATER - EP231X PFAS - Full Suite (28 analytes)	WATER - NT-01 & 02A Ca, Mg, Na, K, Cl, SO4, Alkalinity & Fluoride
EM2100517-001	13-Jan-2021 09:02	0939_MW4059_210113						✓	
EM2100517-002	13-Jan-2021 09:08	0939_MW4077_210113						✓	
EM2100517-003	13-Jan-2021 09:15	0939_MW4027_210113						✓	
EM2100517-004	13-Jan-2021 09:36	0939_MW4058_210113						✓	
EM2100517-005	13-Jan-2021 09:41	0939_MW4078_210113						✓	
EM2100517-006	13-Jan-2021 09:48	0939_MW4219_210113						✓	
EM2100517-007	13-Jan-2021 09:57	0939_MW4076_210113						✓	
EM2100517-008	13-Jan-2021 10:10	0939_MW4064_210113						✓	
EM2100517-009	13-Jan-2021 10:39	0939_MW4045_210113 ...						✓	
EM2100517-010	13-Jan-2021 10:50	0939_MW4070_210113						✓	
EM2100517-011	13-Jan-2021 10:51	0939_QC107_210113						✓	
EM2100517-013	13-Jan-2021 10:34	0939_MW4053_210113						✓	
EM2100517-014	13-Jan-2021 11:09	0939_MW4055_210113						✓	
EM2100517-015	13-Jan-2021 11:23	0939_MW4052_210113						✓	
EM2100517-016	13-Jan-2021 11:40	0939_MW4072_210113						✓	
EM2100517-017	13-Jan-2021 11:52	0939_MW4041_210113						✓	
EM2100517-018	13-Jan-2021 12:03	0939_MW4074_210113						✓	
EM2100517-019	13-Jan-2021 13:23	0939_MW4069_210113		✓	✓	✓	✓	✓	✓
EM2100517-020	13-Jan-2021 13:50	0939_MW4048_210113		✓	✓	✓	✓	✓	✓
EM2100517-021	13-Jan-2021 14:03	0939_MW4001_210113		✓	✓	✓	✓	✓	✓
EM2100517-022	13-Jan-2021 14:05	0939_MW4075_210113		✓	✓	✓	✓	✓	✓
EM2100517-023	13-Jan-2021 14:26	0939_MW4037_210113						✓	
EM2100517-024	13-Jan-2021 14:25	0939_QC108_210113						✓	
EM2100517-026	13-Jan-2021 14:43	0939_MW20327_210113 ...						✓	
EM2100517-027	13-Jan-2021 14:55	0939_MW4003_210113						✓	
EM2100517-028	13-Jan-2021 15:11	0939_MW4068_210113						✓	
EM2100517-029	13-Jan-2021 15:16	0939_MW4035_210113						✓	
EM2100517-030	13-Jan-2021 15:30	0939_MW4013_210113						✓	
EM2100517-031	13-Jan-2021 12:00	0939_QC307_210113						✓	
EM2100517-032	13-Jan-2021 12:00	0939_QC308_210113						✓	



			(On Hold) WATER	No analysis requested	WATER - EA025H	Suspended Solids - Standard Level	WATER - EN055 - PG	Ionic Balance by ED037P, ED041G, ED045G &	WATER - EP002	Dissolved Organic Carbon (DOC)	WATER - EP231X	PFAS - Full Suite (28 analytes)	WATER - NT-01 & 02A	Ca, Mg, Na, K, Cl, SO4, Alkalinity & Fluoride
EM2100517-033	13-Jan-2021 12:00	0939_QC309_210113									✓			
EM2100517-034	13-Jan-2021 12:00	0939_QC407_210113	✓											
EM2100517-035	13-Jan-2021 00:00	0939_QC408_210113	✓											
EM2100517-036	13-Jan-2021 12:00	0939_QC409_210113	✓											
EM2100517-037	14-Jan-2021 08:49	0939_MW4079_210114			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EM2100517-038	14-Jan-2021 08:55	0939_MW4073_210114			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EM2100517-039	14-Jan-2021 09:13	0939_MW4066_210114			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EM2100517-040	14-Jan-2021 09:16	0939_MW4057_210114			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EM2100517-041	14-Jan-2021 09:46	0939_MW4015_210114									✓			
EM2100517-042	14-Jan-2021 09:48	0939_QC109_210114									✓			
EM2100517-044	14-Jan-2021 11:41	0939_MW2203_210114 ...									✓			
EM2100517-045	14-Jan-2021 12:00	0939_MW2197_210114									✓			
EM2100517-046	14-Jan-2021 12:00	0939_QC110_210114									✓			
EM2100517-048	14-Jan-2021 12:06	0939_MW2193_210114 ...									✓			
EM2100517-049	14-Jan-2021 12:20	0939_MW2194_210114									✓			
EM2100517-050	14-Jan-2021 12:54	0939_MW2149_210114									✓			
EM2100517-051	14-Jan-2021 13:04	0939_MW2499_210114 ...									✓			
EM2100517-052	14-Jan-2021 13:16	0939_MW2188_210114									✓			
EM2100517-053	14-Jan-2021 13:18	0939_MW2189_210114									✓			
EM2100517-054	14-Jan-2021 13:40	0939_MW2112_210114									✓			
EM2100517-055	14-Jan-2021 13:40	0939_QC111_210114									✓			
EM2100517-057	14-Jan-2021 14:03	0939_MW2159_210114									✓			
EM2100517-058	14-Jan-2021 14:30	0939_MW2501_210114									✓			
EM2100517-059	14-Jan-2021 12:00	0939_QC310_210114									✓			
EM2100517-060	14-Jan-2021 12:00	0939_QC311_210114									✓			
EM2100517-061	14-Jan-2021 12:00	0939_QC312_210114									✓			
EM2100517-062	14-Jan-2021 12:00	0939_QC410_210114	✓											
EM2100517-063	14-Jan-2021 12:00	0939_QC411_210114	✓											
EM2100517-064	14-Jan-2021 12:00	0939_QC412_210114	✓											

Proactive Holding Time Report

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



Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



APCORP

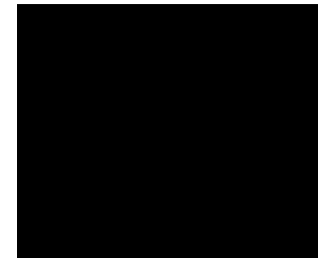
- A4 - AU Tax Invoice (INV)

Email



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

Email
Email
Email
Email
Email
Email
Email
Email



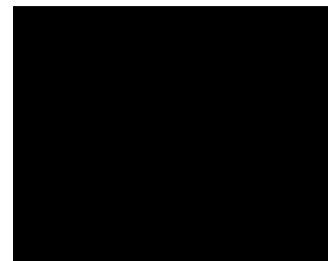
- EDI Format - ESDAT (ESDAT)

Email



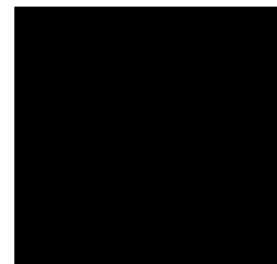
- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)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

Email
Email
Email
Email
Email
Email
Email
Email



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

Email
Email
Email
Email
Email
Email
Email
Email



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

Email
Email
Email
Email
Email
Email
Email
Email



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM2100517	Page	: 1 of 12
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: [REDACTED]	Telephone	: [REDACTED]
Project	: 0939_SA_PFASOMP	Date Samples Received	: 15-Jan-2021
Site	: SA_0939_PFASOMP	Issue Date	: 25-Jan-2021
Sampler	: [REDACTED]	No. of samples received	: 59
Order number	: 60612561 6.1	No. of samples analysed	: 59

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EP231A: Perfluoroalkyl Sulfonic Acids	EM2100517--048	0939_MW2193_210114 Extra	Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	99.9 %	0% - 20%	RPD exceeds LOR based limits
EP231A: Perfluoroalkyl Sulfonic Acids	EM2100517--048	0939_MW2193_210114 Extra	Perfluorohexane sulfonic acid (PFHxS)	355-46-4	90.3 %	0% - 20%	RPD exceeds LOR based limits
EP231B: Perfluoroalkyl Carboxylic Acids	EM2100517--048	0939_MW2193_210114 Extra	Perfluorohexanoic acid (PFHxA)	307-24-4	124 %	0% - 20%	RPD exceeds LOR based limits
EP231P: PFAS Sums	EM2100517--048	0939_MW2193_210114 Extra	Sum of PFAS	----	59.0 %	0% - 20%	RPD exceeds LOR based limits
EP231P: PFAS Sums	EM2100517--048	0939_MW2193_210114 Extra	Sum of PFHxS and PFOS	355-46-4/1763-23-1	50.8 %	0% - 20%	RPD exceeds LOR based limits
EP231P: PFAS Sums	EM2100517--048	0939_MW2193_210114 Extra	Sum of PFAS (WA DER List)	----	58.6 %	0% - 20%	RPD exceeds LOR based limits
Laboratory Control Spike (LCS) Recoveries							
EP231D: (n:2) Fluorotelomer Sulfonic Acids	QC-3467747-002	----	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	59.8 %	70.0-130%	Recovery less than lower control limit
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	EM2100517--051	0939_MW2499_210114 Extra	Perfluorobutane sulfonic acid (PFBS)	375-73-5	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP231A: Perfluoroalkyl Sulfonic Acids	EM2100517--051	0939_MW2499_210114 Extra	Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP231A: Perfluoroalkyl Sulfonic Acids	EM2100517--051	0939_MW2499_210114 Extra	Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP231B: Perfluoroalkyl Carboxylic Acids	EM2100517--051	0939_MW2499_210114 Extra	Perfluoropentanoic acid (PFPeA)	2706-90-3	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP231B: Perfluoroalkyl Carboxylic Acids	EM2100517--051	0939_MW2499_210114 Extra	Perfluorohexanoic acid (PFHxA)	307-24-4	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP231B: Perfluoroalkyl Carboxylic Acids	EM2100517--051	0939_MW2499_210114 Extra	Perfluorooctanoic acid (PFOA)	335-67-1	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Regular Sample Surrogates

Sub-Matrix: **GROUNDWATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
---------------------	----------------------	------------------	---------	------------	------	--------	---------



Sub-Matrix: **GROUNDWATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP231S: PFAS Surrogate	EM2100517-046	0939_QC110_210114	13C4-PFOS	----	57.8 %	65.0-140 %	Recovery less than lower data quality objective

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	2	60	3.33	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	1	60	1.67	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA025: Total Suspended Solids dried at 104 ± 2°C								
Clear Plastic Bottle - Natural (EA025H) 0939_MW4069_210113, 0939_MW4001_210113,	0939_MW4048_210113, 0939_MW4075_210113	13-Jan-2021	----	----	----	20-Jan-2021	20-Jan-2021	✓
Clear Plastic Bottle - Natural (EA025H) 0939_MW4079_210114, 0939_MW4066_210114,	0939_MW4073_210114, 0939_MW4057_210114	14-Jan-2021	----	----	----	20-Jan-2021	21-Jan-2021	✓
ED037P: Alkalinity by PC Titrator								
Clear Plastic Bottle - Natural (ED037-P) 0939_MW4069_210113, 0939_MW4001_210113,	0939_MW4048_210113, 0939_MW4075_210113	13-Jan-2021	----	----	----	19-Jan-2021	27-Jan-2021	✓
Clear Plastic Bottle - Natural (ED037-P) 0939_MW4079_210114, 0939_MW4066_210114,	0939_MW4073_210114, 0939_MW4057_210114	14-Jan-2021	----	----	----	19-Jan-2021	28-Jan-2021	✓



Matrix: WATER

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural (ED041G) 0939_MW4069_210113, 0939_MW4001_210113,	0939_MW4048_210113, 0939_MW4075_210113	13-Jan-2021	----	----	----	19-Jan-2021	10-Feb-2021	✓
Clear Plastic Bottle - Natural (ED041G) 0939_MW4079_210114, 0939_MW4066_210114,	0939_MW4073_210114, 0939_MW4057_210114	14-Jan-2021	----	----	----	19-Jan-2021	11-Feb-2021	✓
ED045G: Chloride by Discrete Analyser								
Clear Plastic Bottle - Natural (ED045G) 0939_MW4069_210113, 0939_MW4001_210113,	0939_MW4048_210113, 0939_MW4075_210113	13-Jan-2021	----	----	----	19-Jan-2021	10-Feb-2021	✓
Clear Plastic Bottle - Natural (ED045G) 0939_MW4079_210114, 0939_MW4066_210114,	0939_MW4073_210114, 0939_MW4057_210114	14-Jan-2021	----	----	----	19-Jan-2021	11-Feb-2021	✓
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Natural (ED093F) 0939_MW4069_210113, 0939_MW4001_210113,	0939_MW4048_210113, 0939_MW4075_210113	13-Jan-2021	----	----	----	19-Jan-2021	20-Jan-2021	✓
Clear Plastic Bottle - Natural (ED093F) 0939_MW4079_210114, 0939_MW4066_210114,	0939_MW4073_210114, 0939_MW4057_210114	14-Jan-2021	----	----	----	19-Jan-2021	21-Jan-2021	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) 0939_MW4069_210113, 0939_MW4001_210113,	0939_MW4048_210113, 0939_MW4075_210113	13-Jan-2021	----	----	----	19-Jan-2021	10-Feb-2021	✓
Clear Plastic Bottle - Natural (EK040P) 0939_MW4079_210114, 0939_MW4066_210114,	0939_MW4073_210114, 0939_MW4057_210114	14-Jan-2021	----	----	----	19-Jan-2021	11-Feb-2021	✓
EP002: Dissolved Organic Carbon (DOC)								
Amber DOC Filtered- Sulfuric Preserved (EP002) 0939_MW4069_210113, 0939_MW4001_210113,	0939_MW4048_210113, 0939_MW4075_210113	13-Jan-2021	----	----	----	20-Jan-2021	10-Feb-2021	✓
Amber DOC Filtered- Sulfuric Preserved (EP002) 0939_MW4079_210114, 0939_MW4066_210114,	0939_MW4073_210114, 0939_MW4057_210114	14-Jan-2021	----	----	----	20-Jan-2021	11-Feb-2021	✓



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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X) 0939_MW4059_210113, 0939_MW4027_210113, 0939_MW4078_210113, 0939_MW4076_210113, 0939_MW4045_210113 - Extra volume for lab QC, 0939_QC107_210113, 0939_MW4055_210113, 0939_MW4072_210113, 0939_MW4074_210113, 0939_MW4048_210113, 0939_MW4075_210113, 0939_QC108_210113, 0939_MW4003_210113, 0939_MW4035_210113, 0939_QC307_210113, 0939_QC309_210113	0939_MW4077_210113, 0939_MW4058_210113, 0939_MW4219_210113, 0939_MW4064_210113, 0939_MW4070_210113, 0939_MW4053_210113, 0939_MW4052_210113, 0939_MW4041_210113, 0939_MW4069_210113, 0939_MW4001_210113, 0939_MW4037_210113, 0939_MW20327_210113 - Extra volume for lab QC, 0939_MW4068_210113, 0939_MW4013_210113, 0939_QC308_210113,	13-Jan-2021	19-Jan-2021	12-Jul-2021	✓	19-Jan-2021	12-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_QC407_210113, 0939_QC409_210113	0939_QC408_210113,	13-Jan-2021	22-Jan-2021	12-Jul-2021	✓	22-Jan-2021	12-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_MW4079_210114, 0939_MW4066_210114, 0939_MW4015_210114, 0939_MW2203_210114 - Extra volume for lab QC,	0939_MW4073_210114, 0939_MW4057_210114, 0939_QC109_210114, 0939_MW2197_210114	14-Jan-2021	19-Jan-2021	13-Jul-2021	✓	19-Jan-2021	13-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_QC110_210114, 0939_MW2194_210114, 0939_MW2499_210114 - Extra volume for lab QC, 0939_MW2189_210114, 0939_QC111_210114, 0939_MW2501_210114, 0939_QC311_210114,	0939_MW2193_210114 - Extra volume for lab qc, 0939_MW2149_210114, 0939_MW2188_210114, 0939_MW2112_210114, 0939_MW2159_210114, 0939_QC310_210114, 0939_QC312_210114	14-Jan-2021	20-Jan-2021	13-Jul-2021	✓	20-Jan-2021	13-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_QC410_210114, 0939_QC412_210114	0939_QC411_210114,	14-Jan-2021	22-Jan-2021	13-Jul-2021	✓	22-Jan-2021	13-Jul-2021	✓



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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X) 0939_MW4059_210113, 0939_MW4027_210113, 0939_MW4078_210113, 0939_MW4076_210113, 0939_MW4045_210113 - Extra volume for lab QC, 0939_QC107_210113, 0939_MW4055_210113, 0939_MW4072_210113, 0939_MW4074_210113, 0939_MW4048_210113, 0939_MW4075_210113, 0939_QC108_210113, 0939_MW4003_210113, 0939_MW4035_210113, 0939_QC307_210113, 0939_QC309_210113	0939_MW4077_210113, 0939_MW4058_210113, 0939_MW4219_210113, 0939_MW4064_210113, 0939_MW4070_210113, 0939_MW4053_210113, 0939_MW4052_210113, 0939_MW4041_210113, 0939_MW4069_210113, 0939_MW4001_210113, 0939_MW4037_210113, 0939_MW20327_210113 - Extra volume for lab QC, 0939_MW4068_210113, 0939_MW4013_210113, 0939_QC308_210113,	13-Jan-2021	19-Jan-2021	12-Jul-2021	✓	19-Jan-2021	12-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_QC407_210113, 0939_QC409_210113	0939_QC408_210113,	13-Jan-2021	22-Jan-2021	12-Jul-2021	✓	22-Jan-2021	12-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_MW4079_210114, 0939_MW4066_210114, 0939_MW4015_210114, 0939_MW2203_210114 - Extra volume for lab QC,	0939_MW4073_210114, 0939_MW4057_210114, 0939_QC109_210114, 0939_MW2197_210114	14-Jan-2021	19-Jan-2021	13-Jul-2021	✓	19-Jan-2021	13-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_QC110_210114, 0939_MW2194_210114, 0939_MW2499_210114 - Extra volume for lab QC, 0939_MW2189_210114, 0939_QC111_210114, 0939_MW2501_210114, 0939_QC311_210114,	0939_MW2193_210114 - Extra volume for lab qc, 0939_MW2149_210114, 0939_MW2188_210114, 0939_MW2112_210114, 0939_MW2159_210114, 0939_QC310_210114, 0939_QC312_210114	14-Jan-2021	20-Jan-2021	13-Jul-2021	✓	20-Jan-2021	13-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_QC410_210114, 0939_QC412_210114	0939_QC411_210114,	14-Jan-2021	22-Jan-2021	13-Jul-2021	✓	22-Jan-2021	13-Jul-2021	✓



Matrix: WATER

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X) 0939_MW4059_210113, 0939_MW4027_210113, 0939_MW4078_210113, 0939_MW4076_210113, 0939_MW4045_210113 - Extra volume for lab QC, 0939_QC107_210113, 0939_MW4055_210113, 0939_MW4072_210113, 0939_MW4074_210113, 0939_MW4048_210113, 0939_MW4075_210113, 0939_QC108_210113, 0939_MW4003_210113, 0939_MW4035_210113, 0939_QC307_210113, 0939_QC309_210113	0939_MW4077_210113, 0939_MW4058_210113, 0939_MW4219_210113, 0939_MW4064_210113, 0939_MW4070_210113, 0939_MW4053_210113, 0939_MW4052_210113, 0939_MW4041_210113, 0939_MW4069_210113, 0939_MW4001_210113, 0939_MW4037_210113, 0939_MW20327_210113 - Extra volume for lab QC, 0939_MW4068_210113, 0939_MW4013_210113, 0939_QC308_210113,	13-Jan-2021	19-Jan-2021	12-Jul-2021	✓	19-Jan-2021	12-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_QC407_210113, 0939_QC409_210113	0939_QC408_210113,	13-Jan-2021	22-Jan-2021	12-Jul-2021	✓	22-Jan-2021	12-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_MW4079_210114, 0939_MW4066_210114, 0939_MW4015_210114, 0939_MW2203_210114 - Extra volume for lab QC,	0939_MW4073_210114, 0939_MW4057_210114, 0939_QC109_210114, 0939_MW2197_210114	14-Jan-2021	19-Jan-2021	13-Jul-2021	✓	19-Jan-2021	13-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_QC110_210114, 0939_MW2194_210114, 0939_MW2499_210114 - Extra volume for lab QC, 0939_MW2189_210114, 0939_QC111_210114, 0939_MW2501_210114, 0939_QC311_210114,	0939_MW2193_210114 - Extra volume for lab qc, 0939_MW2149_210114, 0939_MW2188_210114, 0939_MW2112_210114, 0939_MW2159_210114, 0939_QC310_210114, 0939_QC312_210114	14-Jan-2021	20-Jan-2021	13-Jul-2021	✓	20-Jan-2021	13-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_QC410_210114, 0939_QC412_210114	0939_QC411_210114,	14-Jan-2021	22-Jan-2021	13-Jul-2021	✓	22-Jan-2021	13-Jul-2021	✓



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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X) 0939_MW4059_210113, 0939_MW4027_210113, 0939_MW4078_210113, 0939_MW4076_210113, 0939_MW4045_210113 - Extra volume for lab QC, 0939_QC107_210113, 0939_MW4055_210113, 0939_MW4072_210113, 0939_MW4074_210113, 0939_MW4048_210113, 0939_MW4075_210113, 0939_QC108_210113, 0939_MW4003_210113, 0939_MW4035_210113, 0939_QC307_210113, 0939_QC309_210113	0939_MW4077_210113, 0939_MW4058_210113, 0939_MW4219_210113, 0939_MW4064_210113, 0939_MW4070_210113, 0939_MW4053_210113, 0939_MW4052_210113, 0939_MW4041_210113, 0939_MW4069_210113, 0939_MW4001_210113, 0939_MW4037_210113, 0939_MW20327_210113 - Extra volume for lab QC, 0939_MW4068_210113, 0939_MW4013_210113, 0939_QC308_210113,	13-Jan-2021	19-Jan-2021	12-Jul-2021	✓	19-Jan-2021	12-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_QC407_210113, 0939_QC409_210113	0939_QC408_210113,	13-Jan-2021	22-Jan-2021	12-Jul-2021	✓	22-Jan-2021	12-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_MW4079_210114, 0939_MW4066_210114, 0939_MW4015_210114, 0939_MW2203_210114 - Extra volume for lab QC,	0939_MW4073_210114, 0939_MW4057_210114, 0939_QC109_210114, 0939_MW2197_210114	14-Jan-2021	19-Jan-2021	13-Jul-2021	✓	19-Jan-2021	13-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_QC110_210114, 0939_MW2194_210114, 0939_MW2499_210114 - Extra volume for lab QC, 0939_MW2189_210114, 0939_QC111_210114, 0939_MW2501_210114, 0939_QC311_210114,	0939_MW2193_210114 - Extra volume for lab qc, 0939_MW2149_210114, 0939_MW2188_210114, 0939_MW2112_210114, 0939_MW2159_210114, 0939_QC310_210114, 0939_QC312_210114	14-Jan-2021	20-Jan-2021	13-Jul-2021	✓	20-Jan-2021	13-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_QC410_210114, 0939_QC412_210114	0939_QC411_210114,	14-Jan-2021	22-Jan-2021	13-Jul-2021	✓	22-Jan-2021	13-Jul-2021	✓



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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X) 0939_MW4059_210113, 0939_MW4027_210113, 0939_MW4078_210113, 0939_MW4076_210113, 0939_MW4045_210113 - Extra volume for lab QC, 0939_QC107_210113, 0939_MW4055_210113, 0939_MW4072_210113, 0939_MW4074_210113, 0939_MW4048_210113, 0939_MW4075_210113, 0939_QC108_210113, 0939_MW4003_210113, 0939_MW4035_210113, 0939_QC307_210113, 0939_QC309_210113	0939_MW4077_210113, 0939_MW4058_210113, 0939_MW4219_210113, 0939_MW4064_210113, 0939_MW4070_210113, 0939_MW4053_210113, 0939_MW4052_210113, 0939_MW4041_210113, 0939_MW4069_210113, 0939_MW4001_210113, 0939_MW4037_210113, 0939_MW20327_210113 - Extra volume for lab QC, 0939_MW4068_210113, 0939_MW4013_210113, 0939_QC308_210113,	13-Jan-2021	19-Jan-2021	12-Jul-2021	✓	19-Jan-2021	12-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_QC407_210113, 0939_QC409_210113	0939_QC408_210113,	13-Jan-2021	22-Jan-2021	12-Jul-2021	✓	22-Jan-2021	12-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_MW4079_210114, 0939_MW4066_210114, 0939_MW4015_210114, 0939_MW2203_210114 - Extra volume for lab QC,	0939_MW4073_210114, 0939_MW4057_210114, 0939_QC109_210114, 0939_MW2197_210114	14-Jan-2021	19-Jan-2021	13-Jul-2021	✓	19-Jan-2021	13-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_QC110_210114, 0939_MW2194_210114, 0939_MW2499_210114 - Extra volume for lab QC, 0939_MW2189_210114, 0939_QC111_210114, 0939_MW2501_210114, 0939_QC311_210114,	0939_MW2193_210114 - Extra volume for lab qc, 0939_MW2149_210114, 0939_MW2188_210114, 0939_MW2112_210114, 0939_MW2159_210114, 0939_QC310_210114, 0939_QC312_210114	14-Jan-2021	20-Jan-2021	13-Jul-2021	✓	20-Jan-2021	13-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_QC410_210114, 0939_QC412_210114	0939_QC411_210114,	14-Jan-2021	22-Jan-2021	13-Jul-2021	✓	22-Jan-2021	13-Jul-2021	✓



Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Organic Carbon	EP002	1	8	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	60	3.33	10.00	✘	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Organic Carbon	EP002	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	60	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Organic Carbon	EP002	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	60	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Organic Carbon	EP002	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	60	1.67	5.00	✘	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of 'non-filterable' residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) on a settled supernatant aliquot of the sample using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride.in the presence of ferric ions the librated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm APHA seal method 2 017-1-L
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM Schedule B(3)
Dissolved Organic Carbon	EP002	WATER	In house: Referenced to APHA 5310 B. This method is compliant with NEPM Schedule B(3). Samples are combusted at high temperature in the presence of an oxidative catalyst. The evolved carbon dioxide is quantified using an IR detector.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
---------------------	--------	--------	---------------------



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

QUALITY CONTROL REPORT

Work Order	: EM2100517	Page	: 1 of 12
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 28 91 KING STREET ADELAIDE SA, AUSTRALIA 5000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: [REDACTED]	Telephone	: [REDACTED]
Project	: 0939_SA_PFASOMP	Date Samples Received	: 15-Jan-2021
Order number	: 60612561 6.1	Date Analysis Commenced	: 19-Jan-2021
C-O-C number	: 17751	Issue Date	: 25-Jan-2021
Sampler	: [REDACTED]		
Site	: SA_0939_PFASOMP		
Quote number	: SY/139/19 V3		
No. of samples received	: 59		
No. of samples analysed	: 59		



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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Accreditation Category
	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
	Laboratory Manager	Melbourne Inorganics, Springvale, VIC
	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 3469562)									
EM2100517-037	0939_MW4079_210114	EA025H: Suspended Solids (SS)	----	5	mg/L	169	166	1.49	0% - 20%
EM2100425-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	21	21	0.00	No Limit
ED037P: Alkalinity by PC Titrator (QC Lot: 3467601)									
EM2100506-003	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	508	512	0.911	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	508	512	0.911	0% - 20%
EM2100517-020	0939_MW4048_210113	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	25	24	0.00	0% - 20%
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	343	341	0.696	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	368	365	0.703	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 3467240)									
EM2100517-019	0939_MW4069_210113	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	71	71	0.00	0% - 20%
EM2100550-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	2	2	0.00	No Limit
ED045G: Chloride by Discrete Analyser (QC Lot: 3467241)									
EM2100517-019	0939_MW4069_210113	ED045G: Chloride	16887-00-6	1	mg/L	698	685	1.89	0% - 20%
EM2100549-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	15	14	0.00	0% - 50%
ED093F: Dissolved Major Cations (QC Lot: 3467753)									
EM2100510-003	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	333	335	0.437	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	89	89	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	558	563	0.917	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	6	6	0.00	No Limit
EM2100517-021	0939_MW4001_210113	ED093F: Calcium	7440-70-2	1	mg/L	2	2	0.00	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	3	3	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED093F: Dissolved Major Cations (QC Lot: 3467753) - continued									
EM2100517-021	0939_MW4001_210113	ED093F: Sodium	7440-23-5	1	mg/L	294	297	0.758	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	6	7	0.00	No Limit
ED093F: Dissolved Major Cations (QC Lot: 3467888)									
EM2100499-002	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	<1	<1	0.00	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	<1	<1	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	18	18	0.00	0% - 50%
		ED093F: Potassium	7440-09-7	1	mg/L	21	21	0.00	0% - 20%
EM2100550-002	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	3	3	0.00	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	2	2	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	151	153	1.29	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	142	143	1.12	0% - 20%
EK040P: Fluoride by PC Titrator (QC Lot: 3467600)									
EM2100411-002	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	101	104	3.46	0% - 20%
EM2100517-020	0939_MW4048_210113	EK040P: Fluoride	16984-48-8	0.1	mg/L	7.7	7.9	2.30	0% - 20%
EP002: Dissolved Organic Carbon (DOC) (QC Lot: 3470033)									
EM2100517-019	0939_MW4069_210113	EP002: Dissolved Organic Carbon	----	1	mg/L	8	8	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3469761)									
EM2100517-048	0939_MW2193_210114 Extra volume for lab qc	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	40.2	33.8	17.2	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	2.82	2.53	10.5	0% - 20%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	9.58	# 3.20	99.9	0% - 20%
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	45.5	# 17.2	90.3	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	2.95	3.28	10.7	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	0.12	0.15	18.8	No Limit
EM2100622-024	Anonymous	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3469761)									
EM2100517-048	0939_MW2193_210114 Extra volume for lab qc	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	1.39	1.49	7.53	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	1.08	0.98	9.86	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	21.6	# 5.03	124	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.66	0.71	6.15	0% - 20%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3469761) - continued									
EM2100517-048	0939_MW2193_210114 Extra volume for lab qc	EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	0.4	0.4	0.00	No Limit
EM2100622-024	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3469761)							
EM2100517-048	0939_MW2193_210114 Extra volume for lab qc	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	0.05	0.04	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EM2100622-024	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3469761) - continued									
EM2100622-024	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3469761)									
EM2100517-048	0939_MW2193_210114 Extra volume for lab qc	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EM2100622-024	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 3469761)									
EM2100517-048	0939_MW2193_210114 Extra volume for lab qc	EP231X: Sum of PFAS	----	0.01	µg/L	126	# 68.8	59.0	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	85.7	# 51.0	50.8	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	114	# 62.1	58.6	0% - 20%
EM2100622-024	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

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

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 3469562)									
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	101	91.0	109	
				<5	1000 mg/L	99.5	90.3	109	
ED037P: Alkalinity by PC Titrator (QCLot: 3467601)									
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	106	85.0	116	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3467240)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	108	85.8	117	
				<1	500 mg/L	112	80.0	120	
ED045G: Chloride by Discrete Analyser (QCLot: 3467241)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	104	85.0	115	
				<1	1000 mg/L	103	85.0	122	
ED093F: Dissolved Major Cations (QCLot: 3467753)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	5 mg/L	101	88.2	117	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	5 mg/L	102	85.6	114	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	102	90.0	114	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	105	82.8	115	
ED093F: Dissolved Major Cations (QCLot: 3467888)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	5 mg/L	106	88.2	117	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	5 mg/L	102	85.6	114	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	103	90.0	114	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	102	82.8	115	
EK040P: Fluoride by PC Titrator (QCLot: 3467600)									
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	105	80.8	118	
EP002: Dissolved Organic Carbon (DOC) (QCLot: 3470033)									
EP002: Dissolved Organic Carbon	----	1	mg/L	<1	100 mg/L	97.6	83.0	115	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3467199)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	101	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	94.1	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	89.3	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	95.6	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	85.9	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	93.8	53.0	142	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3467747)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	76.4	72.0	130	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3467747) - continued									
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	127	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	83.2	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	93.0	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	84.8	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	94.8	53.0	142	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3469761)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	85.8	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	125	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	90.9	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	99.6	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	93.1	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	99.4	53.0	142	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3474084)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	91.6	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	101	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	89.2	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	91.6	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	92.0	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	87.4	53.0	142	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3467199)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	75.4	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	97.1	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	97.4	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	97.0	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.2	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	97.2	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.1	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	93.8	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	111	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3467747)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	79.8	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	90.2	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	87.7	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	88.2	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	88.5	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	86.1	69.0	130	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3467747) - continued									
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	84.9	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.6	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.9	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	90.0	71.0	132	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3469761)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	107	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	93.4	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.4	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.8	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	98.0	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	97.6	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	106	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	111	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	101	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	118	71.0	132	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3474084)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	83.4	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	86.8	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	94.3	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	93.1	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	88.4	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	92.8	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	92.2	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	93.1	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	98.8	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	125	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	103	71.0	132	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3467199)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	95.5	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	103	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	89.7	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.8	70.0	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.2	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	93.7	65.0	136	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
					LCS	Low	High		
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3467199) - continued									
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	87.8	61.0	135	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3467747)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	86.2	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	72.4	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	77.6	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	115	70.0	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	101	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	101	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	82.5	61.0	135	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3469761)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	100	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	112	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	90.4	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	128	70.0	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	99.2	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	113	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	105	61.0	135	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3474084)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	86.2	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	104	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	92.2	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	93.7	70.0	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	94.2	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	104	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	108	61.0	135	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3467199)									



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3467199) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	103	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	103	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	111	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	116	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3467747)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	100	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	88.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	103	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	# 59.8	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3469761)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	108	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	102	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	110	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	70.2	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3474084)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	96.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	91.2	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	106	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	126	70.0	130
EP231P: PFAS Sums (QCLot: 3467199)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 3467747)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 3469761)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 3474084)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EP231P: PFAS Sums (QCLot: 3474084) - continued								
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3467240)							
EM2100517-020	0939_MW4048_210113	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	95.4	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 3467241)							
EM2100517-020	0939_MW4048_210113	ED045G: Chloride	16887-00-6	400 mg/L	111	70.0	142
EK040P: Fluoride by PC Titrator (QCLot: 3467600)							
EM2100411-003	Anonymous	EK040P: Fluoride	16984-48-8	250 mg/L	102	70.0	130
EP002: Dissolved Organic Carbon (DOC) (QCLot: 3470033)							
EM2100517-020	0939_MW4048_210113	EP002: Dissolved Organic Carbon	----	100 mg/L	113	75.0	117
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3469761)							
EM2100517-051	0939_MW2499_210114 Extra volume for lab QC	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	# Not Determined	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	# Not Determined	71.0	127
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	# Not Determined	69.0	134
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	121	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3469761)							
EM2100517-051	0939_MW2499_210114 Extra volume for lab QC	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	119	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	98.4	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	# Not Determined	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	111	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	102	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUNDA)	2058-94-8	0.25 µg/L	101	69.0	133



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3469761) - continued							
EM2100517-051	0939_MW2499_210114 Extra volume for lab QC	EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	114	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	99.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	113	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3469761)							
EM2100517-051	0939_MW2499_210114 Extra volume for lab QC	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	113	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	136	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	110	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	118	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	103	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	111	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	102	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3469761)							
EM2100517-051	0939_MW2499_210114 Extra volume for lab QC	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	117	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	104	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	117	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	79.2	70.0	130

CERTIFICATE OF ANALYSIS

Work Order	: EM2100517	Page	: 1 of 34
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: [REDACTED]		
Address	: [REDACTED]		
Telephone	: [REDACTED]	Cell Phone	: +61 2 8784 8333
Project	: 0939_SA_PFASOMP	Date Samples Received	: 15-Jan-2021 10:30
Order number	: 60612561 6.1	Date Analysis Commenced	: 19-Jan-2021
C-O-C number	: 17751	Issue Date	: 25-Jan-2021 15:17
Sampler	: [REDACTED]		
Site	: SA_0939_PFASOMP		
Quote number	: SY/139/19 V3		
No. of samples received	: 59		
No. of samples analysed	: 59		



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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
[REDACTED]	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
[REDACTED]	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
[REDACTED]	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
[REDACTED]	Laboratory Manager	Melbourne Inorganics, Springvale, VIC
[REDACTED]	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

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

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

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

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

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

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

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

- EP231X: Samples (EM2100517) required dilution due to matrix interferences. LOR values have been adjusted accordingly.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Ionic Balance out of acceptable limits for sample #20 due to analytes not quantified in this report.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- EA025H: EM2100537 #37: Results have been confirmed by re-preparation and re-analysis.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0939_MW4059_21011 3	0939_MW4058_21011 3	0939_MW4070_21011 3	0939_QC107_210113	0939_MW4001_21011 3
Sampling date / time				13-Jan-2021 09:02	13-Jan-2021 09:36	13-Jan-2021 10:50	13-Jan-2021 10:51	13-Jan-2021 14:03	
Compound	CAS Number	LOR	Unit	EM2100517-001 Result	EM2100517-004 Result	EM2100517-010 Result	EM2100517-011 Result	EM2100517-021 Result	
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L	----	----	----	----	139	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	----	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	----	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	----	656	
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	----	657	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	----	26	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	----	----	----	----	88	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	----	----	----	----	2	
Magnesium	7439-95-4	1	mg/L	----	----	----	----	3	
Sodium	7440-23-5	1	mg/L	----	----	----	----	294	
Potassium	7440-09-7	1	mg/L	----	----	----	----	6	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	----	----	----	----	7.7	
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	----	----	----	----	16.2	
∅ Total Cations	----	0.01	meq/L	----	----	----	----	13.3	
∅ Ionic Balance	----	0.01	%	----	----	----	----	9.72	
EP002: Dissolved Organic Carbon (DOC)									
Dissolved Organic Carbon	----	1	mg/L	----	----	----	----	4	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.03	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.23	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	1.01	



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4059_21011 3	0939_MW4058_21011 3	0939_MW4070_21011 3	0939_QC107_210113	0939_MW4001_21011 3
Sampling date / time				13-Jan-2021 09:02	13-Jan-2021 09:36	13-Jan-2021 10:50	13-Jan-2021 10:51	13-Jan-2021 14:03
Compound	CAS Number	LOR	Unit	EM2100517-001 Result	EM2100517-004 Result	EM2100517-010 Result	EM2100517-011 Result	EM2100517-021 Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.05
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	0.04
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4059_21011 3	0939_MW4058_21011 3	0939_MW4070_21011 3	0939_QC107_210113	0939_MW4001_21011 3
Sampling date / time				13-Jan-2021 09:02	13-Jan-2021 09:36	13-Jan-2021 10:50	13-Jan-2021 10:51	13-Jan-2021 14:03
Compound	CAS Number	LOR	Unit	EM2100517-001	EM2100517-004	EM2100517-010	EM2100517-011	EM2100517-021
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	1.38
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	1.24
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	1.35
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	93.9	92.7	93.8	85.3	99.9
13C8-PFOA	----	0.02	%	101	106	99.8	98.7	96.6



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4037_21011 3	0939_QC108_210113	0939_MW4013_21011 3	0939_MW4073_21011 4	0939_MW4057_21011 4
Sampling date / time				13-Jan-2021 14:26	13-Jan-2021 14:25	13-Jan-2021 15:30	14-Jan-2021 08:55	14-Jan-2021 09:16
Compound	CAS Number	LOR	Unit	EM2100517-023	EM2100517-024	EM2100517-030	EM2100517-038	EM2100517-040
				Result	Result	Result	Result	Result
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	----	----	----	179	2840
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	1520	766
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	1520	766
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	1180	750
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	----	----	----	2720	1410
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	----	----	----	10	18
Magnesium	7439-95-4	1	mg/L	----	----	----	79	51
Sodium	7440-23-5	1	mg/L	----	----	----	2500	1360
Potassium	7440-09-7	1	mg/L	----	----	----	26	16
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	----	----	----	3.8	4.2
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	----	----	----	132	70.7
∅ Total Cations	----	0.01	meq/L	----	----	----	116	64.7
∅ Ionic Balance	----	0.01	%	----	----	----	6.15	4.46
EP002: Dissolved Organic Carbon (DOC)								
Dissolved Organic Carbon	----	1	mg/L	----	----	----	13	9
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.21	0.08	0.06
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.48	0.04	0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	2.52	0.23	0.15
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.24	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	5.11	0.07	0.10



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4037_21011 3	0939_QC108_210113	0939_MW4013_21011 3	0939_MW4073_21011 4	0939_MW4057_21011 4
Sampling date / time				13-Jan-2021 14:26	13-Jan-2021 14:25	13-Jan-2021 15:30	14-Jan-2021 08:55	14-Jan-2021 09:16
Compound	CAS Number	LOR	Unit	EM2100517-023	EM2100517-024	EM2100517-030	EM2100517-038	EM2100517-040
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.05	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.36	<0.02	0.04
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.06	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.15	0.03	0.04
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4037_21011 3	0939_QC108_210113	0939_MW4013_21011 3	0939_MW4073_21011 4	0939_MW4057_21011 4
Sampling date / time				13-Jan-2021 14:26	13-Jan-2021 14:25	13-Jan-2021 15:30	14-Jan-2021 08:55	14-Jan-2021 09:16
Compound	CAS Number	LOR	Unit	EM2100517-023	EM2100517-024	EM2100517-030	EM2100517-038	EM2100517-040
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	9.18	0.45	0.41
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	7.63	0.30	0.25
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	8.46	0.41	0.39
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	99.4	95.2	94.8	108	103
13C8-PFOA	----	0.02	%	98.7	92.4	91.6	98.9	97.2



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4015_21011 4	0939_QC109_210114	0939_MW2197_21011 4	0939_QC110_210114	0939_MW2194_21011 4
Sampling date / time				14-Jan-2021 09:46	14-Jan-2021 09:48	14-Jan-2021 12:00	14-Jan-2021 12:00	14-Jan-2021 12:20
Compound	CAS Number	LOR	Unit	EM2100517-041 Result	EM2100517-042 Result	EM2100517-045 Result	EM2100517-046 Result	EM2100517-049 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.30	0.32	14.0	13.9	0.09
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.88	0.87	17.1	16.8	0.11
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	4.65	4.75	117	105	1.13
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.46	0.40	13.9	13.2	0.07
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	6.50	6.54	280	268	1.31
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.04	0.14	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	3.0	4.7	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.07	0.08	5.24	4.87	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.55	0.55	25.7	25.9	0.17
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.07	0.07	4.05	3.87	0.03
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.18	0.18	8.11	8.10	0.05
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.07	0.06	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.04	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.04	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.04	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.04	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.11	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.10	0.13	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.11	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.11	<0.05	<0.05



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4015_21011 4	0939_QC109_210114	0939_MW2197_21011 4	0939_QC110_210114	0939_MW2194_21011 4
Sampling date / time				14-Jan-2021 09:46	14-Jan-2021 09:48	14-Jan-2021 12:00	14-Jan-2021 12:00	14-Jan-2021 12:20
Compound	CAS Number	LOR	Unit	EM2100517-041	EM2100517-042	EM2100517-045	EM2100517-046	EM2100517-049
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.11	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.11	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.04	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.04	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.26	0.09	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	13.7	13.8	488	465	2.96
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	11.2	11.3	397	373	2.44
Sum of PFAS (WA DER List)	----	0.01	µg/L	12.3	12.5	457	434	2.78
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	95.3	104	96.4	57.8	96.1
13C8-PFOA	----	0.02	%	90.2	95.8	101	91.7	95.9



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2499_21011 4 Extra volume for lab QC	0939_MW2112_21011 4	0939_QC111_210114	0939_MW2501_21011 4	----
Sampling date / time				14-Jan-2021 13:04	14-Jan-2021 13:40	14-Jan-2021 13:40	14-Jan-2021 14:30	----
Compound	CAS Number	LOR	Unit	EM2100517-051	EM2100517-054	EM2100517-055	EM2100517-058	-----
				Result	Result	Result	Result	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	1.07	0.04	0.04	<0.02	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	2.40	0.09	0.09	<0.02	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	84.0	0.51	0.52	0.10	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	1.94	0.07	0.07	<0.02	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	61.6	2.81	3.32	0.20	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	0.26	<0.02	<0.02	<0.02	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	0.7	<0.1	<0.1	<0.1	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	2.50	<0.02	<0.02	<0.02	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	3.69	0.10	0.10	0.04	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.74	0.03	0.02	<0.02	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	2.06	0.06	0.06	0.02	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.05	<0.02	<0.02	<0.02	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	0.22	<0.02	<0.02	<0.02	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2499_21011 4 Extra volume for lab QC	0939_MW2112_21011 4	0939_QC111_210114	0939_MW2501_21011 4	----
Sampling date / time				14-Jan-2021 13:04	14-Jan-2021 13:40	14-Jan-2021 13:40	14-Jan-2021 14:30	----
Compound	CAS Number	LOR	Unit	EM2100517-051	EM2100517-054	EM2100517-055	EM2100517-058	-----
				Result	Result	Result	Result	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	161	3.71	4.22	0.36	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	146	3.32	3.84	0.30	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	156	3.55	4.06	0.36	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	82.0	95.2	96.0	94.2	----
13C8-PFOA	----	0.02	%	95.0	95.5	92.4	99.0	----



Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID		0939_MW4075_21011 3	----	----	----	----
Sampling date / time		13-Jan-2021 14:05			----	----	----	----
Compound	CAS Number	LOR	Unit	EM2100517-022	-----	-----	-----	-----
				Result	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	5940	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	37	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	2	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	39	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	33	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	605	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	68	----	----	----	----
Magnesium	7439-95-4	1	mg/L	11	----	----	----	----
Sodium	7440-23-5	1	mg/L	244	----	----	----	----
Potassium	7440-09-7	1	mg/L	20	----	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.1	----	----	----	----
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	18.5	----	----	----	----
∅ Total Cations	----	0.01	meq/L	15.4	----	----	----	----
∅ Ionic Balance	----	0.01	%	9.16	----	----	----	----
EP002: Dissolved Organic Carbon (DOC)								
Dissolved Organic Carbon	----	1	mg/L	18	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.08	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.05	----	----	----	----



Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID			0939_MW4075_21011 3	----	----	----	----
		Sampling date / time			13-Jan-2021 14:05	----	----	----	----
Compound	CAS Number	LOR	Unit	EM2100517-022	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	0.03	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.02	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----	----



Analytical Results

Sub-Matrix: SURFACE WATER
 (Matrix: WATER)

Sample ID

				0939_MW4075_21011 3	----	----	----	----
				13-Jan-2021 14:05	----	----	----	----
Compound	CAS Number	LOR	Unit	EM2100517-022	-----	-----	-----	-----
				Result	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	0.18	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.13	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.15	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	96.0	----	----	----	----
13C8-PFOA	----	0.02	%	94.8	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_MW4077_21011 3	0939_MW4027_21011 3	0939_MW4078_21011 3	0939_MW4219_21011 3	0939_MW4076_21011 3
Sampling date / time				13-Jan-2021 09:08	13-Jan-2021 09:15	13-Jan-2021 09:41	13-Jan-2021 09:48	13-Jan-2021 09:57	
Compound	CAS Number	LOR	Unit	EM2100517-002 Result	EM2100517-003 Result	EM2100517-005 Result	EM2100517-006 Result	EM2100517-007 Result	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	0.03	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	0.03	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	<0.02	0.18	<0.02	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	0.20	0.02	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	0.03	<0.02	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	0.01	<0.01	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_MW4077_21011 3	0939_MW4027_21011 3	0939_MW4078_21011 3	0939_MW4219_21011 3	0939_MW4076_21011 3
Sampling date / time					13-Jan-2021 09:08	13-Jan-2021 09:15	13-Jan-2021 09:41	13-Jan-2021 09:48	13-Jan-2021 09:57
Compound	CAS Number	LOR	Unit	EM2100517-002	EM2100517-003	EM2100517-005	EM2100517-006	EM2100517-007	EM2100517-007
				Result	Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	0.48	0.02	0.02
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	0.38	0.02	0.02
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	0.45	0.02	0.02
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	95.5	98.5	94.1	89.6	93.5	93.5
13C8-PFOA	----	0.02	%	101	102	102	97.9	106	106



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				0939_MW4064_21011 3	0939_MW4045_21011 3 Extra volume for lab QC	0939_MW4053_21011 3	0939_MW4055_21011 3	0939_MW4052_21011 3
Sampling date / time				13-Jan-2021 10:10	13-Jan-2021 10:39	13-Jan-2021 10:34	13-Jan-2021 11:09	13-Jan-2021 11:23
Compound	CAS Number	LOR	Unit	EM2100517-008	EM2100517-009	EM2100517-013	EM2100517-014	EM2100517-015
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.02	0.04	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.04	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.09	0.26	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.27	0.56	0.03	0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.02	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				0939_MW4064_21011 3	0939_MW4045_21011 3 Extra volume for lab QC	0939_MW4053_21011 3	0939_MW4055_21011 3	0939_MW4052_21011 3
Sampling date / time				13-Jan-2021 10:10	13-Jan-2021 10:39	13-Jan-2021 10:34	13-Jan-2021 11:09	13-Jan-2021 11:23
Compound	CAS Number	LOR	Unit	EM2100517-008	EM2100517-009	EM2100517-013	EM2100517-014	EM2100517-015
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	0.38	0.92	0.03	0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	0.36	0.82	0.03	0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	0.38	0.88	0.03	0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	104	95.0	102	94.9	95.5
13C8-PFOA	----	0.02	%	108	102	95.8	98.5	98.3



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_MW4072_21011 3	0939_MW4041_21011 3	0939_MW4074_21011 3	0939_MW4069_21011 3	0939_MW4048_21011 3
Sampling date / time				13-Jan-2021 11:40	13-Jan-2021 11:52	13-Jan-2021 12:03	13-Jan-2021 13:23	13-Jan-2021 13:50	
Compound	CAS Number	LOR	Unit	EM2100517-016 Result	EM2100517-017 Result	EM2100517-018 Result	EM2100517-019 Result	EM2100517-020 Result	
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L	----	----	----	1520	88	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	<1	25	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	323	343	
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	323	368	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	71	22	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	----	----	----	698	67	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	----	----	----	36	2	
Magnesium	7439-95-4	1	mg/L	----	----	----	46	3	
Sodium	7440-23-5	1	mg/L	----	----	----	402	179	
Potassium	7440-09-7	1	mg/L	----	----	----	16	6	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	----	----	----	1.8	7.7	
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L	----	----	----	27.6	9.70	
∅ Total Cations	----	0.01	meq/L	----	----	----	23.5	8.29	
∅ Ionic Balance	----	0.01	%	----	----	----	8.11	7.86	
EP002: Dissolved Organic Carbon (DOC)									
Dissolved Organic Carbon	----	1	mg/L	----	----	----	8	<1	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	0.08	0.05	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	0.08	0.04	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	<0.02	0.69	0.36	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	0.03	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	1.39	0.73	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_MW4072_21011 3	0939_MW4041_21011 3	0939_MW4074_21011 3	0939_MW4069_21011 3	0939_MW4048_21011 3
Sampling date / time					13-Jan-2021 11:40	13-Jan-2021 11:52	13-Jan-2021 12:03	13-Jan-2021 13:23	13-Jan-2021 13:50
Compound	CAS Number	LOR	Unit	EM2100517-016	EM2100517-017	EM2100517-018	EM2100517-019	EM2100517-020	
				Result	Result	Result	Result	Result	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	2.49	1.36	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	2.08	1.09	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	2.38	1.32	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	88.6	99.6	94.9	88.3	103	
13C8-PFOA	----	0.02	%	94.6	95.5	99.3	103	99.9	



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				0939_MW20327_2101 13 Extra volume for lab QC	0939_MW4003_21011 3	0939_MW4068_21011 3	0939_MW4035_21011 3	0939_QC307_210113
Sampling date / time				13-Jan-2021 14:43	13-Jan-2021 14:55	13-Jan-2021 15:11	13-Jan-2021 15:16	13-Jan-2021 12:00
Compound	CAS Number	LOR	Unit	EM2100517-026	EM2100517-027	EM2100517-028	EM2100517-029	EM2100517-031
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.29	0.31	1.00	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.65	0.77	0.90	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	3.61	3.56	4.67	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.43	0.49	0.71	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	8.47	9.40	11.5	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.08	0.09	0.08	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.46	0.51	0.61	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.09	0.10	0.11	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.23	0.22	0.27	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				0939_MW20327_2101 13 Extra volume for lab QC	0939_MW4003_21011 3	0939_MW4068_21011 3	0939_MW4035_21011 3	0939_QC307_210113
Sampling date / time				13-Jan-2021 14:43	13-Jan-2021 14:55	13-Jan-2021 15:11	13-Jan-2021 15:16	13-Jan-2021 12:00
Compound	CAS Number	LOR	Unit	EM2100517-026	EM2100517-027	EM2100517-028	EM2100517-029	EM2100517-031
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	14.3	15.4	19.8	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	12.1	13.0	16.2	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	13.2	14.2	18.2	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	108	89.6	95.0	96.2	90.8
13C8-PFOA	----	0.02	%	104	100	96.0	103	97.8



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_QC308_210113	0939_QC309_210113	0939_QC407_210113	0939_QC408_210113	0939_QC409_210113
Sampling date / time				13-Jan-2021 12:00	13-Jan-2021 12:00	13-Jan-2021 12:00	13-Jan-2021 00:00	13-Jan-2021 12:00	
Compound	CAS Number	LOR	Unit	EM2100517-032	EM2100517-033	EM2100517-034	EM2100517-035	EM2100517-036	
				Result	Result	Result	Result	Result	
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	92.2	88.6	107	101	127	
13C8-PFOA	----	0.02	%	98.8	95.2	97.2	97.8	120	



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				0939_MW4079_21011 4	0939_MW4066_21011 4	0939_MW2203_21011 4 Extra volume for lab QC	0939_MW2193_21011 4 Extra volume for lab qc	0939_MW2149_21011 4
Sampling date / time				14-Jan-2021 08:49	14-Jan-2021 09:13	14-Jan-2021 11:41	14-Jan-2021 12:06	14-Jan-2021 12:54
Compound	CAS Number	LOR	Unit	EM2100517-037 Result	EM2100517-039 Result	EM2100517-044 Result	EM2100517-048 Result	EM2100517-050 Result
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	169	97	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	1900	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	97	<1	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	659	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	2000	659	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	10	1330	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	1420	3240	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	534	63	----	----	----
Magnesium	7439-95-4	1	mg/L	<1	166	----	----	----
Sodium	7440-23-5	1	mg/L	867	2320	----	----	----
Potassium	7440-09-7	1	mg/L	150	30	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.1	2.8	----	----	----
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	80.2	132	----	----	----
∅ Total Cations	----	0.01	meq/L	68.2	118	----	----	----
∅ Ionic Balance	----	0.01	%	8.10	5.49	----	----	----
EP002: Dissolved Organic Carbon (DOC)								
Dissolved Organic Carbon	----	1	mg/L	19	5	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	0.07	72.9	2.82	1.39
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.04	94.4	9.58	1.76
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.05	0.16	838	45.5	12.7
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	79.5	2.95	1.37



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				0939_MW4079_21011 4	0939_MW4066_21011 4	0939_MW2203_21011 4 Extra volume for lab QC	0939_MW2193_21011 4 Extra volume for lab qc	0939_MW2149_21011 4
Sampling date / time				14-Jan-2021 08:49	14-Jan-2021 09:13	14-Jan-2021 11:41	14-Jan-2021 12:06	14-Jan-2021 12:54
Compound	CAS Number	LOR	Unit	EM2100517-037 Result	EM2100517-039 Result	EM2100517-044 Result	EM2100517-048 Result	EM2100517-050 Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.06	2890	40.2	88.3
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	0.16	<0.02	<0.04	0.12	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	14.5	0.4	3.5
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	36.7	1.08	2.83
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.04	183	21.6	3.89
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	25.8	0.66	2.73
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.01	0.02	62.0	1.39	2.30
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.44	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.04	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.04	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.04	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.04	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.10	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.51	0.05	0.08
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.10	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.10	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.10	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.10	<0.05	<0.05



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				0939_MW4079_21011 4	0939_MW4066_21011 4	0939_MW2203_21011 4 Extra volume for lab QC	0939_MW2193_21011 4 Extra volume for lab qc	0939_MW2149_21011 4
Sampling date / time				14-Jan-2021 08:49	14-Jan-2021 09:13	14-Jan-2021 11:41	14-Jan-2021 12:06	14-Jan-2021 12:54
Compound	CAS Number	LOR	Unit	EM2100517-037 Result	EM2100517-039 Result	EM2100517-044 Result	EM2100517-048 Result	EM2100517-050 Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.04	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.04	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.45	<0.05	0.26
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	0.27	0.39	4290	126	121
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.07	0.22	3730	85.7	101
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.11	0.35	4120	114	118
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	98.3	99.8	80.7	88.1	100
13C8-PFOA	----	0.02	%	97.9	97.8	95.4	95.9	87.7



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_MW2188_21011 4	0939_MW2189_21011 4	0939_MW2159_21011 4	0939_QC310_210114	0939_QC311_210114
Sampling date / time				14-Jan-2021 13:16	14-Jan-2021 13:18	14-Jan-2021 14:03	14-Jan-2021 12:00	14-Jan-2021 12:00	
Compound	CAS Number	LOR	Unit	EM2100517-052 Result	EM2100517-053 Result	EM2100517-057 Result	EM2100517-059 Result	EM2100517-060 Result	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	10.4	1.17	<0.02	<0.02	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	11.3	1.46	<0.02	<0.02	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	62.7	11.1	<0.02	<0.02	<0.02	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	3.46	1.10	<0.02	<0.02	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	49.8	87.7	<0.01	<0.01	<0.01	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.89	<0.02	<0.02	<0.02	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	1.6	1.0	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	4.99	1.88	<0.02	<0.02	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	21.6	3.86	<0.02	<0.02	<0.02	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	2.34	1.39	<0.02	<0.02	<0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	4.55	2.91	<0.01	<0.01	<0.01	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_MW2188_21011 4	0939_MW2189_21011 4	0939_MW2159_21011 4	0939_QC310_210114	0939_QC311_210114
Sampling date / time				14-Jan-2021 13:16	14-Jan-2021 13:18	14-Jan-2021 14:03	14-Jan-2021 12:00	14-Jan-2021 12:00	
Compound	CAS Number	LOR	Unit	EM2100517-052 Result	EM2100517-053 Result	EM2100517-057 Result	EM2100517-059 Result	EM2100517-060 Result	
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	173	114	<0.01	<0.01	<0.01	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	112	98.8	<0.01	<0.01	<0.01	
Sum of PFAS (WA DER List)	----	0.01	µg/L	158	111	<0.01	<0.01	<0.01	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	82.8	77.6	95.5	94.5	92.5	
13C8-PFOA	----	0.02	%	92.5	93.2	97.6	96.3	102	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_QC312_210114	0939_QC410_210114	0939_QC411_210114	0939_QC412_210114	----
Sampling date / time				14-Jan-2021 12:00	14-Jan-2021 12:00	14-Jan-2021 12:00	14-Jan-2021 12:00	----	
Compound	CAS Number	LOR	Unit	EM2100517-061	EM2100517-062	EM2100517-063	EM2100517-064	-----	
				Result	Result	Result	Result	----	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_QC312_210114	0939_QC410_210114	0939_QC411_210114	0939_QC412_210114	----
Sampling date / time				14-Jan-2021 12:00	14-Jan-2021 12:00	14-Jan-2021 12:00	14-Jan-2021 12:00	----	
Compound	CAS Number	LOR	Unit	EM2100517-061	EM2100517-062	EM2100517-063	EM2100517-064	-----	
				Result	Result	Result	Result	----	
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	88.0	103	97.2	104	----	
13C8-PFOA	----	0.02	%	99.3	98.7	88.3	92.1	----	



Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM2100623

Client : AECOM Australia Pty Ltd Laboratory : Environmental Division Melbourne
Contact : KIM TREGLOWN Contact :
Address :
E-mail : Telephone : Facsimile :
Project : 0939_SA_PFASOMP Page : 1 of 3
Order number : 60612561 6.1 Quote number : ES2019AECOMAU0030 (SY/139/19 V3)
C-O-C number : 17985 QC Level : NEPM 2013 B3 & ALS QC Standard
Site : SA_0939_PFASOMP
Sampler :

Dates

Date Samples Received : 20-Jan-2021 12:45 Issue Date : 21-Jan-2021
Client Requested Due Date : 28-Jan-2021 Scheduled Reporting Date : 28-Jan-2021

Delivery Details

Mode of Delivery : Carrier Security Seal : Not Available
No. of coolers/boxes : 1 Temperature : 16.8°C - Ice present
Receipt Detail : No. of samples received / analysed : 3 / 3

General Comments

- This report contains the following information:
- Sample Container(s)/Preservation Non-Compliances
- Summary of Sample(s) and Requested Analysis
- Proactive Holding Time Report
- Requested Deliverables
Additional analysis instruction was received by ALS on 21/01/2021 at 12:06 requesting to add PFAS to sample 003.
The scheduled reporting date has been extended due to a public holiday.
Please direct any queries related to sample condition / numbering / breakages to Client Services.
Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
Analytical work for this work order will be conducted at ALS Springvale.
Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.
Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

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

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

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
EM2100623-001	19-Jan-2021 09:43	0939_MW21322_210119	✓
EM2100623-002	19-Jan-2021 09:44	0939_MW22767_210119	✓
EM2100623-003	19-Jan-2021 09:45	0939_QC413_210119	✓

Proactive Holding Time Report

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



Requested Deliverables

APCORP

- A4 - AU Tax Invoice (INV)	Email	[Redacted]
[Redacted]		
- *AU Certificate of Analysis - NATA (COA)	Email	[Redacted]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[Redacted]
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[Redacted]
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[Redacted]
- Chain of Custody (CoC) (COC)	Email	[Redacted]
- EDI Format - ENMRG (ENMRG)	Email	[Redacted]
- EDI Format - ESDAT (ESDAT)	Email	[Redacted]
- EDI Format - XTab (XTAB)	Email	[Redacted]
[Redacted]		
- EDI Format - ESDAT (ESDAT)	Email	[Redacted]
[Redacted]		
- *AU Certificate of Analysis - NATA (COA)	Email	[Redacted]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[Redacted]
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[Redacted]
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[Redacted]
- Chain of Custody (CoC) (COC)	Email	[Redacted]
- EDI Format - ENMRG (ENMRG)	Email	[Redacted]
- EDI Format - ESDAT (ESDAT)	Email	[Redacted]
- EDI Format - XTab (XTAB)	Email	[Redacted]
[Redacted]		
- *AU Certificate of Analysis - NATA (COA)	Email	[Redacted]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[Redacted]
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[Redacted]
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[Redacted]
- Chain of Custody (CoC) (COC)	Email	[Redacted]
- EDI Format - ENMRG (ENMRG)	Email	[Redacted]
- EDI Format - ESDAT (ESDAT)	Email	[Redacted]
- EDI Format - XTab (XTAB)	Email	[Redacted]
[Redacted]		
- *AU Certificate of Analysis - NATA (COA)	Email	[Redacted]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[Redacted]
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[Redacted]
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[Redacted]
- Chain of Custody (CoC) (COC)	Email	[Redacted]
- EDI Format - ENMRG (ENMRG)	Email	[Redacted]
- EDI Format - ESDAT (ESDAT)	Email	[Redacted]
- EDI Format - XTab (XTAB)	Email	[Redacted]

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM2100623	Page	: 1 of 5
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: [REDACTED]	Telephone	: [REDACTED]
Project	: 0939_SA_PFASOMP	Date Samples Received	: 20-Jan-2021
Site	: SA_0939_PFASOMP	Issue Date	: 25-Jan-2021
Sampler	: [REDACTED]	No. of samples received	: 3
Order number	: 60612561 6.1	No. of samples analysed	: 3

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP231C: Perfluoroalkyl Sulfonamides	QC-3472391-002	----	N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	150 %	68.0-141%	Recovery greater than upper control limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids	QC-3472391-002	----	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	139 %	67.0-138%	Recovery greater than upper control limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids	QC-3472391-002	----	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	134 %	70.0-130%	Recovery greater than upper control limit

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	1	21	4.76	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	21	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **WATER**

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

Method	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X) 0939_MW21322_210119,	0939_MW22767_210119	19-Jan-2021	21-Jan-2021	18-Jul-2021	✓	21-Jan-2021	18-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_QC413_210119		19-Jan-2021	22-Jan-2021	18-Jul-2021	✓	22-Jan-2021	18-Jul-2021	✓



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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0939_MW21322_210119, 0939_MW22767_210119	19-Jan-2021	21-Jan-2021	18-Jul-2021	✓	21-Jan-2021	18-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_QC413_210119	19-Jan-2021	22-Jan-2021	18-Jul-2021	✓	22-Jan-2021	18-Jul-2021	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0939_MW21322_210119, 0939_MW22767_210119	19-Jan-2021	21-Jan-2021	18-Jul-2021	✓	21-Jan-2021	18-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_QC413_210119	19-Jan-2021	22-Jan-2021	18-Jul-2021	✓	22-Jan-2021	18-Jul-2021	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0939_MW21322_210119, 0939_MW22767_210119	19-Jan-2021	21-Jan-2021	18-Jul-2021	✓	21-Jan-2021	18-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_QC413_210119	19-Jan-2021	22-Jan-2021	18-Jul-2021	✓	22-Jan-2021	18-Jul-2021	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0939_MW21322_210119, 0939_MW22767_210119	19-Jan-2021	21-Jan-2021	18-Jul-2021	✓	21-Jan-2021	18-Jul-2021	✓
HDPE (no PTFE) (EP231X) 0939_QC413_210119	19-Jan-2021	22-Jan-2021	18-Jul-2021	✓	22-Jan-2021	18-Jul-2021	✓



Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	21	4.76	10.00	✘	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	21	9.52	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	21	9.52	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	21	0.00	5.00	✘	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

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

QUALITY CONTROL REPORT

Work Order	: EM2100623	Page	: 1 of 6
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: [REDACTED]	Contact	: [REDACTED]
Address	: [REDACTED]	Address	: [REDACTED]
Telephone	: +61 08 8981 2698	Telephone	: [REDACTED]
Project	: 0939_SA_PFASOMP	Date Samples Received	: 20-Jan-2021
Order number	: 60612561 6.1	Date Analysis Commenced	: 21-Jan-2021
C-O-C number	: 17985	Issue Date	: 25-Jan-2021
Sampler	: [REDACTED]		
Site	: SA_0939_PFASOMP		
Quote number	: SY/139/19 V3		
No. of samples received	: 3		
No. of samples analysed	: 3		



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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Accreditation Category
[REDACTED]	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3474488)									
EM2100736-008	Anonymous	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3474488)									
EM2100736-008	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3474488)									
EM2100736-008	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3474488) - continued									
EM2100736-008	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3474488)									
EM2100736-008	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 3474488)									
EM2100736-008	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

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

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3472391)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	127	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	127	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	118	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	123	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	116	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	130	53.0	142	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3474488)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	95.0	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	123	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	96.9	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	98.6	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.6	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	100	53.0	142	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3472391)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	115	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	123	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	119	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	116	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	120	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	116	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	116	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	119	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	115	71.0	132	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3474488)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	114	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.1	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	96.8	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	97.0	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.9	69.0	133	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3474488) - continued									
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	95.8	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	91.1	71.0	132	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3472391)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	106	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	# 150	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	108	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	108	70.0	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	98.2	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	121	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	119	61.0	135	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3474488)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	96.8	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	97.8	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	102	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	101	70.0	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	101	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	105	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	102	61.0	135	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3472391)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	121	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	134	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	# 139	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	# 134	70.0	130	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3474488)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	104	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	106	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	100	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	87.3	70.0	130	
EP231P: PFAS Sums (QCLot: 3472391)									
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP231P: PFAS Sums (QCLot: 3472391) - continued									
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----	
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----	
EP231P: PFAS Sums (QCLot: 3474488)									
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----	
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----	
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----	

Matrix Spike (MS) Report

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

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

CERTIFICATE OF ANALYSIS

Work Order	: EM2100623	Page	: 1 of 7
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: KIM TREGLOWN	Contact	: [REDACTED]
Address	: [REDACTED]		
Telephone	: [REDACTED]	Telephone	: [REDACTED]
Project	: 0939_SA_PFASOMP	Date Samples Received	: 20-Jan-2021 12:45
Order number	: 60612561 6.1	Date Analysis Commenced	: 21-Jan-2021
C-O-C number	: 17985	Issue Date	: 25-Jan-2021 19:54
Sampler	: [REDACTED]		
Site	: SA_0939_PFASOMP		
Quote number	: SY/139/19 V3		
No. of samples received	: 3		
No. of samples analysed	: 3		



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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
[REDACTED]	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

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

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

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

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

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

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

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

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



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

0939_MW21322_2101
19

Sampling date / time

19-Jan-2021 09:43

Compound

CAS Number

LOR

Unit

EM2100623-001

Result

EP231A: Perfluoroalkyl Sulfonic Acids

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

EP231B: Perfluoroalkyl Carboxylic Acids

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

EP231C: Perfluoroalkyl Sulfonamides

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



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

0939_MW21322_2101
19

Sampling date / time

19-Jan-2021 09:43

Compound

CAS Number

LOR

Unit

EM2100623-001

Result

EP231C: Perfluoroalkyl Sulfonamides - Continued

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

EP231D: (n:2) Fluorotelomer Sulfonic Acids

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

EP231P: PFAS Sums

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

EP231S: PFAS Surrogate

13C4-PFOS	----	0.02	%	112	----	----	----	----
13C8-PFOA	----	0.02	%	98.9	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID		0939_MW22767_2101 19	0939_QC413_210119	----	----	----
Sampling date / time				19-Jan-2021 09:44	19-Jan-2021 09:45	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM2100623-002	EM2100623-003	-----	-----	-----	-----	-----
				Result	Result	---	---	---	---	---
EP231A: Perfluoroalkyl Sulfonic Acids										
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids										
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides										
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_MW22767_210119	0939_QC413_210119	----	----	----
Sampling date / time				19-Jan-2021 09:44	19-Jan-2021 09:45	----	----	----	
Compound	CAS Number	LOR	Unit	EM2100623-002	EM2100623-003	-----	-----	-----	
				Result	Result	---	---	---	
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	----	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	----	----	----	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	112	106	----	----	----	
13C8-PFOA	----	0.02	%	98.5	108	----	----	----	



Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133



SAMPLE RECEIPT NOTIFICATION

CUSTOMER DETAILS

Attention: [REDACTED]
Customer: AECOM AUSTRALIA PTY LTD
Address: [REDACTED]
Email: [REDACTED]
Telephone:
Fax:

LABORATORY DETAILS

Lab: National Measurement Institute
Contact: [REDACTED]
Address: [REDACTED]
Email: [REDACTED]
Telephone: [REDACTED]
Fax:

SAMPLE DETAILS

NMI Job Name: AECO03/210204/1

Total No. of Samples: 2

LRNs	Estimated Report Date	Customer Sample ID	Lab Sample Description
N21/002496	11-FEB-2021	0939_QC208_210113	WATER 13/01/21
N21/002497	11-FEB-2021	0939_QC209_210114	WATER 14/01/21

SAMPLE RECEIVED CONDITION

Date samples received: 4-FEB-2021
Sample received in good order: Yes
NMI Quotation no. provided: SA_0939_PFASOMP
Client purchase order number: 60612561_6_1
Temperature of samples: Chilled
Comments:
Mode of Delivery: Courier

Additional Terms and Conditions

Incomplete / unclear information about samples or required testing will delay the start of the analysis work

If you require your Purchase Order (PO) number to be included on our invoice, please provide the number during sample submission and before the completion of work to avoid unnecessary delays and/or additional processing/handling fees.

The lodgement of an order or receipt of samples for NMI services referenced in this Sample Receipt Notification constitutes an acceptance of the current version of NMI Terms and Conditions or other applicable Terms referenced in the NMI Quotation.

NMI Terms and Conditions are available on the web at

<https://www.industry.gov.au/client-services/testing-and-analysis-services/chemical-and-biological-analysis-services-terms-and-conditions>



Australian Government
National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO03/210204/1

Sample Matrix: Liquid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		ug/L	ug/L	ug/L	ug/L	%	%	%
PFBA (375-22-4)	NR70	0.05	<0.05	NA	NA	NA	104	NA
PFPeA (2706-90-3)	NR70	0.02	<0.02	NA	NA	NA	97	NA
PFHxA (307-24-4)	NR70	0.01	<0.01	NA	NA	NA	98	NA
PFHpA (375-85-9)	NR70	0.01	<0.01	NA	NA	NA	86	NA
PFOA (335-67-1)	NR70	0.01	<0.01	NA	NA	NA	95	NA
PFNA (375-95-1)	NR70	0.01	<0.01	NA	NA	NA	104	NA
PFDA (335-76-2)	NR70	0.01	<0.01	NA	NA	NA	103	NA
PFUdA (2058-94-8)	NR70	0.01	<0.01	NA	NA	NA	91	NA
PFDaA (307-55-1)	NR70	0.01	<0.01	NA	NA	NA	95	NA
PFTrDA (72629-94-8)	NR70	0.02	<0.02	NA	NA	NA	83	NA
PFTeDA (376-06-7)	NR70	0.02	<0.02	NA	NA	NA	99	NA
PFHxDA (67905-19-5)	NR70	0.02	<0.02	NA	NA	NA	114	NA
PFODA (16517-11-6)	NR70	0.05	<0.05	NA	NA	NA	120	NA
FOUEA (70887-84-2)	NR70	0.01	<0.01	NA	NA	NA	109	NA
PFBS (375-73-5)	NR70	0.01	<0.01	NA	NA	NA	98	NA
PFPeS (2706-91-4)	NR70	0.01	<0.01	NA	NA	NA	94	NA
PFHxS (355-46-4)	NR70	0.01	<0.01	NA	NA	NA	91	NA
PFHpS (375-92-8)	NR70	0.01	<0.01	NA	NA	NA	92	NA
PFOS (1763-23-1)	NR70	0.02	<0.02	NA	NA	NA	103	NA
PFNS (68259-12-1)	NR70	0.01	<0.01	NA	NA	NA	101	NA
PFDS (335-77-3)	NR70	0.01	<0.01	NA	NA	NA	96	NA
PFOSA (754-91-6)	NR70	0.01	<0.01	NA	NA	NA	91	NA
N-MeFOSA (31506-32-8)	NR70	0.02	<0.02	NA	NA	NA	116	NA
N-EtFOSA (4151-50-2)	NR70	0.02	<0.02	NA	NA	NA	113	NA
N-MeFOSAA (2355-31-9)	NR70	0.01	<0.01	NA	NA	NA	92	NA
N-EtFOSAA(2991-50-6)	NR70	0.01	<0.01	NA	NA	NA	88	NA
N-MeFOSE (24448-09-7)	NR70	0.05	<0.05	NA	NA	NA	124	NA
N-EtFOSE (1691-99-2)	NR70	0.05	<0.05	NA	NA	NA	79	NA
4:2 FTS (757124-72-4)	NR70	0.01	<0.01	NA	NA	NA	98	NA
6:2 FTS (27619-97-2)	NR70	0.01	<0.01	NA	NA	NA	101	NA
8:2 FTS (39108-34-4)	NR70	0.01	<0.01	NA	NA	NA	101	NA
10:2 FTS (120226-60-0)	NR70	0.01	<0.01	NA	NA	NA	93	NA
8:2 diPAP (678-41-1)	NR70	0.02	<0.02	NA	NA	NA	90	NA

Results expressed in percentage (%) or ug/L wherever appropriate.

Acceptable Spike recovery is 50-150%.

Maximum acceptable RPDs on spikes and duplicates is 40%.

'NA' = Not Applicable.

RPD= Relative Percentage Difference.

Signed:



Organics Manager, NMI-North Ryde
10/02/2021

Date:



REPORT OF ANALYSIS

Client : AECOM AUSTRALIA PTY LTD LEVEL 21 420 GEORGE STREET	Job No. : AECO03/210204/1
Attention : [REDACTED]	Quote No. : QT-02018
Project Name : SA_0939_PFASOMP	Order No. : 60612561_6_1
Your Client Services Manager : [REDACTED]	Date Received : 04-FEB-2021
	Sampled By : CLIENT
	Phone : [REDACTED]

Lab Reg No.	Sample Ref	Sample Description
N21/002496	0939_QC208_210113	WATER 13/01/21
N21/002497	0939_QC209_210114	WATER 14/01/21

Lab Reg No.		N21/002496	N21/002497			
Date Sampled		13-JAN-2021	14-JAN-2021			
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	ug/L	<0.05	0.097			NR70
PFPeA (2706-90-3)	ug/L	<0.02	0.097			NR70
PFHxA (307-24-4)	ug/L	<0.01	0.49			NR70
PFHpA (375-85-9)	ug/L	<0.01	0.062			NR70
PFOA (335-67-1)	ug/L	<0.01	0.16			NR70
PFNA (375-95-1)	ug/L	<0.01	<0.01			NR70
PFDA (335-76-2)	ug/L	<0.01	<0.01			NR70
PFUdA (2058-94-8)	ug/L	<0.01	<0.01			NR70
PFDoA (307-55-1)	ug/L	<0.01	<0.01			NR70
PFTrDA (72629-94-8)	ug/L	<0.02	<0.02			NR70
PFTeDA (376-06-7)	ug/L	<0.02	<0.02			NR70
PFHxDA (67905-19-5)	ug/L	<0.02	<0.02			NR70
PFODA (16517-11-6)	ug/L	<0.05	<0.05			NR70
FOUEA (70887-84-2)	ug/L	<0.01	<0.01			NR70
PFDS (335-77-3)	ug/L	<0.01	<0.01			NR70
PFPeS (2706-91-4)	ug/L	<0.01	0.43			NR70
PFHxS (355-46-4)	ug/L	<0.01	4.6			NR70
PFHpS (375-92-8)	ug/L	<0.01	0.19			NR70
PFOS (1763-23-1)	ug/L	<0.02	5.9			NR70
PFNS (68259-12-1)	ug/L	<0.01	<0.01			NR70
PFBS (375-73-5)	ug/L	<0.01	0.34			NR70
PFOSA (754-91-6)	ug/L	<0.01	<0.01			NR70
N-MeFOSA (31506-32-8)	ug/L	<0.02	<0.02			NR70
N-EtFOSA (4151-50-2)	ug/L	<0.02	<0.02			NR70
N-MeFOSAA (2355-31-9)	ug/L	<0.01	<0.01			NR70
N-EtFOSAA(2991-50-6)	ug/L	<0.01	<0.01			NR70
N-MeFOSE (24448-09-7)	ug/L	<0.05	<0.05			NR70
N-EtFOSE (1691-99-2)	ug/L	<0.05	<0.05			NR70
4:2 FTS (757124-72-4)	ug/L	<0.01	<0.01			NR70

REPORT OF ANALYSIS

Page: 2 of 3
Report No. RN1303312

Lab Reg No.		N21/002496	N21/002497			
Date Sampled		13-JAN-2021	14-JAN-2021			
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
6:2 FTS (27619-97-2)	ug/L	<0.01	<0.01			NR70
8:2 FTS (39108-34-4)	ug/L	<0.01	<0.01			NR70
10:2 FTS (120226-60-0)	ug/L	<0.01	<0.01			NR70
8:2 diPAP (678-41-1)	ug/L	<0.02	<0.02			NR70
PFBA (Surrogate Recovery)	%	121	111			NR70
PFPeA (Surrogate Recovery)	%	111	107			NR70
PFHxA (Surrogate Recovery)	%	116	113			NR70
PFHpA (Surrogate Recovery)	%	118	111			NR70
PFOA (Surrogate Recovery)	%	116	109			NR70
PFNA (Surrogate Recovery)	%	99	113			NR70
PFDA (Surrogate Recovery)	%	100	100			NR70
PFUdA (Surrogate Recovery)	%	103	114			NR70
PFDoA (Surrogate Recovery)	%	89	115			NR70
PFTeDA (Surrogate Recovery)	%	91	103			NR70
PFHxDA (Surrogate Recovery)	%	89	89			NR70
FOUEA (Surrogate Recovery)	%	87	87			NR70
PFBS (Surrogate Recovery)	%	115	112			NR70
PFHxS (Surrogate Recovery)	%	116	104			NR70
PFOS (Surrogate Recovery)	%	114	113			NR70
PFOSA (Surrogate Recovery)	%	97	96			NR70
N-MeFOSA (Surrogate Recovery)	%	74	79			NR70
N-EtFOSA (Surrogate Recovery)	%	79	84			NR70
N-MeFOSAA (Surrogate Recovery)	%	92	94			NR70
N-EtFOSAA (Surrogate Recovery)	%	82	106			NR70
N-MeFOSE (Surrogate Recovery)	%	98	51			NR70
N-EtFOSE (Surrogate Recovery)	%	74	78			NR70
4:2 FTS (Surrogate Recovery)	%	55	62			NR70
6:2 FTS (Surrogate Recovery)	%	74	82			NR70
8:2 FTS (Surrogate Recovery)	%	76	91			NR70
8:2 diPAP (Surrogate Recovery)	%	200	191			NR70
Dates						
Date extracted		9-FEB-2021	9-FEB-2021			
Date analysed		9-FEB-2021	9-FEB-2021			

N21/002496
to
N21/002497

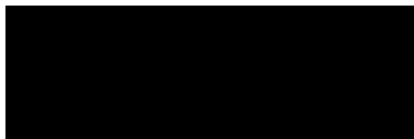
PFOS and PFHxS are quantified using a combined branched and linear standard,

REPORT OF ANALYSIS

Page: 3 of 3
Report No. RN1303312

linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.

Selected PFAS surrogate recoveries are biased due to matrix effects. δ
High PFAS surrogate recoveries accepted - results corrected for recovery.



Organics - NSW
Accreditation No. 198

10-FEB-2021



Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

This Report supersedes reports: *RN1303301*

Measurement Uncertainty is available upon request.

Chemical Accreditation 198: 105 Delhi Road, North Ryde, NSW, 2113



SAMPLE RECEIPT NOTIFICATION

CUSTOMER DETAILS

Attention: [REDACTED]
Customer: AECOM AUSTRALIA PTY LTD
Address: [REDACTED]
Email: [REDACTED]
Telephone:
Fax:

LABORATORY DETAILS

Lab: National Measurement Institute
Contact: [REDACTED]
Email: [REDACTED]
Telephone: [REDACTED]
Fax:

SAMPLE DETAILS

NMI Job Name: AECO03/210121

Total No. of Samples: 3

LRNs	Estimated Report Date	Customer Sample ID	Lab Sample Description
N21/001447	29-JAN-2021	0939_QC207_210113	WATER 13/01/2021 11:21 AM
N21/001448	29-JAN-2021	0939_QC210_210114	WATER 14/01/2021 12:30 PM
N21/001449	29-JAN-2021	0939_QC211_210114	WATER 14/01/2021 02:11 PM

SAMPLE RECEIVED CONDITION

Date samples received: 21-JAN-2021

Sample received in good order: Yes

NMI Quotation no. provided:

Client purchase order number: 60612561_6_1

Temperature of samples: Chilled

Comments: On COC its hold. We have registered for PFAS. Sample 0939_QC208_2101 0939_QC209_210114 samples not received.

Mode of Delivery: Courier

Additional Terms and Conditions

Incomplete / unclear information about samples or required testing will delay the start of the analysis work

If you require your Purchase Order (PO) number to be included on our invoice, please provide the number during sample submission and before the completion of work to avoid unnecessary delays and/or additional processing/handling fees.

The lodgement of an order or receipt of samples for NMI services referenced in this Sample Receipt Notification constitutes an acceptance of the current version of NMI Terms and Conditions or other applicable Terms referenced in the NMI Quotation. NMI Terms and Conditions are available on the web at <https://www.industry.gov.au/client-services/testing-and-analysis-services/chemical-and-biological-analysis-services-terms-and-conditions>



Australian Government
National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO03/210121

Sample Matrix: Liquid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
		ug/L	ug/L	Sample ug/L	Duplicate ug/L	RPD %	LCS %	Matrix Spike %
PFBA (375-22-4)	NR70	0.05	<0.05	NA	NA	NA	103	NA
PFPeA (2706-90-3)	NR70	0.02	<0.02	NA	NA	NA	95	NA
PFHxA (307-24-4)	NR70	0.01	<0.01	NA	NA	NA	97	NA
PFHpA (375-85-9)	NR70	0.01	<0.01	NA	NA	NA	93	NA
PFOA (335-67-1)	NR70	0.01	<0.01	NA	NA	NA	90	NA
PFNA (375-95-1)	NR70	0.01	<0.01	NA	NA	NA	87	NA
PFDA (335-76-2)	NR70	0.01	<0.01	NA	NA	NA	88	NA
PFUdA (2058-94-8)	NR70	0.01	<0.01	NA	NA	NA	91	NA
PFDaA (307-55-1)	NR70	0.01	<0.01	NA	NA	NA	100	NA
PFTrDA (72629-94-8)	NR70	0.02	<0.02	NA	NA	NA	92	NA
PFTeDA (376-06-7)	NR70	0.02	<0.02	NA	NA	NA	95	NA
PFHxDA (67905-19-5)	NR70	0.02	<0.02	NA	NA	NA	117	NA
PFODA (16517-11-6)	NR70	0.05	<0.05	NA	NA	NA	109	NA
FOUEA (70887-84-2)	NR70	0.01	<0.01	NA	NA	NA	101	NA
PFBS (375-73-5)	NR70	0.01	<0.01	NA	NA	NA	92	NA
PFPeS (2706-91-4)	NR70	0.01	<0.01	NA	NA	NA	90	NA
PFHxS (355-46-4)	NR70	0.01	<0.01	NA	NA	NA	91	NA
PFHpS (375-92-8)	NR70	0.01	<0.01	NA	NA	NA	92	NA
PFOS (1763-23-1)	NR70	0.02	<0.02	NA	NA	NA	96	NA
PFNS (68259-12-1)	NR70	0.01	<0.01	NA	NA	NA	96	NA
PFDS (335-77-3)	NR70	0.01	<0.01	NA	NA	NA	96	NA
PFOSA (754-91-6)	NR70	0.01	<0.01	NA	NA	NA	93	NA
N-MeFOSA (31506-32-8)	NR70	0.02	<0.02	NA	NA	NA	134	NA
N-EtFOSA (4151-50-2)	NR70	0.02	<0.02	NA	NA	NA	92	NA
N-MeFOSAA (2355-31-9)	NR70	0.01	<0.01	NA	NA	NA	81	NA
N-EtFOSAA(2991-50-6)	NR70	0.01	<0.01	NA	NA	NA	89	NA
N-MeFOSE (24448-09-7)	NR70	0.05	<0.05	NA	NA	NA	131	NA
N-EtFOSE (1691-99-2)	NR70	0.05	<0.05	NA	NA	NA	89	NA
4:2 FTS (757124-72-4)	NR70	0.01	<0.01	NA	NA	NA	83	NA
6:2 FTS (27619-97-2)	NR70	0.01	<0.01	NA	NA	NA	107	NA
8:2 FTS (39108-34-4)	NR70	0.01	<0.01	NA	NA	NA	86	NA
10:2 FTS (120226-60-0)	NR70	0.01	<0.01	NA	NA	NA	88	NA
8:2 diPAP (678-41-1)	NR70	0.02	<0.02	NA	NA	NA	89	NA

Results expressed in percentage (%) or ug/L wherever appropriate.

Acceptable Spike recovery is 50-150%.

Maximum acceptable RPDs on spikes and duplicates is 40%.

'NA' = Not Applicable.

RPD= Relative Percentage Difference.

Signed:



Organics Manager, NMI-North Ryde
28/01/2021

Date:



REPORT OF ANALYSIS

Client : AECOM AUSTRALIA PTY LTD LEVEL 21 420 GEORGE STREET	Job No. : AECO03/210121
Attention : [REDACTED]	Quote No. : QT-02018
Project Name : SA_0939_PFASOMP	Order No. : 60612561_6_1
Your Client Services Manager : [REDACTED]	Date Received : 21-JAN-2021
	Sampled By : CLIENT
	Phone : 02 9449 0169

Lab Reg No.	Sample Ref	Sample Description
N21/001447	0939_QC207_210113	WATER 13/01/2021 11:21 AM
N21/001448	0939_QC210_210114	WATER 14/01/2021 12:30 PM
N21/001449	0939_QC211_210114	WATER 14/01/2021 02:11 PM

Lab Reg No.		N21/001447	N21/001448	N21/001449		
Date Sampled		13-JAN-2021	14-JAN-2021	14-JAN-2021		
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	ug/L	<0.05	3.9	0.065		NR70
PFPeA (2706-90-3)	ug/L	<0.02	5.1	0.028		NR70
PFHxA (307-24-4)	ug/L	<0.01	24	0.10		NR70
PFHpA (375-85-9)	ug/L	<0.01	3.2	0.027		NR70
PFOA (335-67-1)	ug/L	<0.01	7.7	0.066		NR70
PFNA (375-95-1)	ug/L	<0.01	0.050	<0.01		NR70
PFDA (335-76-2)	ug/L	<0.01	<0.01	<0.01		NR70
PFUdA (2058-94-8)	ug/L	<0.01	<0.01	<0.01		NR70
PFDoA (307-55-1)	ug/L	<0.01	<0.01	<0.01		NR70
PFTrDA (72629-94-8)	ug/L	<0.02	<0.02	<0.02		NR70
PFTeDA (376-06-7)	ug/L	<0.02	<0.02	<0.02		NR70
PFHxDA (67905-19-5)	ug/L	<0.02	<0.02	<0.02		NR70
PFODA (16517-11-6)	ug/L	<0.05	<0.05	<0.05		NR70
FOUEA (70887-84-2)	ug/L	<0.01	<0.01	<0.01		NR70
PFDS (335-77-3)	ug/L	<0.01	<0.01	<0.01		NR70
PFPeS (2706-91-4)	ug/L	<0.01	13	0.053		NR70
PFHxS (355-46-4)	ug/L	<0.01	120	0.68		NR70
PFHpS (375-92-8)	ug/L	<0.01	9.4	0.039		NR70
PFOS (1763-23-1)	ug/L	<0.02	240	2.2		NR70
PFNS (68259-12-1)	ug/L	<0.01	0.11	<0.01		NR70
PFBS (375-73-5)	ug/L	<0.01	14	0.051		NR70
PFOSA (754-91-6)	ug/L	<0.01	0.094	<0.01		NR70
N-MeFOSA (31506-32-8)	ug/L	<0.02	<0.02	<0.02		NR70
N-EtFOSA (4151-50-2)	ug/L	<0.02	<0.02	<0.02		NR70
N-MeFOSAA (2355-31-9)	ug/L	<0.01	<0.01	<0.01		NR70
N-EtFOSAA(2991-50-6)	ug/L	<0.01	<0.01	<0.01		NR70
N-MeFOSE (24448-09-7)	ug/L	<0.05	<0.05	<0.05		NR70
N-EtFOSE (1691-99-2)	ug/L	<0.05	<0.05	<0.05		NR70

REPORT OF ANALYSIS

Page: 2 of 3
Report No. RN1302014

Lab Reg No.		N21/001447	N21/001448	N21/001449		
Date Sampled		13-JAN-2021	14-JAN-2021	14-JAN-2021		
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
4:2 FTS (757124-72-4)	ug/L	<0.01	<0.01	<0.01		NR70
6:2 FTS (27619-97-2)	ug/L	<0.01	0.12	<0.01		NR70
8:2 FTS (39108-34-4)	ug/L	<0.01	<0.01	<0.01		NR70
10:2 FTS (120226-60-0)	ug/L	<0.01	<0.01	<0.01		NR70
8:2 diPAP (678-41-1)	ug/L	<0.02	<0.02	<0.02		NR70
PFBA (Surrogate Recovery)	%	91	92	89		NR70
PFPeA (Surrogate Recovery)	%	93	77	88		NR70
PFHxA (Surrogate Recovery)	%	107	63	92		NR70
PFHpA (Surrogate Recovery)	%	90	94	88		NR70
PFOA (Surrogate Recovery)	%	95	79	86		NR70
PFNA (Surrogate Recovery)	%	109	47	95		NR70
PFDA (Surrogate Recovery)	%	99	82	95		NR70
PFUDA (Surrogate Recovery)	%	92	85	93		NR70
PFDoA (Surrogate Recovery)	%	89	84	84		NR70
PFTeDA (Surrogate Recovery)	%	88	77	81		NR70
PFHxDA (Surrogate Recovery)	%	81	108	76		NR70
FOUEA (Surrogate Recovery)	%	68	76	60		NR70
PFBS (Surrogate Recovery)	%	87	82	86		NR70
PFHxS (Surrogate Recovery)	%	91	92	84		NR70
PFOS (Surrogate Recovery)	%	105	80	95		NR70
PFOSA (Surrogate Recovery)	%	82	73	82		NR70
N-MeFOSA (Surrogate Recovery)	%	58	80	84		NR70
N-EtFOSA (Surrogate Recovery)	%	67	73	73		NR70
N-MeFOSAA (Surrogate Recovery)	%	94	97	81		NR70
N-EtFOSAA (Surrogate Recovery)	%	81	87	74		NR70
N-MeFOSE (Surrogate Recovery)	%	45	88	45		NR70
N-EtFOSE (Surrogate Recovery)	%	57	97	52		NR70
4:2 FTS (Surrogate Recovery)	%	71	77	66		NR70
6:2 FTS (Surrogate Recovery)	%	69	79	66		NR70
8:2 FTS (Surrogate Recovery)	%	59	54	72		NR70
8:2 diPAP (Surrogate Recovery)	%	161	168	130		NR70
Dates						
Date extracted		25-JAN-2021	25-JAN-2021	25-JAN-2021		
Date analysed		27-JAN-2021	27-JAN-2021	27-JAN-2021		

N21/001447
to
N21/001449

REPORT OF ANALYSIS

Page: 3 of 3
Report No. RN1302014

PFOS and PFHxS are quantified using a combined branched and linear standard, linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.

Selected PFAS surrogate recoveries are biased due to matrix effects.^δ
High PFAS surrogate recoveries accepted - results corrected for recovery.
Surrogate recoveries low for selected analytes - PFAS LORs not raised since S/N > 10.



Organics - NSW
Accreditation No. 198

29-JAN-2021



Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

This Report supersedes reports: *RN1301996*

Measurement Uncertainty is available upon request.

Chemical Accreditation 198: 105 Delhi Road, North Ryde, NSW, 2113



SAMPLE RECEIPT NOTIFICATION

CUSTOMER DETAILS

Attention: [REDACTED]
Customer: AECOM AUSTRALIA PTY LTD
Address: LEVEL 21
SYDNEY NSW 2000
Email: [REDACTED]
Telephone:
Fax:

LABORATORY DETAILS

Lab: National Measurement Institute
Contact: [REDACTED]
Address: [REDACTED]
Email: [REDACTED]
Telephone: [REDACTED]
Fax:

SAMPLE DETAILS

NMI Job Name: AECO03/210115/1

Total No. of Samples: 6

LRNs	Estimated Report Date	Customer Sample ID	Lab Sample Description
N21/000914	28-JAN-2021	0939_QC201_210111	WATER 11/01/2021 11:33 AM
N21/000915	28-JAN-2021	0939_QC202_210111	WATER 11/01/2021 01:46 PM
N21/000916	28-JAN-2021	0939_QC203_210111	WATER 11/01/2021 04:01 PM
N21/000917	28-JAN-2021	0939_QC204_210112	WATER 12/01/2021 11:47 AM
N21/000918	28-JAN-2021	0939_QC205_210112	WATER 12/01/2021 02:29 PM
N21/000919	28-JAN-2021	0939_QC206_210112	WATER 12/01/2021 04:08 PM

SAMPLE RECEIVED CONDITION

Date samples received: 15-JAN-2021

Sample received in good order: Yes

NMI Quotation no. provided:

Client purchase order number: 60612561_6_1

Temperature of samples: Chilled

Comments: ALL OK

Mode of Delivery: Courier

Additional Terms and Conditions

Incomplete / unclear information about samples or required testing will delay the start of the analysis work

If you require your Purchase Order (PO) number to be included on our invoice, please provide the number during sample submission and before the completion of work to avoid unnecessary delays and/or additional processing/handling fees.

The lodgement of an order or receipt of samples for NMI services referenced in this Sample Receipt Notification constitutes an acceptance of the current version of NMI Terms and Conditions or other applicable Terms referenced in the NMI Quotation. NMI Terms and Conditions are available on the web at <https://www.industry.gov.au/client-services/testing-and-analysis-services/chemical-and-biological-analysis-services-terms-and-conditions>



QUALITY ASSURANCE REPORT

Client: **AECOM Pty Ltd**

NMI QA Report No: AECO03/200128 QA

Sample Matrix: Water

Analyte	Method	LOR	Blank	Duplicates			Recoveries	
		mg/L	mg/L	Sample mg/L	Duplicate mg/L	RPD %	Matrix spk %	LCS %
Waters Section				N21/000916			N21/000916	
Bicarbonate as CaCO ₃	NW_B1	5	<5	260	NA	NA	NA	96
Carbonate as CaCO ₃	NW_B1	5	<5	<5	NA	NA	NA	NA
Hydroxide as CaCO ₃	NW_B1	5	<5	<5	NA	NA	NA	NA
Alkalinity - Total as CaCO ₃	NW_B1	5	<5	260	NA	NA	NA	96
Carbon - Dissolved Organic	NW_S15	0.5	<0.5	4.7	NA	NA	NA	120
Sulphate	NW_D10_B14	0.1	<0.1	45	NA	NA	NA	98
Chloride	NW_D3_B14	0.1	<0.1	86	NA	NA	NA	91
Nitrate-N	NW_B19	0.005	<0.005	0.21	NA	NA	NA	110
Conductivity (uS/cm)	NW_B9	1	<1	6400	NA	NA	NA	104
Dissolved Solids - Total	NW_B10A	1	<1	4100	NA	NA	NA	104
pH (pH units)	NW_S11	NA	NA	8.1	NA	NA	NA	101
Suspended Solids - Total	NW_S13	2	<2	1200	1200	0.0	NA	94

Filename = N:\North Ryde\Data\Inorganics\Records\2021\Water Section Records\B2\

Legend

Acceptable recovery is 80-120%.

Acceptable RPDs on duplicates is 30% at > 5 times LOR. Greater RPD may be expected at < 5 LOR.

LOR = Limit Of Reporting

ND = Not Determined

RPD = Relative Percent Difference

NA = Not Applicable

LCS = Laboratory Control Sample.

Comments

This report shall not be reproduced except in full.

Results greater than ten times LOR have been rounded to two significant figures.

Signed:



Inorganics Manager, NMI-North Ryde

Date:

27/01/2021



QUALITY ASSURANCE REPORT

Client: **AECOM AUSTRALIA PTY LTD**

NMI QA Report No: **AECO03/210115/1 T1**

Sample Matrix: **Water**

Analyte	Method	LOR	Blank	Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		mg/L	mg/L	mg/L	mg/L	%	%	%
Inorganics Section				N20/027900				N20/027900
Calcium Filtered	NT2.47	0.005	<0.005	61	60	2	100	93
Magnesium Filtered	NT2.47	0.005	<0.005	93	91	2	111	88
Potassium Filtered	NT2.47	0.05	<0.05	18	17	6	NA	99
Sodium Filtered	NT2.47	0.05	<0.05	1260	1240	2	100	NA

Filename = N:\North Ryde\Data\Inorganics\Quality System\QA Reports\TE\QAR2021\Water\

Legend:

Acceptable recovery is 75-120%.

Acceptable RPDs on duplicates is 44% at concentrations >5 times LOR. Greater RPD may be expected at <5 times LOR.

LOR = Limit Of Reporting

ND = Not Determined

RPD = Relative Percent Difference

NA = Not Applicable

LCS = Laboratory Control Sample.

#: Spike level is less than 50% of the sample's concentration, hence the recovery data cannot be reported.

Comments:

Results greater than ten times LOR have been rounded to two significant figures.

This report shall not be reproduced except in full.

Signed:



**Inorganics , NMI-North Ryde
22/01/2021**

Date:



QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO03/210115/1

Sample Matrix: Liquid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample ug/L	Duplicate ug/L	RPD %	LCS %	Matrix Spike %
		ug/L	ug/L					
PFBA (375-22-4)	NR70	0.05	<0.05	NA	NA	NA	107	NA
PFPeA (2706-90-3)	NR70	0.02	<0.02	NA	NA	NA	94	NA
PFHxA (307-24-4)	NR70	0.01	<0.01	NA	NA	NA	90	NA
PFHpA (375-85-9)	NR70	0.01	<0.01	NA	NA	NA	85	NA
PFOA (335-67-1)	NR70	0.01	<0.01	NA	NA	NA	90	NA
PFNA (375-95-1)	NR70	0.01	<0.01	NA	NA	NA	89	NA
PFDA (335-76-2)	NR70	0.01	<0.01	NA	NA	NA	92	NA
PFUdA (2058-94-8)	NR70	0.01	<0.01	NA	NA	NA	82	NA
PFDoA (307-55-1)	NR70	0.01	<0.01	NA	NA	NA	79	NA
PFTrDA (72629-94-8)	NR70	0.02	<0.02	NA	NA	NA	87	NA
PFTeDA (376-06-7)	NR70	0.02	<0.02	NA	NA	NA	99	NA
PFHxDA (67905-19-5)	NR70	0.02	<0.02	NA	NA	NA	112	NA
PFODA (16517-11-6)	NR70	0.05	<0.05	NA	NA	NA	98	NA
FOUEA (70887-84-2)	NR70	0.01	<0.01	NA	NA	NA	104	NA
PFBS (375-73-5)	NR70	0.01	<0.01	NA	NA	NA	90	NA
PFPeS (2706-91-4)	NR70	0.01	<0.01	NA	NA	NA	86	NA
PFHxS (355-46-4)	NR70	0.01	<0.01	NA	NA	NA	88	NA
PFHpS (375-92-8)	NR70	0.01	<0.01	NA	NA	NA	87	NA
PFOS (1763-23-1)	NR70	0.02	<0.02	NA	NA	NA	88	NA
PFNS (68259-12-1)	NR70	0.01	<0.01	NA	NA	NA	86	NA
PFDS (335-77-3)	NR70	0.01	<0.01	NA	NA	NA	88	NA
PFOSA (754-91-6)	NR70	0.01	<0.01	NA	NA	NA	97	NA
N-MeFOSA (31506-32-8)	NR70	0.02	<0.02	NA	NA	NA	110	NA
N-EtFOSA (4151-50-2)	NR70	0.02	<0.02	NA	NA	NA	108	NA
N-MeFOSAA (2355-31-9)	NR70	0.01	<0.01	NA	NA	NA	80	NA
N-EtFOSAA(2991-50-6)	NR70	0.01	<0.01	NA	NA	NA	96	NA
N-MeFOSE (24448-09-7)	NR70	0.05	<0.05	NA	NA	NA	113	NA
N-EtFOSE (1691-99-2)	NR70	0.05	<0.05	NA	NA	NA	116	NA
4:2 FTS (757124-72-4)	NR70	0.01	<0.01	NA	NA	NA	106	NA
6:2 FTS (27619-97-2)	NR70	0.01	<0.01	NA	NA	NA	106	NA
8:2 FTS (39108-34-4)	NR70	0.01	<0.01	NA	NA	NA	94	NA
10:2 FTS (120226-60-0)	NR70	0.01	<0.01	NA	NA	NA	94	NA
8:2 diPAP (678-41-1)	NR70	0.02	<0.02	NA	NA	NA	80	NA

Results expressed in percentage (%) or ug/L wherever appropriate.

Acceptable Spike recovery is 50-150%.

Maximum acceptable RPDs on spikes and duplicates is 40%.

'NA' = Not Applicable.

RPD= Relative Percentage Difference.

Signed:



**Organics Manager, NMI-North Ryde
28/01/2021**

Date:



REPORT OF ANALYSIS

Client : AECOM AUSTRALIA PTY LTD LEVEL 21 420 GEORGE STREET	Job No. : AECO03/210115/1
Attention : [REDACTED]	Quote No. : QT-02018
Project Name : SA_0939_PFASOMP	Order No. : 60612561_6_1
Your Client Services Manager : [REDACTED]	Date Received : 15-JAN-2021
	Sampled By : CLIENT
	Phone : [REDACTED]

Lab Reg No.	Sample Ref	Sample Description
N21/000916	0939_QC203_210111	WATER 11/01/2021 04:01 PM
N21/000917	0939_QC204_210112	WATER 12/01/2021 11:47 AM

Lab Reg No.		N21/000916	N21/000917			
Date Sampled		11-JAN-2021	12-JAN-2021			
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	ug/L	0.20	4.2			NR70
PFPeA (2706-90-3)	ug/L	0.28	6.5			NR70
PFHxA (307-24-4)	ug/L	1.4	31			NR70
PFHpA (375-85-9)	ug/L	0.21	4.6			NR70
PFOA (335-67-1)	ug/L	0.74	9.7			NR70
PFNA (375-95-1)	ug/L	<0.01	0.022			NR70
PFDA (335-76-2)	ug/L	<0.01	<0.01			NR70
PFUdA (2058-94-8)	ug/L	<0.01	<0.01			NR70
PFDaA (307-55-1)	ug/L	<0.01	<0.01			NR70
PFTrDA (72629-94-8)	ug/L	<0.02	<0.02			NR70
PFTeDA (376-06-7)	ug/L	<0.02	<0.02			NR70
PFHxDA (67905-19-5)	ug/L	<0.02	<0.02			NR70
PFODA (16517-11-6)	ug/L	<0.05	<0.05			NR70
FOUEA (70887-84-2)	ug/L	<0.01	<0.01			NR70
PFDS (335-77-3)	ug/L	0.043	<0.01			NR70
PFPeS (2706-91-4)	ug/L	0.66	21			NR70
PFHxS (355-46-4)	ug/L	6.0	170			NR70
PFHpS (375-92-8)	ug/L	0.57	8.9			NR70
PFOS (1763-23-1)	ug/L	40	110			NR70
PFNS (68259-12-1)	ug/L	0.23	<0.01			NR70
PFBS (375-73-5)	ug/L	0.58	22			NR70
PFOSA (754-91-6)	ug/L	0.45	0.031			NR70
N-MeFOSA (31506-32-8)	ug/L	<0.02	<0.02			NR70
N-EtFOSA (4151-50-2)	ug/L	<0.02	<0.02			NR70
N-MeFOSAA (2355-31-9)	ug/L	<0.01	<0.01			NR70
N-EtFOSAA(2991-50-6)	ug/L	<0.01	<0.01			NR70
N-MeFOSE (24448-09-7)	ug/L	<0.05	<0.05			NR70
N-EtFOSE (1691-99-2)	ug/L	<0.05	<0.05			NR70
4:2 FTS (757124-72-4)	ug/L	<0.01	<0.01			NR70

REPORT OF ANALYSIS

Page: 2 of 7
Report No. RN1301926

Lab Reg No.		N21/000916	N21/000917			
Date Sampled		11-JAN-2021	12-JAN-2021			
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
6:2 FTS (27619-97-2)	ug/L	<0.01	<0.01			NR70
8:2 FTS (39108-34-4)	ug/L	<0.01	<0.01			NR70
10:2 FTS (120226-60-0)	ug/L	<0.01	<0.01			NR70
8:2 diPAP (678-41-1)	ug/L	<0.02	<0.02			NR70
PFBA (Surrogate Recovery)	%	118	111			NR70
PFPeA (Surrogate Recovery)	%	119	114			NR70
PFHxA (Surrogate Recovery)	%	120	77			NR70
PFHpA (Surrogate Recovery)	%	119	119			NR70
PFOA (Surrogate Recovery)	%	115	104			NR70
PFNA (Surrogate Recovery)	%	98	74			NR70
PFDA (Surrogate Recovery)	%	118	99			NR70
PFUDa (Surrogate Recovery)	%	127	123			NR70
PFDoA (Surrogate Recovery)	%	112	109			NR70
PFTeDA (Surrogate Recovery)	%	112	111			NR70
PFHxDA (Surrogate Recovery)	%	88	137			NR70
FOUEA (Surrogate Recovery)	%	97	130			NR70
PFBS (Surrogate Recovery)	%	124	93			NR70
PFHxS (Surrogate Recovery)	%	102	54			NR70
PFOS (Surrogate Recovery)	%	110	121			NR70
PFOSA (Surrogate Recovery)	%	119	105			NR70
N-MeFOSA (Surrogate Recovery)	%	93	101			NR70
N-EtFOSA (Surrogate Recovery)	%	92	113			NR70
N-MeFOSAA (Surrogate Recovery)	%	106	107			NR70
N-EtFOSAA (Surrogate Recovery)	%	111	97			NR70
N-MeFOSE (Surrogate Recovery)	%	77	112			NR70
N-EtFOSE (Surrogate Recovery)	%	127	143			NR70
4:2 FTS (Surrogate Recovery)	%	100	80			NR70
6:2 FTS (Surrogate Recovery)	%	95	101			NR70
8:2 FTS (Surrogate Recovery)	%	95	80			NR70
8:2 diPAP (Surrogate Recovery)	%	89	106			NR70
Dates						
Date extracted		21-JAN-2021	21-JAN-2021			
Date analysed		21-JAN-2021	21-JAN-2021			

Organics - NSW
Accreditation No. 198

28-JAN-2021

105 Delhi Road, North Ryde NSW 2113 Tel: +61 2 9449 0111 www.measurement.gov.au

National Measurement Institute

REPORT OF ANALYSIS

Page: 3 of 7
Report No. RN1301926

Lab Reg No.		N21/000916	N21/000917			
Date Sampled		11-JAN-2021	12-JAN-2021			
	Units					Method
Filtered Trace Elements by ICP						
Calcium Filtered	mg/L	41	60			NT2_47
Magnesium Filtered	mg/L	34	92			NT2_47
Potassium Filtered	mg/L	8.7	17			NT2_47
Sodium Filtered	mg/L	90	1250			NT2_47
Dates						
Date extracted		21-JAN-2021	21-JAN-2021			
Date analysed		21-JAN-2021	21-JAN-2021			



Inorganics - NSW
Accreditation No. 198

28-JAN-2021

Lab Reg No.		N21/000916	N21/000917			
Date Sampled		11-JAN-2021	12-JAN-2021			
	Units					Method
Miscellaneous						
Chloride	mg/L	86	1900			NW_D3_B14
Anions	meq/L	9	63			CALC_IONS
Cations	meq/L	9	65			CALC_IONS
Cation/Anion Balance	%	0.0	1.6			CALC_IONS
Bicarbonate as CaCO3	mg/L	260	280			NW_B1
Carbonate as CaCO3	mg/L	< 5	< 5			NW_B1
Hydroxide as CaCO3	mg/L	< 5	< 5			NW_B1
Alkalinity - Total as CaCO3	mg/L	260	280			NW_B1
Conductivity	uS/cm	6400	900			NW_B9
Carbon - Dissolved Organic	mg/L	4.7	4.4			NW_S15
Dissolved Solids - Total	mg/L	4100	580			NW_B10A
Sulphate	mg/L	45	180			NW_D10_B14
Suspended Solids - Total	mg/L	1200	160			NW_S13
Fluoride	mg/L	1.5	3.2			NW_B3_B14
Nitrate-N	mg/L	0.21	0.83			NWD20
pH	pH_unit	8.1	8.1			NW_S11
Dates						
Date extracted		18-JAN-2021	18-JAN-2021			
Date analysed		21-JAN-2021	21-JAN-2021			

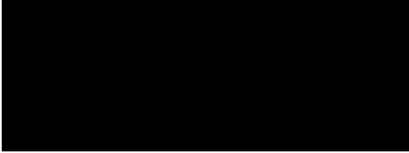
REPORT OF ANALYSIS

Page: 4 of 7
Report No. RN1301926

N21/000916

to N21/000917

pH was tested outside of recommended holding times.



Inorganics - NSW

Accreditation No. 198

28-JAN-2021

REPORT OF ANALYSIS

Page: 5 of 7

Report No. RN1301926

Client : AECOM AUSTRALIA PTY LTD LEVEL 21 420 GEORGE STREET Attention : ██████████ Project Name : SA_0939_PFASOMP Your Client Services Manager : ██████████	Job No. : AECO03/210115/1 Quote No. : QT-02018 Order No. : 60612561_6_1 Date Received : 15-JAN-2021 Sampled By : CLIENT Phone : ██████████
--	---

Lab Reg No.	Sample Ref	Sample Description
N21/000914	0939_QC201_210111	WATER 11/01/2021 11:33 AM
N21/000915	0939_QC202_210111	WATER 11/01/2021 01:46 PM
N21/000918	0939_QC205_210112	WATER 12/01/2021 02:29 PM
N21/000919	0939_QC206_210112	WATER 12/01/2021 04:08 PM

Lab Reg No.	Date Sampled	Units	N21/000914	N21/000915	N21/000918	N21/000919	Method
			11-JAN-2021	11-JAN-2021	12-JAN-2021	12-JAN-2021	
PFAS (per-and poly-fluoroalkyl substances)							
PFBA (375-22-4)	ug/L	0.56	<0.05	<0.05	<0.05	<0.05	NR70
PFPeA (2706-90-3)	ug/L	1.1	<0.02	<0.02	<0.02	<0.02	NR70
PFHxA (307-24-4)	ug/L	7.1	<0.01	<0.01	<0.01	<0.01	NR70
PFHpA (375-85-9)	ug/L	0.79	<0.01	<0.01	<0.01	<0.01	NR70
PFOA (335-67-1)	ug/L	6.6	<0.01	<0.01	<0.01	<0.01	NR70
PFNA (375-95-1)	ug/L	0.058	<0.01	<0.01	<0.01	<0.01	NR70
PFDA (335-76-2)	ug/L	<0.01	<0.01	<0.01	<0.01	<0.01	NR70
PFUdA (2058-94-8)	ug/L	<0.01	<0.01	<0.01	<0.01	<0.01	NR70
PFDoA (307-55-1)	ug/L	<0.01	<0.01	<0.01	<0.01	<0.01	NR70
PFTrDA (72629-94-8)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	NR70
PFTeDA (376-06-7)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	NR70
PFHxDA (67905-19-5)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	NR70
PFODA (16517-11-6)	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	NR70
FOUEA (70887-84-2)	ug/L	<0.01	<0.01	<0.01	<0.01	<0.01	NR70
PFDS (335-77-3)	ug/L	<0.01	<0.01	<0.01	<0.01	<0.01	NR70
PFPeS (2706-91-4)	ug/L	1.6	<0.01	<0.01	<0.01	<0.01	NR70
PFHxS (355-46-4)	ug/L	65	<0.01	<0.01	<0.01	<0.01	NR70
PFHpS (375-92-8)	ug/L	5.0	<0.01	<0.01	<0.01	<0.01	NR70
PFOS (1763-23-1)	ug/L	58	0.060	<0.02	<0.02	<0.02	NR70
PFNS (68259-12-1)	ug/L	<0.01	<0.01	<0.01	<0.01	<0.01	NR70
PFBS (375-73-5)	ug/L	0.63	<0.01	<0.01	<0.01	<0.01	NR70
PFOSA (754-91-6)	ug/L	0.028	<0.01	<0.01	<0.01	<0.01	NR70
N-MeFOSA (31506-32-8)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	NR70
N-EtFOSA (4151-50-2)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	NR70
N-MeFOSAA (2355-31-9)	ug/L	<0.01	<0.01	<0.01	<0.01	<0.01	NR70
N-EtFOSAA(2991-50-6)	ug/L	<0.01	<0.01	<0.01	<0.01	<0.01	NR70
N-MeFOSE (24448-09-7)	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	NR70

REPORT OF ANALYSIS

Page: 6 of 7

Report No. RN1301926

Lab Reg No.			N21/000914	N21/000915	N21/000918	N21/000919	
Date Sampled			11-JAN-2021	11-JAN-2021	12-JAN-2021	12-JAN-2021	
		Units					Method
PFAS (per- and poly-fluoroalkyl substances)							
N-EtFOSE (1691-99-2)	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	NR70
4:2 FTS (757124-72-4)	ug/L	<0.01	<0.01	<0.01	<0.01	<0.01	NR70
6:2 FTS (27619-97-2)	ug/L	<0.01	<0.01	<0.01	<0.01	<0.01	NR70
8:2 FTS (39108-34-4)	ug/L	<0.01	<0.01	<0.01	<0.01	<0.01	NR70
10:2 FTS (120226-60-0)	ug/L	<0.01	<0.01	<0.01	<0.01	<0.01	NR70
8:2 diPAP (678-41-1)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	NR70
PFBA (Surrogate Recovery)	%	110	107	119	114	114	NR70
PFPeA (Surrogate Recovery)	%	144	102	120	114	114	NR70
PFHxA (Surrogate Recovery)	%	115	111	118	117	117	NR70
PFHpA (Surrogate Recovery)	%	143	120	120	112	112	NR70
PFOA (Surrogate Recovery)	%	110	102	124	121	121	NR70
PFNA (Surrogate Recovery)	%	92	88	103	93	93	NR70
PFDA (Surrogate Recovery)	%	106	79	106	99	99	NR70
PFUdA (Surrogate Recovery)	%	110	74	114	112	112	NR70
PFDoA (Surrogate Recovery)	%	105	74	103	98	98	NR70
PFTeDA (Surrogate Recovery)	%	105	82	110	106	106	NR70
PFHxDA (Surrogate Recovery)	%	124	76	100	94	94	NR70
FOUEA (Surrogate Recovery)	%	118	66	90	80	80	NR70
PFBS (Surrogate Recovery)	%	142	114	114	115	115	NR70
PFHxS (Surrogate Recovery)	%	69	101	119	114	114	NR70
PFOS (Surrogate Recovery)	%	116	74	119	102	102	NR70
PFOSA (Surrogate Recovery)	%	98	58	99	95	95	NR70
N-MeFOSA (Surrogate Recovery)	%	109	46	79	71	71	NR70
N-EtFOSA (Surrogate Recovery)	%	90	89	113	100	100	NR70
N-MeFOSAA (Surrogate Recovery)	%	113	65	116	118	118	NR70
N-EtFOSAA (Surrogate Recovery)	%	101	81	107	100	100	NR70
N-MeFOSE (Surrogate Recovery)	%	90	48	69	77	77	NR70
N-EtFOSE (Surrogate Recovery)	%	93	59	120	81	81	NR70
4:2 FTS (Surrogate Recovery)	%	149	103	87	94	94	NR70
6:2 FTS (Surrogate Recovery)	%	102	80	82	88	88	NR70
8:2 FTS (Surrogate Recovery)	%	79	57	81	80	80	NR70
8:2 diPAP (Surrogate Recovery)	%	111	104	157	154	154	NR70
Dates							
Date extracted		21-JAN-2021	25-JAN-2021	21-JAN-2021	21-JAN-2021	21-JAN-2021	
Date analysed		21-JAN-2021	27-JAN-2021	21-JAN-2021	21-JAN-2021	21-JAN-2021	

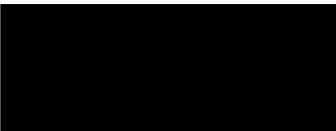
N21/000914
to
N21/000919

REPORT OF ANALYSIS

Page: 7 of 7
Report No. RN1301926

PFOS and PFHxS are quantified using a combined branched and linear standard, linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.

Selected PFAS surrogate recoveries are biased due to matrix effects.
Surrogate recoveries low for selected analytes - PFAS LORs not raised since S/N > 10.



Organics - NSW
Accreditation No. 198

28-JAN-2021



Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

This Report supersedes reports: *RN1301886*

Measurement Uncertainty is available upon request.

Chemical Accreditation 198: 105 Delhi Road, North Ryde, NSW, 2113

Appendix F

Calibration Certificates

Appendix F Calibration Certificates



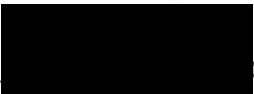
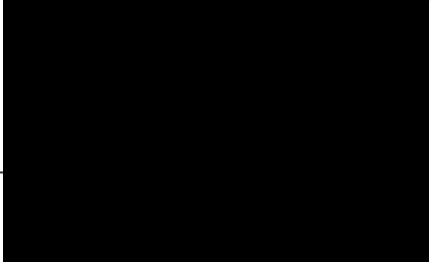
EQUIPMENT CERTIFICATION REPORT

PGN9003842-9003846 - INTERFACE METER

Plant Number: 235267 Serial Number: 236569

Probe Length: 60m

ITEM	TEST	PASS	COMMENTS
Battery	Compartment / Capacity	<input checked="" type="checkbox"/> 5,5V	9v
Probe	Clean / Operation	<input checked="" type="checkbox"/>	
Earth Lead	Check if equipped	<input checked="" type="checkbox"/>	
Tape Check	Cleaned / Checked for cuts	<input checked="" type="checkbox"/>	
Function test	At surface level	<input checked="" type="checkbox"/>	

Checked By:  Date: 8/1/21 Signed: 

Accessories List:

Interface Meter	Tape Guide	Decon 90 Solution
Brush	Spare 9v Battery	Transport Box



Make your job EASY!

135 135 | kennards.com.au



EQUIPMENT CERTIFICATION REPORT


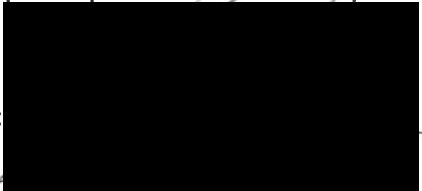
PGN9003871 WATER QUALITY METER – MULTIFUNCTION (SMART TROLL)

Plant Number: 235640 Serial Number: 532889

SENSOR	CONCENTRATION	SPAN 1	SPAN 2	TRACEABILITY	PASS
pH	pH 6.88 / pH 4.00	6.88 pH	4.00 pH	325169 344027	<input checked="" type="checkbox"/>
Conductivity	12.88 mS/cm	12.88 mS/cm	—	343265	<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0.0% in Sodium Sulphite	% Saturation 100 in Air	10465	<input checked="" type="checkbox"/>
ORP	240mV @ 25°C	240mV	—	5235	<input checked="" type="checkbox"/>

Battery Status <u>100%</u>	Temperature <u>25.1°C</u>
Electrical Test & Tag (AS/NZS 3760)	Electrodes Cleaned and Checked

Note: Calibration solution traceability information is available upon request.

Checked By:  Date: 6/1/21 Signed: 

Accessories List:

User's Manual	pH Sensor	Conductivity Sensor
Dissolved Oxygen Sensor with Wetting Cap	Redox (ORP) Sensor with Wetting Cap	Flow Cell 500ml
Charger Adaptor & Comm Cable	Desiccant Satchel	iPod & Transit Case
Storage Cap	Testing Cap	Calibration Test Tube
External Battery Pack for iPod		



Make your job EASY!

135 135 | kennards.com.au

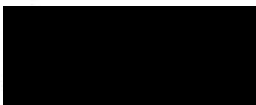
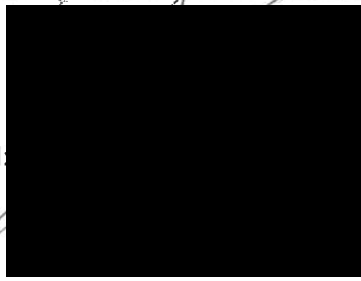
EQUIPMENT CERTIFICATION REPORT

PGN9003842-9003846 - INTERFACE METER

Plant Number: 235211 Serial Number: 268020

Probe Length: 60m

ITEM	TEST	PASS	COMMENTS
Battery	Compartment / Capacity	<input checked="" type="checkbox"/> 9V	9v
Probe	Clean / Operation	<input checked="" type="checkbox"/>	
Earth Lead	Check if equipped	<input checked="" type="checkbox"/>	
Tape Check	Cleaned / Checked for cuts	<input checked="" type="checkbox"/>	
Function test	At surface level	<input checked="" type="checkbox"/>	

Checked By:  Date: 4/2/21 Signed: 

Accessories List:

Interface Meter	Tape Guide	Decon 90 Solution
Brush	Spare 9v Battery	Transport Box



Make your job *EASY!*

135 135 | kennards.com.au

EQUIPMENT CERTIFICATION REPORT

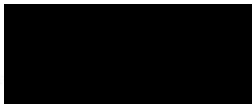

PGN9003871 WATER QUALITY METER – MULTIFUNCTION (SMART TROLL)

Plant Number: 235637 Serial Number: 341733

SENSOR	CONCENTRATION	SPAN 1	SPAN 2	TRACEABILITY	PASS
pH	pH 6.88 / pH 4.00	6.88 pH	4.00 pH	325169 347027	<input checked="" type="checkbox"/>
Conductivity	12.88 mS/cm	12.88 mS/cm	—	343265	<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0.0% in Sodium Sulphite	% Saturation 100 in Air	10465	<input checked="" type="checkbox"/>
ORP	240mV @ 25°C	240mV	—	5235	<input checked="" type="checkbox"/>

Battery Status <u>100</u> %	Temperature <u>24.3</u> °C
Electrical Test & Tag (AS/NZS 3760)	Electrodes Cleaned and Checked

Note: Calibration solution traceability information is available upon request.

Checked By:  Date: 4/2/21 Signed: 

Accessories List:

User's Manual	pH Sensor	Conductivity Sensor
Dissolved Oxygen Sensor	Redox (ORP) Sensor	Flow Cell
iPod Charger	Stainless Steel Restrictor	iPod & Transit Case
Calibration Cup	Bluetooth Battery Pack	Calibration Test Tube
External Battery Pack for iPod	Cable	



Make your job *EASY!*

135 135 | kennards.com.au

KENNARDS**HIRE****EQUIPMENT CERTIFICATION REPORT****PGN9003871 WATER QUALITY METER – MULTIFUNCTION (SMART TROLL)**Plant Number: 235635 Serial Number: 362930

SENSOR	CONCENTRATION	SPAN 1	SPAN 2	TRACEABILITY	PASS
pH	pH 6.88 / pH 4.00	6.88 pH	4.00 pH	325169 347027	<input checked="" type="checkbox"/>
Conductivity	12.88 mS/cm	12.88 mS/cm	—	343265	<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0.0% in Sodium Sulphite	% Saturation 100 in Air	10465	<input checked="" type="checkbox"/>
ORP	240mV @ 25°C	240mV	—	5235	<input checked="" type="checkbox"/>

Battery Status <u>100 %</u>	Temperature <u>24.8 °C</u>
Electrical Test & Tag (AS/NZS 3760)	Electrodes Cleaned and Checked

Note: Calibration solution traceability information is available upon request.

Checked By: [REDACTED] Date: 4/2/21 Signed: [REDACTED]**Accessories List:**

User's Manual	pH Sensor	Conductivity Sensor
Dissolved Oxygen Sensor	Redox (ORP) Sensor	Flow Cell
iPod Charger	Stainless Steel Restrictor	iPod & Transit Case
Calibration Cup	Bluetooth Battery Pack	Calibration Test Tube
External Battery Pack for iPod	Cable	

Make your job *EASY!*

135 135 | kennards.com.au

Prepared for
Department of Defence, Directorate
of PFAS Remediation, Environment
and Engineering Branch
ABN: 68706814312

AECOM

Sampling Event Factual Report, July and August 2021

PFAS OMP - RAAF Base Edinburgh

02-Nov-2021
RAAF Base Edinburgh

Sampling Event Factual Report, July and August 2021

PFAS OMP - RAAF Base Edinburgh

Client: Department of Defence,
Directorate of PFAS Remediation,
Environment and Engineering Branch

ABN: 68706814312

Prepared by

AECOM Australia Pty Ltd
Level 3, 9 Cavenagh Street, Darwin NT 0800, GPO Box 3175, Darwin NT 0801, Australia
T +61 8 8942 6200 F +61 8 8942 6299 www.aecom.com
ABN 20 093 846 925

02-Nov-2021

Job No.: 60612561

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 and ISO45001.

Quality Information

Document Sampling Event Factual Report, July and August 2021

Ref 60612561_0939_EDN_July-Aug_2021_Factual_Report_Rev0.docx

Date 02-Nov-2021

Prepared by ██████████

Reviewed by ██████████

Revision History

Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
0	02-Nov-2021	Final	██████████ Project Manager	██████████

Table of Contents

Abbreviations		1
1.0	Introduction	1
	1.1 General	1
	1.2 Objectives	1
2.0	Scope of Work	2
	2.1 Deviations from the SAQP	5
3.0	Methodology	6
	3.1 Adopted Screening Criteria	7
	3.2 Data Quality Objectives and Data Validation	8
4.0	Field Observations and Results	9
	4.1 General Field Observations	9
	4.2 Groundwater	9
	4.2.1 Field Observations and Field Measurements	9
	4.2.2 PFAS Groundwater Analytical Results	10
	4.3 Surface Water	11
	4.3.1 Field Observations and Field Measurements	11
	4.3.2 PFAS Surface Water Analytical Results	11
5.0	Summary and Next Sampling Events	12
	5.1 Summary of Monitoring Event	12
	5.2 Upcoming Sampling Events	13
	5.3 Upcoming Annual Interpretive Report	13
6.0	References	14
Appendix A		
	Figures	A
Appendix B		
	Tables	B
Appendix C		
	Data Validation Reports	C
Appendix D		
	Chain of Custody	D
Appendix E		
	Laboratory Certificates	E
Appendix F		
	Calibration Certificates	F

List of Tables

Table 1	Groundwater Sampling Locations	3
Table 2	Groundwater Gauging Locations	4
Table 3	Surface Water Sampling Locations	4
Table 4	Deviations from the SAQP during sampling event for August 2021	5
Table 5	Sampling Methodology	6
Table 6	Summary of Adopted PFAS Screening Criteria	7
Table 7	General Field Observations	9
Table 8	Groundwater observations and field measurements	9
Table 9	Surface Water Observations and Field Measurements	11
Table 10	Summary of Sampling Event	12

Abbreviations

Term	Description
AECOM	AECOM Australia Pty Ltd
ALS	Australian Laboratory Services Pty Ltd
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure, as amended (2013)
DCMM	Defence Contamination Management Manual
DEW	Department for Environment and Water
DO	Dissolved oxygen
DoH	Department of Health
EC	Electrical conductivity
FSANZ	Food Standards Australia and New Zealand
HEPA	Heads of Environmental Protection Agencies
LOR	Limit of reporting
mAHD	metres Australian Height Datum
mbtoc	metres below top of casing
NATA	National Association of Testing Authorities
NEMP	National Environmental Management Plan
NEPC	National Environment Protection Council
NHMRC	National Health and Medical Research Council
NMI	National Measurement Institute
NSW	New South Wales
OMP	Ongoing Monitoring Program
ORP	Oxidation-reduction potential
PFAS	Per- and poly-fluoroalkyl substances
PFHxS	Perfluorohexane sulfonic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonate
PMAP	PFAS Management Area Plan
QA/QC	Quality Assurance/Quality Control
Q1	Quaternary aquifer unit 1
RAN	Royal Australian Navy
SA EPA	South Australian Environmental Protection Agency
SAQP	Sampling Analysis Quality Plan
SWL	Standing Water Level

Term	Description
T1	Tertiary aquifer unit 1

1.0 Introduction

1.1 General

AECOM Australia Pty Ltd (AECOM) was engaged by the Department of Defence (Defence) to implement the per- and poly-fluoroalkyl substances (PFAS) Ongoing Monitoring Program (OMP) outlined in the *PFAS Management Area Plan (PMAP)* (Department of Defence, 2019) at RAAF Base Edinburgh (the 'Site') in South Australia. The location of the Site and Management Area is shown in **Figure 1.1** in **Appendix A** and PFAS source areas as outlined in the PMAP (Defence, 2019) are shown in **Figure 1.2, Appendix A**. The OMP (Defence, 2019) for the Site outlines the requirement to complete biannual groundwater and surface water sampling.

The primary purpose of the OMP program is to monitor changes to the PFAS impact in groundwater and surface water pathways associated with sources of PFAS as initially assessed through the detailed site investigation phase of works. Changes may result from the specific or cumulative impact of remediation or containment actions, existing transportation trends, and changes to hydrogeology or weather events.

The monitoring program at RAAF Base Edinburgh includes a regime of groundwater and surface water sampling to capture these changes in the long term, to enable Defence to maintain an up-to-date understanding of temporal and spatial distribution, concentration and transport of PFAS contaminants. The data collected will assist in the timely identification of risks and inform Defence's approach to the management of PFAS, including updates and revisions to the PFAS Management Area Plan (PMAP) (Defence, 2019).

1.2 Objectives

As noted above, the objective of the PFAS OMP is to provide information on changes to PFAS contamination originating from Defence property to inform risk management decisions by Defence to protect human health and the environment.

The purpose of this PFAS OMP factual report is to summarise the scope of works and findings for the winter groundwater and surface water sampling event conducted in July to August 2021, specifically highlighting first time detections and/or first-time exceedances of adopted human health and ecological screening criteria for perfluorohexane sulfonic acid (PFHxS)+ perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA).

This report has been prepared in accordance with the *Defence PFAS OMP factual reports – interim guidance for preparation*, v0.2, May 2021 (Defence, 2021).

An annual interpretive report will be subsequently developed for the purpose of assessing the data collected during the discrete monitoring events completed over the preceding 12-month period and will include assessment of environmental variability and any statistically significant trends in PFAS concentrations

2.0 Scope of Work

The sampling event was completed in general accordance with the SAQP (AECOM, 2019).

Prior to commencement of the sampling events the SAQP was reviewed to ensure compliance with the following:

- PFAS National Environmental Management Plan (NEMP) (2020).
- National Environment Protection (Assessment of Site Contamination) Measure 1999, Schedule B1 (ASC NEPM).
- Defence Routine Environment Water Quality Monitoring Manual.
- AS/NZ 5667:1998 Water quality – Sampling.
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality; and
- Relevant State regulatory guidelines.

In summary, the scope of works for this sampling event included:

- Obtaining access to two City of Salisbury operational bores, one Department for Environment and Water (DEW) monitoring bore and one private bore.
- Collection of groundwater samples (including gauging of groundwater levels), in July and August 2021 from 102 of 105 planned existing monitoring wells using Hydrasleeves™ (refer to **Table 1** below, and **Figure 3** in **Appendix A** for specific locations).
- Collection of 20 surface water samples from 21 planned locations in August 2021 (refer to **Table 2** below and **Figure 2** in **Appendix A** for specific locations) coinciding with a significant rainfall event (forecast for >10 mm of rain). One location was dry and a surface water sample was thus unable to be collected from this location during this sampling event.
- Collection of intra- and inter-laboratory duplicate samples at a rate of 1 in 10 primary samples, one rinsate and one field blank sample per fieldwork day for groundwater and surface water.
- Analysis of samples for a suite of 28 PFAS analytes at the standard limit of reporting (LOR).
- Data management of the OMP field and laboratory data in the Defence ESdat database.
- Preparation of this Sampling Event Factual Report.

Table 1 Groundwater Sampling Locations

Location Description	Aquifer	On-Base wells/bores	Off-base wells/bores	Number of wells/bores
Background North and Northeast of Base	Quaternary aquifer unit 1 (Q1)	MW2325, MW2134, MW2135, MW2159	MW2218	On-Base (6 locations) Off-Base (1 location)
	Q2	MW2216, MW4011 [^] , MW4218		
Source Area P4	Q1	MW2358, MW2411, MW2394		On-Base (5 locations)
	Q2	MW2126, MW2162		
Source Areas P9 and P15, P11, P16 and P21	Q1	MW2499, MW2112, MW2116, MW2120, MW2148, MW2149, MW2150, MW2188, MW2194, MW2197, MW2201, MW2202, MW2203		On-Base (19 locations)
	Q2	MW2158, MW2189, MW2200		
	Q3	MW2270, MW2272		
	Q4	MW2284		
Source Areas P1, P3A, P3B and P27	Q1	MW2528, MW2490, MW2114, MW2130, MW2131, MW2193		On-Base (9 locations)
	Q2	MW2157, MW2209, MW2210		
Southern, western and northern boundary	Q1	MW2501, MW2129, MW2137, MW2139, MW2166, MW2169, MW2172, MW2175, MW2177, MW2180, MW2182, MW2184	MW4013	On-Base (21 locations) Off-Base (1 location)
	Q2	MW2145, MW2173, MW2176, MW2183, MW2185		
	Q3	MW2275, MW2281		
	Q4	MW2285, MW2286		
Helps Road Drain	Q1		MW4001, MW4003, MW4015, MW4053	Off-Base (11 locations)
	Q2		MW4035, MW4045, MW4048	
	Q3		MW4068, MW4069 [^] , MW4070	
	Q4		MW4075	
	Q1		MW4009, MW4020,	Off-Base (20 locations)

Location Description	Aquifer	On-Base wells/bores	Off-base wells/bores	Number of wells/bores
Lateral extent of PFAS impacts			MW4023, MW4027*, MW4037, MW4041, MW4052, MW4055, MW4059, MW4060, MW4061*, MW4063^^, MW4064, MW4072, MW4219	
	Q2		MW4021, MW4022, MW4024, MW4076*, MW4077	
	Q3		MW4071	
Proximity to identified licensed groundwater users	Q1		MW4057, MW4058	Off-Base (9 locations)
	Q2		MW4065, MW4066	
	Q3		MW4069^, MW4073, MW4074,	
	Q4		MW4078, MW4079	
Tertiary Aquifer Bores	T1 (Tertiary aquifer unit 1)		MW21322, MW20327 (DEW) and MW22767	Off-Base (3 locations)
Private Property Bore	Q2		MW15586	Off-Base (1 location)

^Targeted wells are applicable to multiple investigative locations

*Location not accessed. See Table 8 for details.

^^Wells MW4011 and MW4063 believed destroyed and replaced with wells MW4218 and MW4219, respectively.

Table 2 Groundwater Gauging Locations

Aquifer	On-Base wells/bores	Off-base wells/bores	Number of wells/bores
Q1	MW2118, MW2156, MW2163, MW2171	MW4006, MW4028, MW4029, MW4030, MW4043, MW4046, MW4047, MW4049	On-Base (4 locations) Off-Base (8 locations)
Q2	MW2160, MW2164, MW2199, MW2195	MW4031, MW4032	On-Base (4 locations) Off-Base (2 locations)

Refer to Table 8 for further details

Table 3 Surface Water Sampling Locations

Location Description	On-Base locations	Off-Base locations	Number of locations
Upgradient locations	SW003, SW028	SW029, SW032 SW033	On-Base (2 locations) Off-Base (3 locations)
On-Base surface water drain network	SW006, SW017, SW018, SW019, SW021, SW050, SW054		On-Base (7 locations)

Location Description	On-Base locations	Off-Base locations	Number of locations
On-Base surface water exiting the Base	SW037*		On-Base (1 location)
Helps Road Drain south of the Base boundary		SW009, SW010, SW011, SW012, SW062	Off-Base (5 locations)
Kaurna Park Wetland		SW058, SW059, SW078	Off-Base (3 locations)

*Location not sampled. Refer to Table 9 for further details

2.1 Deviations from the SAQP

The works completed during this sampling event included some deviations from the SAQP (AECOM, 2019) as outlined in **Table 4** below.

Table 4 Deviations from the SAQP during sampling event for August 2021

SAQP Scope	July/August 2021 Sampling Event
105 groundwater locations to be sampled.	102 locations were sampled as three locations, MW4027, MW4061 and MW4076 were submerged in pooled surface water.
21 surface water locations to be sampled as part of the biannual sampling event.	20 surface water locations were sampled as SW037 had insufficient water to sample.
Locations within the well network include MW20327, MW21322, MW22767 and MW15586.	Off-base tertiary aquifer bore location names were updated to be compliant with Annex L of the Defence Contamination Management Manual (DCMM; Department of Defence, 2019a). The corresponding location names are the following: MW20327 updated to MW4220 MW21322 updated to MW4221 MW22767 updated to MW4222 MW15586 updated to MW4223
Sampling of groundwater and surface water for the non-PFAS suite in July/August 2021	Defence notified the AECOM project management team via email on 27th January 2021 that “all future OMP sampling events across all sites, the inclusion of non-PFAS analysis will need to be justified in advance and agreed by Defence Tech Policy through review of the SAQP”.

3.0 Methodology

The methodology adopted for the biannual groundwater and surface water sampling events was in accordance with the SAQP (AECOM, 2019) and is summarised below in **Table 5**:

Table 5 Sampling Methodology

Item	January/February 2021 Sampling Events
Groundwater gauging	The depth to groundwater was measured in each monitoring well immediately prior to collection of groundwater samples using an interface probe.
Field parameters	<p>Temperature, electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (ORP), pH and observations of water quality were recorded for all groundwater and surface water samples.</p> <p><u>Groundwater</u></p> <p>Groundwater field parameters were obtained prior to sampling by retrieving groundwater via Hydrasleeve™ samplers for measurement with a water quality meter.</p> <p><u>Surface water</u></p> <p>Surface water field parameters were obtained prior to sampling by retrieving surface water via a sampling pole and bottle for measurement with a water quality meter.</p> <p>Field parameters and observations were collected electronically using AECOM's environmental data collection and analysis (EDCA) tool. Observations collected in the field are presented in table T1 in Appendix B.</p> <p>Water quality meter calibration certificates are presented in Appendix F.</p>
Sampling collection	<p><u>Groundwater</u></p> <p>Groundwater samples were collected from accessible monitoring wells using no-purge methodology HydraSleeves™, with the exception of wells MW4223, MW4221 and MW4220 which were sampled via a tap.</p> <p>HydraSleeves™ were installed within the screened interval of the wells for a minimum of 24 hours prior to the sampling round. This was based on a review of the well construction log. Once sampling was completed, new HydraSleeves™ were deployed at the screened interval depth in preparation for the next sampling round.</p> <p>Groundwater samples obtained through a tap were collected by placing the laboratory sample bottle beneath the tap and the tap slowly opened to collect the "first flush" of water.</p> <p><u>Surface water</u></p> <p>Surface water samples were collected from approximately 0.1 meters below the water surface to minimise collection of sediment or floating materials in the samples. At each location, a new, laboratory supplied container was lowered into the water, using an aluminium sampling pole, with the cap immediately applied once the container was full.</p>
QAQC samples	Field QA/QC samples collected included intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits), field blanks and rinsate samples. Refer to Appendix C for assessment of QAQC sample data.

Item	January/February 2021 Sampling Events
Sample analysis	<p>Samples were submitted to the primary and secondary laboratories for analysis for the suite of 28 PFAS analytes.</p> <p>ALS Environmental (ALS) Sydney, NSW was used as the primary laboratory. National Measurement Institute (NMI) of Sydney, NSW was used as the secondary laboratory. ALS and NMI methods for analyses were certified by the National Association of Testing Authorities (NATA).</p> <p>Chain of custody documents are presented in Appendix D and laboratory certificates are presented in Appendix E.</p>

3.1 Adopted Screening Criteria

Screening criteria were selected on the basis of national guidance in the form of the PFAS National Environmental Management Plan, Defence estate and environmental strategies, and Defence PFAS-specific strategies and guidance. Guidance documents used to assess the dataset includes the following:

- Department of Health (DoH), 2019. Health Based Guidance Values for PFAS for use in site investigations in Australia. April 2017 [updated September 2019].
- Heads of the Environment Protection Authority (HEPA), (2020), PFAS National Environmental Management Plan (NEMP). January 2020.
- Food Standards Australia New Zealand (FSANZ), 2017. Perfluorinated Chemicals in Food (FSANZ, 2017).
- National Health and Medical Research Council (NHMRC), 2019. Guidance on PFAS in Recreational Water. August 2019 (NHMRC 2019).
- National Environment Protection (Assessment of Site Contamination) Measure 1999 (ASC NEPM) Schedule B1.

The screening criteria which have been adopted are presented **Table 6** below.

Table 6 Summary of Adopted PFAS Screening Criteria

Pathway	Compound	Criteria	Comment/Reference
Human Health Receptors			
Drinking water - groundwater	PFOS + PFHxS	0.07 µg/L	The values are from the PFAS NEMP (HEPA, 2020). Where the guideline value refers to the sum of PFOS + PFHxS, this includes PFOS only, PFHxS only and the sum of the two (HEPA, 2020). <i>All groundwater results will be compared to these criteria.</i>
	PFOA	0.56 µg/L	
Recreational use – surface water	PFOS + PFHxS	2 µg/L	The values are from the PFAS NEMP (HEPA, 2020). <i>All surface water results will be compared to these criteria.</i>
	PFOA	10 µg/L	
Ecological Receptors			
Freshwater (95% species protection values)	PFOS	0.13 µg/L	The values are from the PFAS NEMP (HEPA, 2020). <i>All surface water results will be compared to these criteria.</i>
	PFOA	220 µg/L	

PFOS + PFHxS: Sum of Perfluorooctanesulfonic acid and Perfluorohexanesulfonic acid
PFOA: Perfluorooctanoic acid

3.2 Data Quality Objectives and Data Validation

The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2019).

Data validation assessment is provided in **Appendix C**.

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

All data collected during this event has been reviewed and uploaded to the Defence ESdat database in accordance with DCMM (Department of Defence, 2019a) requirements.

4.0 Field Observations and Results

4.1 General Field Observations

The following field observations were applicable across the entirety of the sampling event.

Table 7 General Field Observations

Item	Observation
Weather conditions	<p>Weather was observed to be partly cloudy with intermittent rain and cool conditions (approximately 15°C) during the groundwater sampling event in July to August 2021.</p> <p>The surface water sampling event between the 4 and 13 August 2021 was undertaken following a rainfall event of 8.6 mm of rain (3 August 2021). A total of 28.6 mm of rain was recorded from the 1 to 13 August 2021 (Edinburgh RAAF station, 023083) (Bureau of Meteorology, 2021). It was noted that surface water was abundant at the time of sampling following above average winter rainfall events.</p>
Estate Management Works or Training Activities	<p>During the sampling event, no notable estate works, or training activities were observed in the vicinity of sampling locations with the exception of the following:</p> <ul style="list-style-type: none"> Flight training activities undertaken airside. <p>Due to the nature and location of these works within the groundwater sampling network, they are not expected to affect data or samples collected within the sampling program or interpretations made for the site.</p>

4.2 Groundwater

4.2.1 Field Observations and Field Measurements

Table 8 Groundwater observations and field measurements

Item	Observations and field measurements
Fieldwork dates	Groundwater sampling was completed between 30 July and 13 August 2021.
Access and sample collection	<p>All monitoring wells and bores were accessible between 30 July and 6 August 2021, with the exception of the following:</p> <ul style="list-style-type: none"> Monitoring wells MW4027, MW4061 and MW4076 were not accessed due to being submerged in pooled water. Airside monitoring wells were sampled on 12 and 13 August 2021 due to constraints on airside access. Bores MW4220, MW4221 and MW4223 were sampled from a tap; headworks or infrastructure present restricted access to gauge groundwater levels at these bores. <p>A key obtained from DEW was required to access DEW bore MW20327. City of Salisbury bores MW21322 and MW22767 required council escort for access.</p>
Monitoring well network	The monitoring well network was generally in good condition and unchanged from the previous round.
Contamination Observations	No visible or olfactory indications of contamination were observed during sampling.

Item	Observations and field measurements
Depth to groundwater and flow direction	<p>Depth to groundwater for each aquifer ranged between:</p> <ul style="list-style-type: none"> • Q1: 0.006 (MW4013) and 9.877 (MW4072) meters below top of casing (mBTOC). • Q2: 1.043 (MW4066) and 7.866 (MW2126) mBTOC. • Q3: 1.256 (MW4073) and 6.621 (MW2272) mBTOC. • Q4: 4.724 (MW2285) and 6.729 (MW2284) mBTOC. • T1: 6.366 mBTOC (MW20327). MW20327 was the only monitoring well available for gauging attributed to this aquifer. <p>Groundwater gauging data is presented in Table T1, Appendix B.</p> <p>Inferred groundwater contours and groundwater flow directions at the site based on standing water levels gauged between 2 and 13 August 2021 are shown on Figure 4.1, 4.2, 4.3 and 4.4 in Appendix A.</p> <p>Inferred groundwater contouring suggests that groundwater generally flows to the south west across all quaternary aquifers, although with significant local variation in the Q1 aquifer associated with influence from surface water bodies. Insufficient data is available to generate groundwater contours for the T1 aquifer.</p>
Geochemical parameters	<p>Groundwater geochemical parameters were measured prior to collecting groundwater samples. The readings are presented in Table T1 in Appendix B, and are summarised below:</p> <ul style="list-style-type: none"> • Dissolved oxygen ranged from 0.91 mg/L (MW2182) to 10.83 mg/L (MW2210). • Electrical conductivity ranged from 1056.4 μS/cm (MW2112) to 31,356 μS/cm (MW4028) indicating fresh water to saline conditions. • pH ranged from 6.32 (MW4021) to 12.89 (MW4079) indicating slightly acidic to basic conditions. • Redox (field measured) ranged from -274.2 mV (MW2286) to 239.7 mV (MW4057) indicating reducing to oxidising conditions.

4.2.2 PFAS Groundwater Analytical Results

The PFAS groundwater analytical results from the July and August 2021 sampling event are presented in **Table T2 in Appendix B**. Of the 102 groundwater wells sampled during this event, 73 samples reported concentrations of PFAS compounds above the laboratory LOR.

PFHxS+PFOS concentrations across on-Base locations ranged between 0.02 μ g/L (MW2173) and 9,560 μ g/L (MW2116) and for off-base locations ranged between below the laboratory LOR (<0.01) at 23 locations and 7.63 μ g/L (MW4013).

PFOA concentrations across on-Base locations ranged from below the laboratory LOR (<0.01 μ g/L) at 19 locations up to 9.7 μ g/L (MW2148), and for off-base locations ranged between below the laboratory LOR (<0.01 μ g/L) at 19 locations and 20.1 μ g/L (MW4031).

There were no first-time detections or new exceedances of assessment criteria for PFHxS+PFOS or PFOA at any location for this round of sampling.

4.3 Surface Water

4.3.1 Field Observations and Field Measurements

Table 9 Surface Water Observations and Field Measurements

Item	Description
Fieldwork Dates	Surface water sampling was completed on 4 to 13 August 2021.
Access and sample collection	SW037 had insufficient water for sampling, therefore no surface water was collected at this location. All other locations were suitable for sampling.
Contamination Observations	No obvious visible signs of contamination were observed.
Rainfall	The surface water sampling event between 4 and 13 August 2021 was undertaken following a rainfall event of 8.6 mm of rain (3 August 2021). A total of 28.6 mm of rain was recorded from 1 to 13 August 2021 (Edinburgh RAAF station, 023083) (Bureau of Meteorology, 2021). It was noted that surface water was abundant at the time of sampling following above average winter rainfall events.
Surface Water Flow	During the August 2021 sampling event, it was noted that surface water generally flowed to the south west within the drainage network. Sample locations where water was not evidently flowing were recorded at SW019, SW021, SW032, SW033, SW050, SW058 and SW059. Sample location SW037 had insufficient water for sampling.
Geochemical Parameters	<p>Surface water geochemical parameters were measured prior to collecting surface water samples in August 2021. The readings are presented in Table T4 in Appendix B, and are summarised below:</p> <ul style="list-style-type: none"> Dissolved oxygen ranged from 5.34 mg/L (SW006) and 12.98 mg/L (SW029), indicating low to well oxygenated conditions. Electrical conductivity ranged from 39.0 µS/cm (SW011) to 411.6 µS/cm (SW017), indicating freshwater conditions. pH ranged from 6.43 (SW006) to 8.84 (SW078). pH results indicate generally neutral conditions. Redox (field measured) ranged from -10.3 mV (SW003) to 376.2 mV (SW0018) indicating reducing to oxidising conditions.

4.3.2 PFAS Surface Water Analytical Results

The PFAS surface water analytical results from the August 2021 sampling event are presented in **Table T5** in **Appendix B**. Sixteen of the 20 surface water sample locations sampled during this event reported concentrations of PFAS compounds above the laboratory LOR.

PFHxS+PFOS concentrations across on-Base locations ranged between below the laboratory LOR (<0.01 µg/L) at two locations and 0.54 µg/L (SW006) and for off-base locations ranged between below the laboratory LOR (<0.01 µg/L) at three locations and 0.12 µg/L (SW010).

PFOA concentrations across on-Base locations were below the laboratory LOR with the exception of SW006 (0.01 µg/L) and SW019 (0.02 µg/L). PFOA concentrations at off-base locations were reported below the laboratory LOR.

There were no first-time detections or new exceedances of assessment criteria for PFHxS+PFOS or PFOA at any location for this round of sampling.

5.0 Summary and Next Sampling Events

5.1 Summary of Monitoring Event

The bi-annual monitoring event was completed at the Site, publicly accessible land and on a private property within the Management Area between 30 July and 13 August 2021. The program included:

- Gauging and sampling of groundwater from 102 monitoring wells and bores
- Gauging of an additional 18 monitoring wells
- Surface water sampling at 20 locations.

Table 11 summarises the findings of the July and August 2021 sampling event and recommended actions.

Table 10 Summary of Sampling Event

Item	Comment	Recommended Actions
Access to sampling locations	Locations MW4027, MW4061 and MW4076 were not accessed due to being submerged in pooled water. A sample at surface water sample location SW037 was not collected as the location had insufficient water at the time of sampling.	Continue monitoring in accordance with the OMP.
Monitoring well network condition	The monitoring well network was generally in good condition and unchanged from the previous round.	No action required
Analytical Results	PFAS concentrations were recorded above the LOR at 73 of 105 sampled groundwater monitoring locations and at 16 of 20 sampled surface water monitoring locations.	No action required
First time detection of PFOA or PFHxS+PFOS in groundwater or surface water	Groundwater No first time detections above the LOR were recorded for PFOA or PFHxS+PFOS downgradient of the identified PFAS plume, at cross or upgradient locations, at the private Q2 bore, or at locations adjacent to registered extractive users of groundwater. Surface water No first time detections above the LOR were recorded for PFOA or PFHxS+PFOS in surface water samples.	Continue monitoring in accordance with the OMP.
First time exceedance of screening criteria.	Groundwater No first time exceedances of screening criteria were recorded in groundwater Surface water No first time exceedances of screening criteria were recorded in surface water.	Continue monitoring in accordance with the OMP.

5.2 Upcoming Sampling Events

The next biannual sampling event is scheduled for January 2022.

5.3 Upcoming Annual Interpretive Report

The next annual interpretive report is scheduled to be delivered in November 2021.

6.0 References

AECOM Australia Pty Ltd (AECOM) (2019). *Sampling Analysis and Quality Plan - RAAF Base Edinburgh* prepared for Department of Defence.

Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ), 2000. *Australian and New Zealand guidelines for fresh and marine water quality*.

Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ), 2000. *Australian guidelines for water quality monitoring and reporting*.

Bureau of Meteorology, 2021, *Edinburgh RAAF (station number 023083) Daily Rainfall*, accessed 25.02.2021

National Environment Protection (Assessment of Site Contamination) Measure 1999 (ASC NEPM)

AS4482.1 *Guide to the sampling and investigation of potentially contaminated soil, Part 1: Non-Volatile and Semi-Volatile Substances*.

AS4482.2 *Guide to the sampling and investigation of potentially contaminated soil, Part 2: Volatile Substances*.

AS/NZ 5667.1 *Water Quality Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handing of samples*.

Department of Defence (Defence) (May 2021) PFAS OMP factual reports – interim guidance for preparation, v0.2

Department of Defence (Defence) (2019). *PFAS Management Area Plan - RAAF Base Edinburgh*

Department of Defence (Defence) (2019a). *Contamination Management Manual*

Department of Defence (Defence) (2016). *Routine Environment Water Quality Monitoring Manual*.

Department of Defence (Defence) (July 2018, Amended August 2019). *Defence Contamination Management Manual*.

Department of the Environment and Energy (DoEE) (2018). *PFAS National Environmental Management Plan (PFAS NEMP)*.

Department of Health (DoH) (2017). *Health Based Guidance Values for PFAS for use in site investigations in Australia. April 2017 (FSANZ 2017)*.

Heads of Environment Protection Authorities (HEPA) Australia and New Zealand 2018. *PFAS National Environmental Management Plan*. January 2018.

Heads of EPAs Australia and New Zealand (HEPA) (2020). *PFAS National Environmental Management Plan Version 2.0 (PFAS NEMP 2.0)*.

National Health and Medical Research Council (NHMRC) (2019). *Guidance on PFAS in Recreational Water*. August 2019.

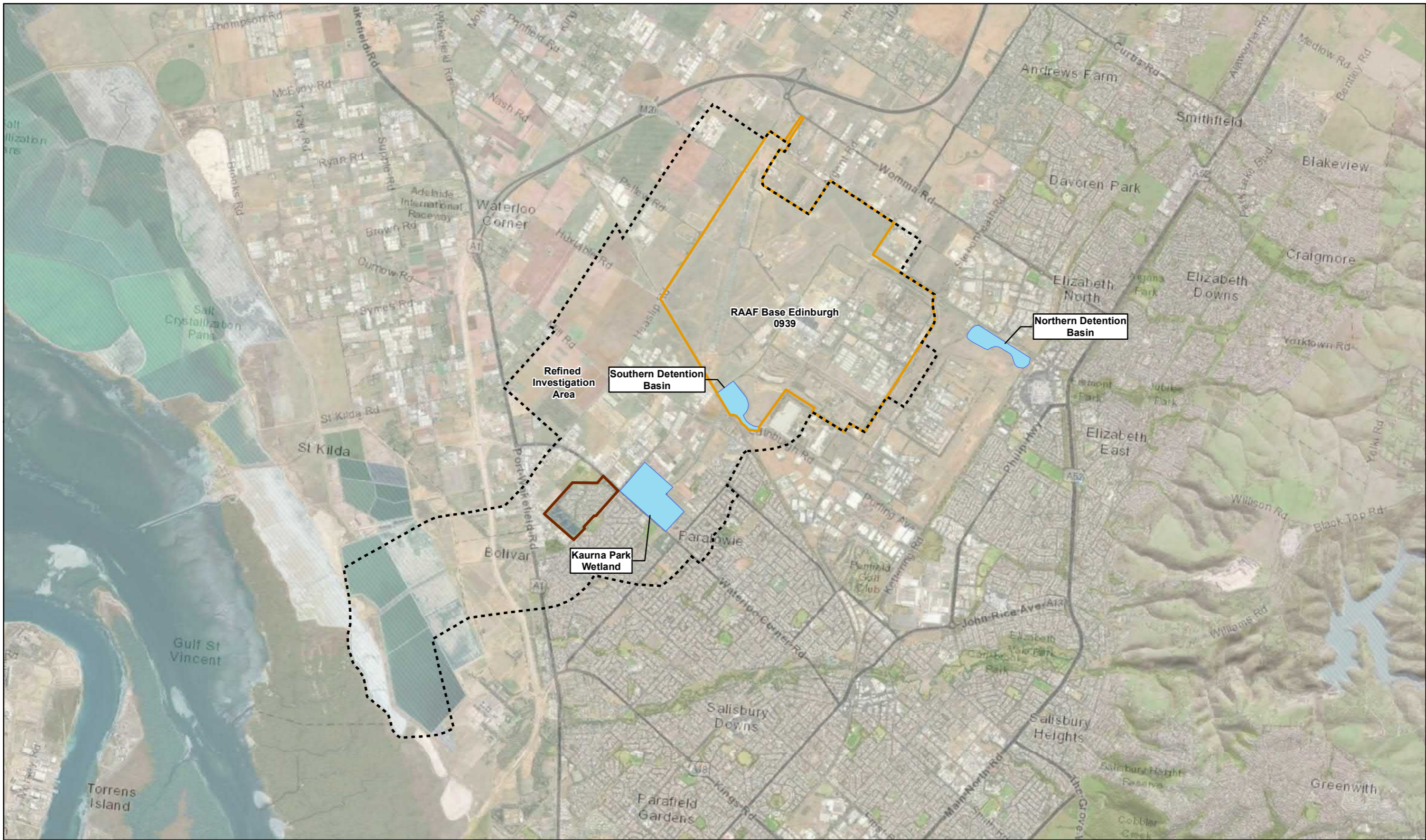
National Health and Medical Research Council (NHMRC) (2016). *Australian Drinking Water Guidelines (ADWG)*

Appendix A

Figures

Appendix A Figures

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.

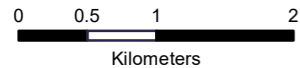


AECOM
www.aecom.com

Legend

- Detention Basin
- Springbank Waters Estate
- RAAF Base Edinburgh Boundary
- Refined Investigation Area

DATUM GDA 1994, PROJECTION MGA ZONE 54



1:55,000 (when printed at A3)

**Department of Defence
RAAF BASE EDINBURGH
ONGOING MONITORING
PROGRAM**

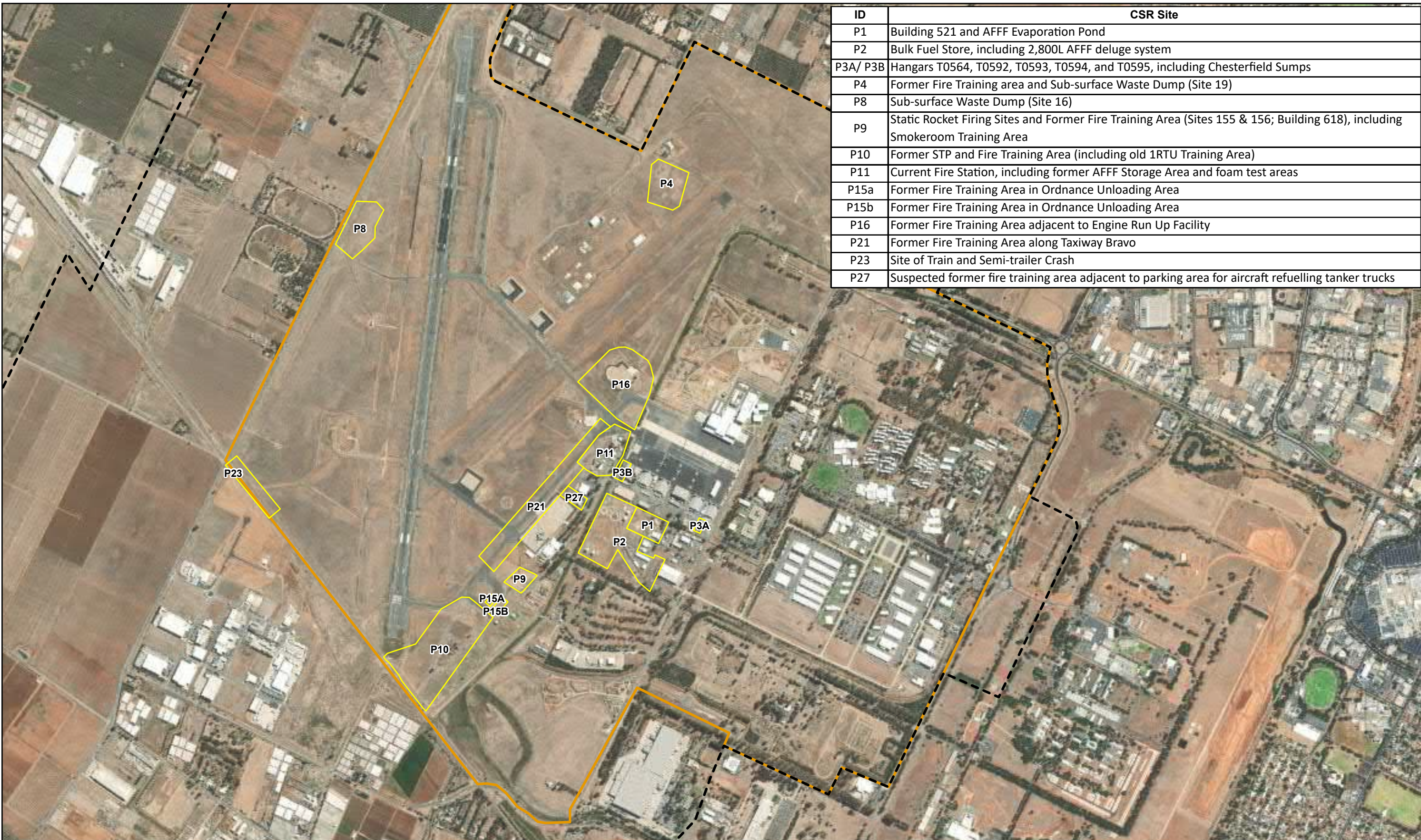
SITE LOCATION

PROJECT ID 60612561
 CREATED BY JD
 LAST MODIFIED prachi.kulkarni127 Apr 2020
 VERSION: 1

**Figure
1.1**

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



ID	CSR Site
P1	Building 521 and AFFF Evaporation Pond
P2	Bulk Fuel Store, including 2,800L AFFF deluge system
P3A/ P3B	Hangars T0564, T0592, T0593, T0594, and T0595, including Chesterfield Sumps
P4	Former Fire Training area and Sub-surface Waste Dump (Site 19)
P8	Sub-surface Waste Dump (Site 16)
P9	Static Rocket Firing Sites and Former Fire Training Area (Sites 155 & 156; Building 618), including Smokeroom Training Area
P10	Former STP and Fire Training Area (including old 1RTU Training Area)
P11	Current Fire Station, including former AFFF Storage Area and foam test areas
P15a	Former Fire Training Area in Ordnance Unloading Area
P15b	Former Fire Training Area in Ordnance Unloading Area
P16	Former Fire Training Area adjacent to Engine Run Up Facility
P21	Former Fire Training Area along Taxiway Bravo
P23	Site of Train and Semi-trailer Crash
P27	Suspected former fire training area adjacent to parking area for aircraft refuelling tanker trucks

AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 0.225 0.45 0.9
Kilometers
1:18,000 (when printed at A3)

Legend

PFAS Source Area

RAAF Base Edinburgh Boundary

Management Area

**Department of Defence
RAAF BASE EDINBURGH
FACTUAL REPORT**

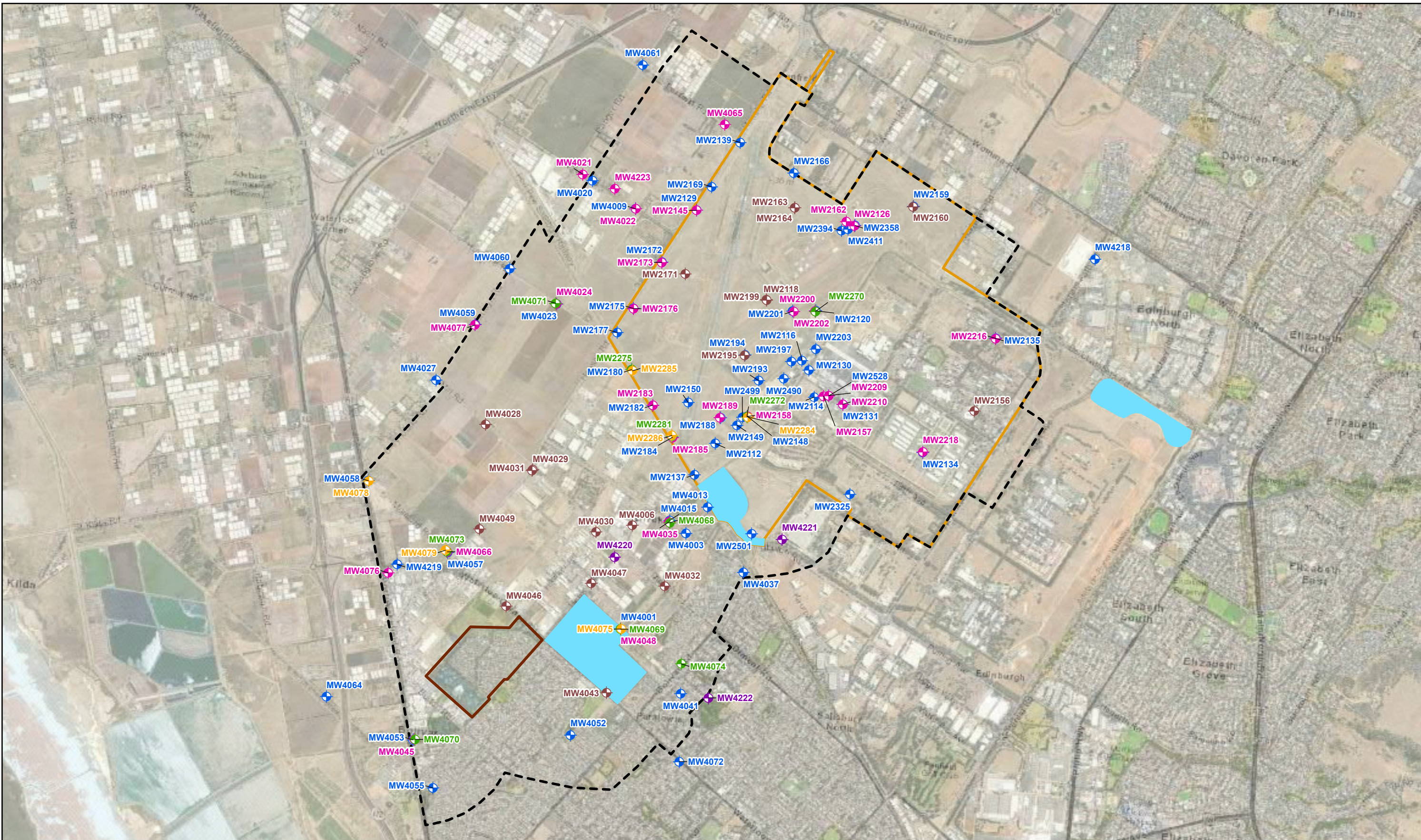
INFERRED PFAS SOURCE AREAS

PROJECT ID 60612561
 CREATED BY KAL.DU
 LAST MODIFIED KAL.DU 06 AUG 2021
 VERSION: 1

**Figure
1.2**

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54
0 0.425 0.85 1.7
Kilometers
1:35,000 (when printed at A3)

- Legend**
- ◆ Gauging Locations Only
 - Sample Locations**
 - ◆ Q1 Aquifer
 - ◆ Q2 Aquifer
 - ◆ Q3 Aquifer
 - ◆ Q4 Aquifer
 - ◆ T1 Aquifer
 - Management Area
 - RAAF Base Edinburgh Boundary
 - Springbank Waters Estate
 - Detention Basin

**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM**

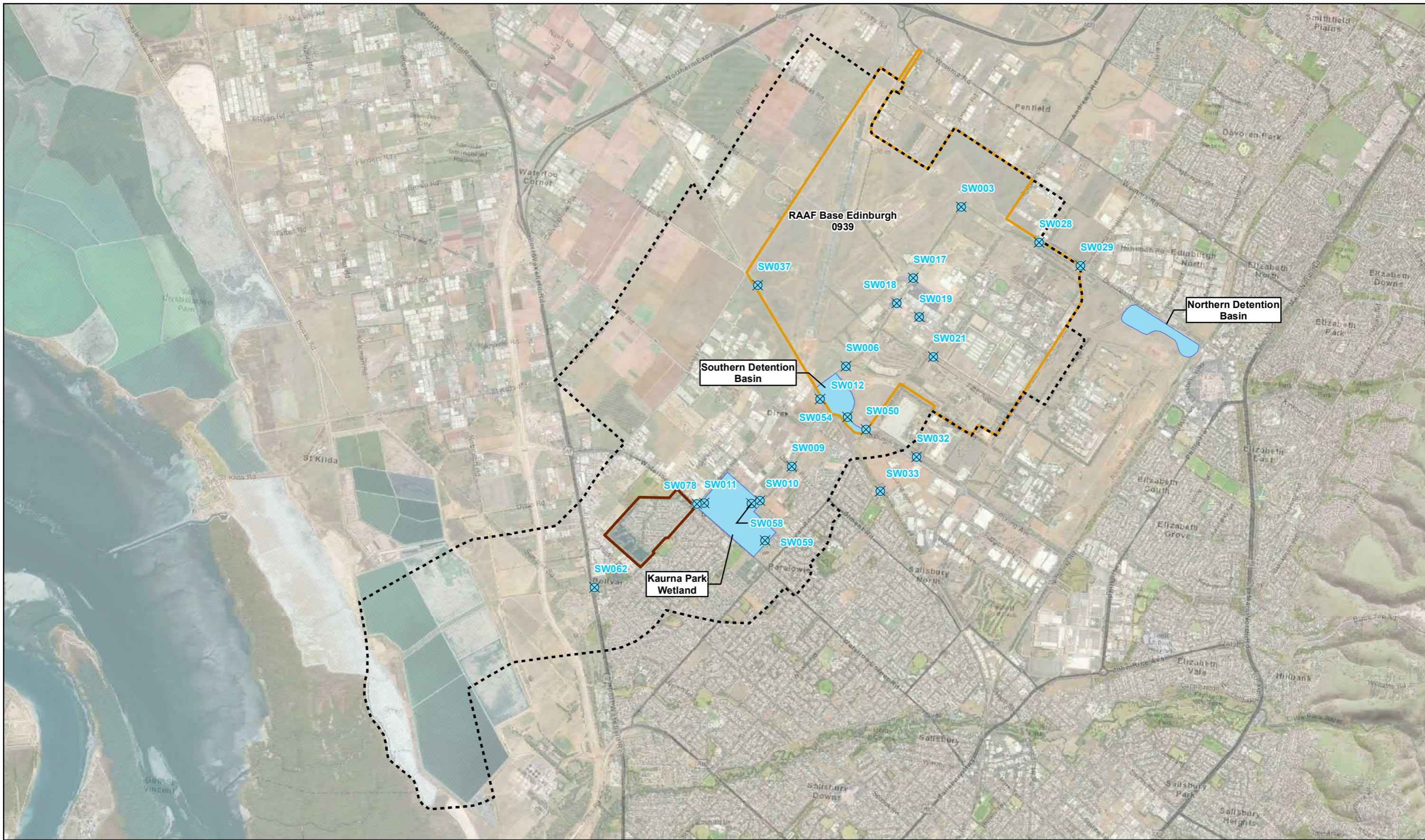
GROUNDWATER SAMPLE LOCATIONS

PROJECT ID 60612561
CREATED BY KALDU
LAST MODIFIED KALDU 09 JUN 2021
VERSION: 1

**Figure
2**

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54
0 0.5 1 2
Kilometers
1:45,000 (when printed at A3)

Legend

- ⊗ Surface Water Sample Locations
- Type**
- Detention Basin
- Springbank Waters Estate
- RAAF Base Edinburgh Boundary
- Refined Investigation Area

**Department of Defence
RAAF BASE EDINBURGH
ONGOING MONITORING PROGRAM**

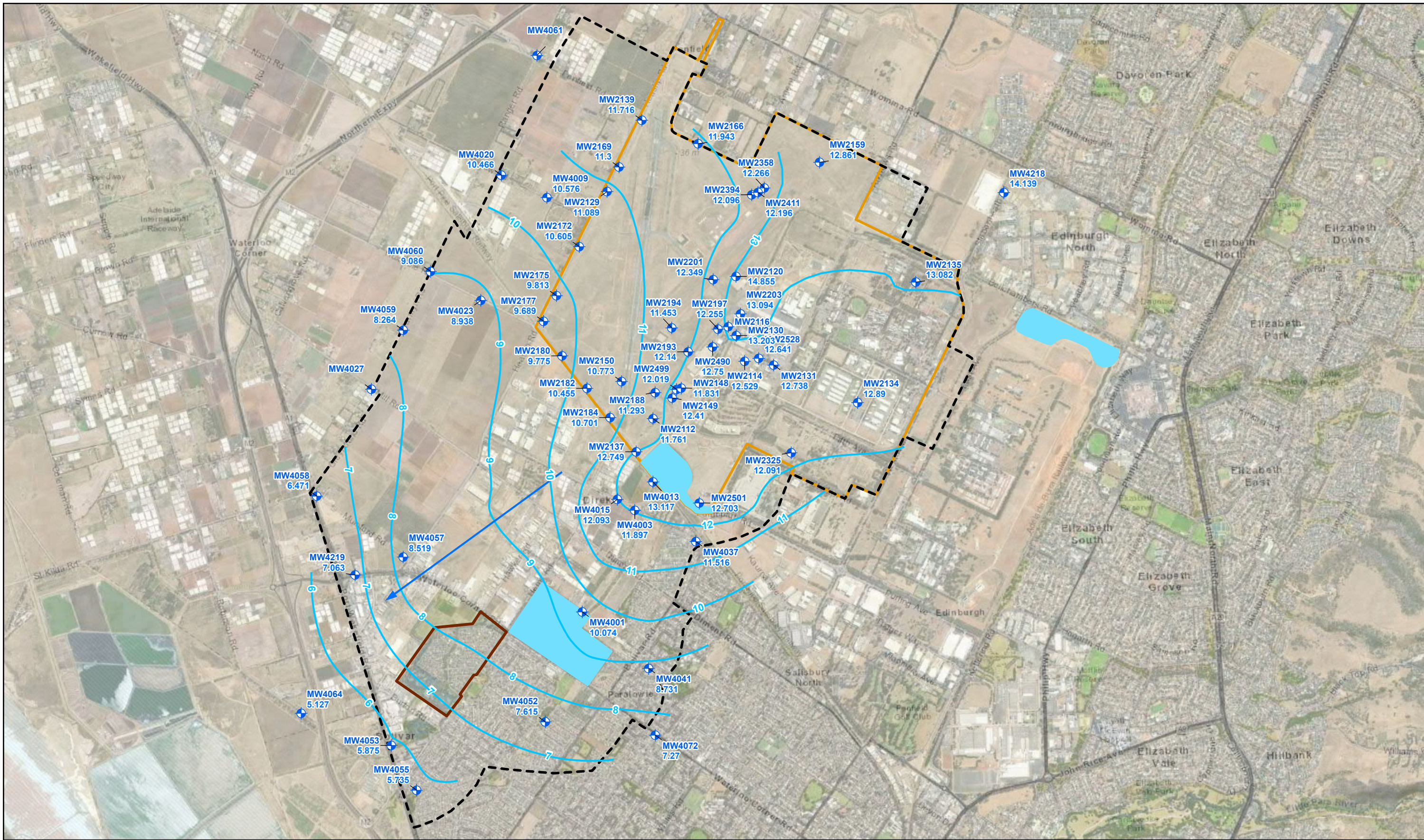
SURFACE WATER SAMPLE LOCATIONS

PROJECT ID 60612561
CREATED BY JD
LAST MODIFIED prachi.kulkarni127 Apr 2020
VERSION: 1

**Figure
3**

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 250 500 1,000 1,500
Metres

1:35,000 (when printed at A3)

Legend

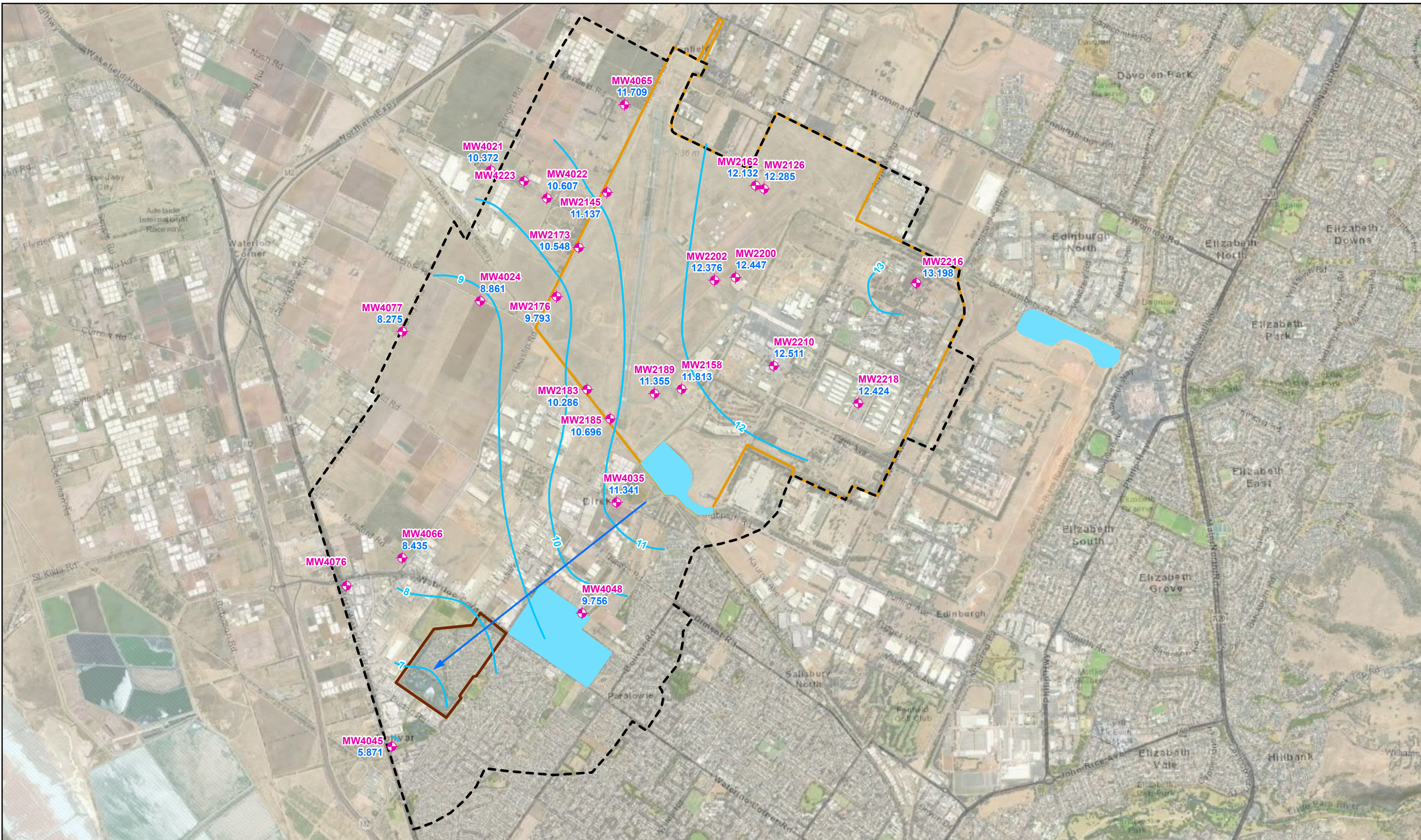
- ◆ Q1 Aquifer
- 175.44 Groundwater Elevation (mAHD)
- Inferred Groundwater Contour
- Inferred Groundwater Flow Direction
- Management Area
- RAAF Base Edinburgh Boundary
- Springbank Waters Estate
- Detention Basin

**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM
Inferred Groundwater Elevation
Q1 Monitoring Wells
July - August 2021**

PROJECT ID: 60612561	Figure
CREATED BY: FLETTN	4.1
LAST MODIFIED: FLETTN 28 SEP 2021	
VERSION: 1	

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 250 500 1,000 1,500
Metres

1:35,000 (when printed at A3)

Legend

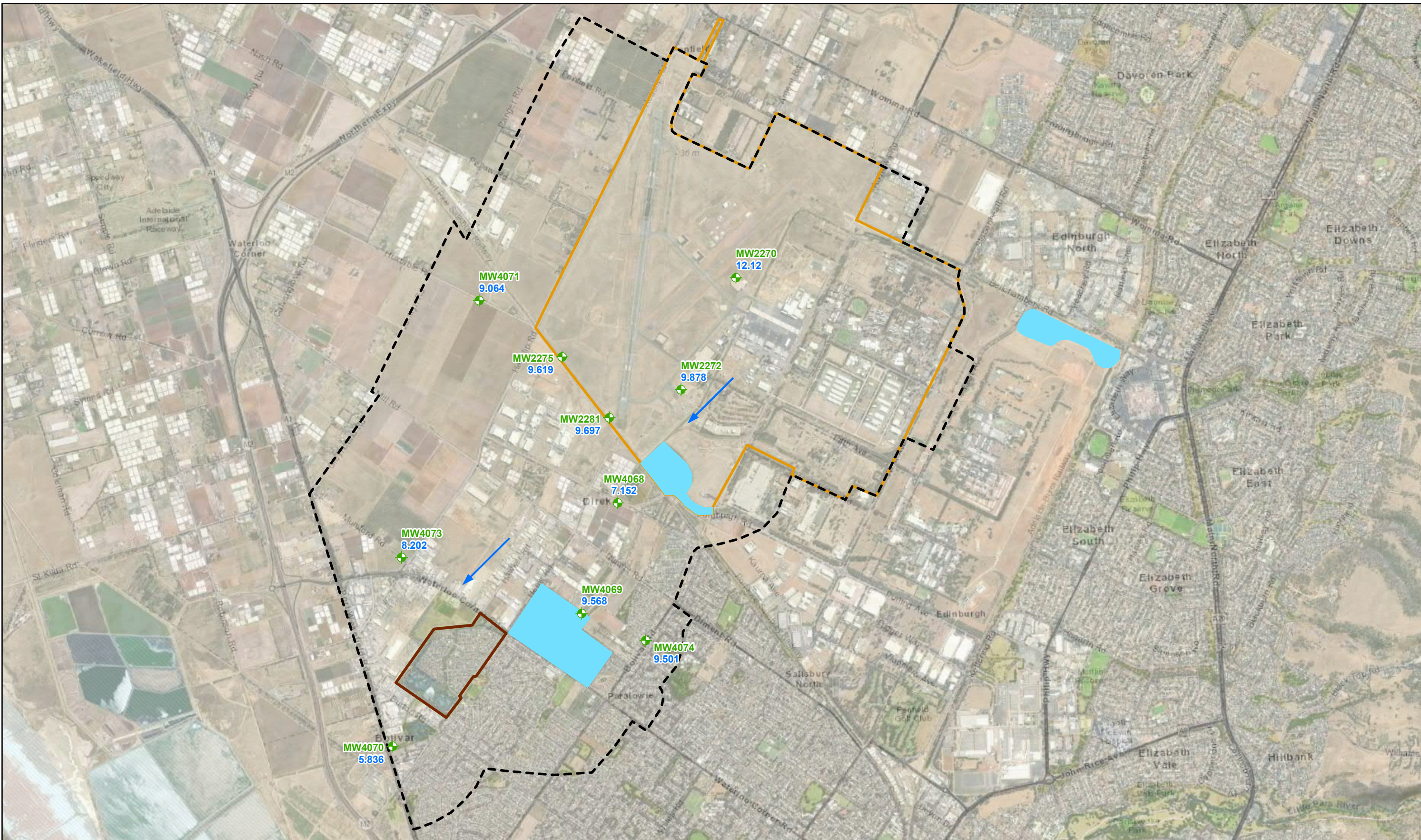
- ◆ Q2 Aquifer
- 175.44 Groundwater Elevation (mAHd)
- Management Area
- RAAF Base Edinburgh Boundary
- Springbank Waters Estate
- Detention Basin
- Inferred Groundwater Contour
- ➔ Inferred Groundwater Flow Direction

**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM
Inferred Groundwater Elevation
Q2 Monitoring Wells
July-August 2021**

PROJECT ID: 60612561	Figure
CREATED BY: FLETTN	4.2
LAST MODIFIED: FLETTN 28 SEP 2021	
VERSION: 1	

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 250 500 1,000 1,500
Metres

1:35,000 (when printed at A3)

Legend

- ◆ Q3 Aquifer
- 175.44 Groundwater Elevation (mAHD)
- ➔ Inferred Groundwater Flow Direction

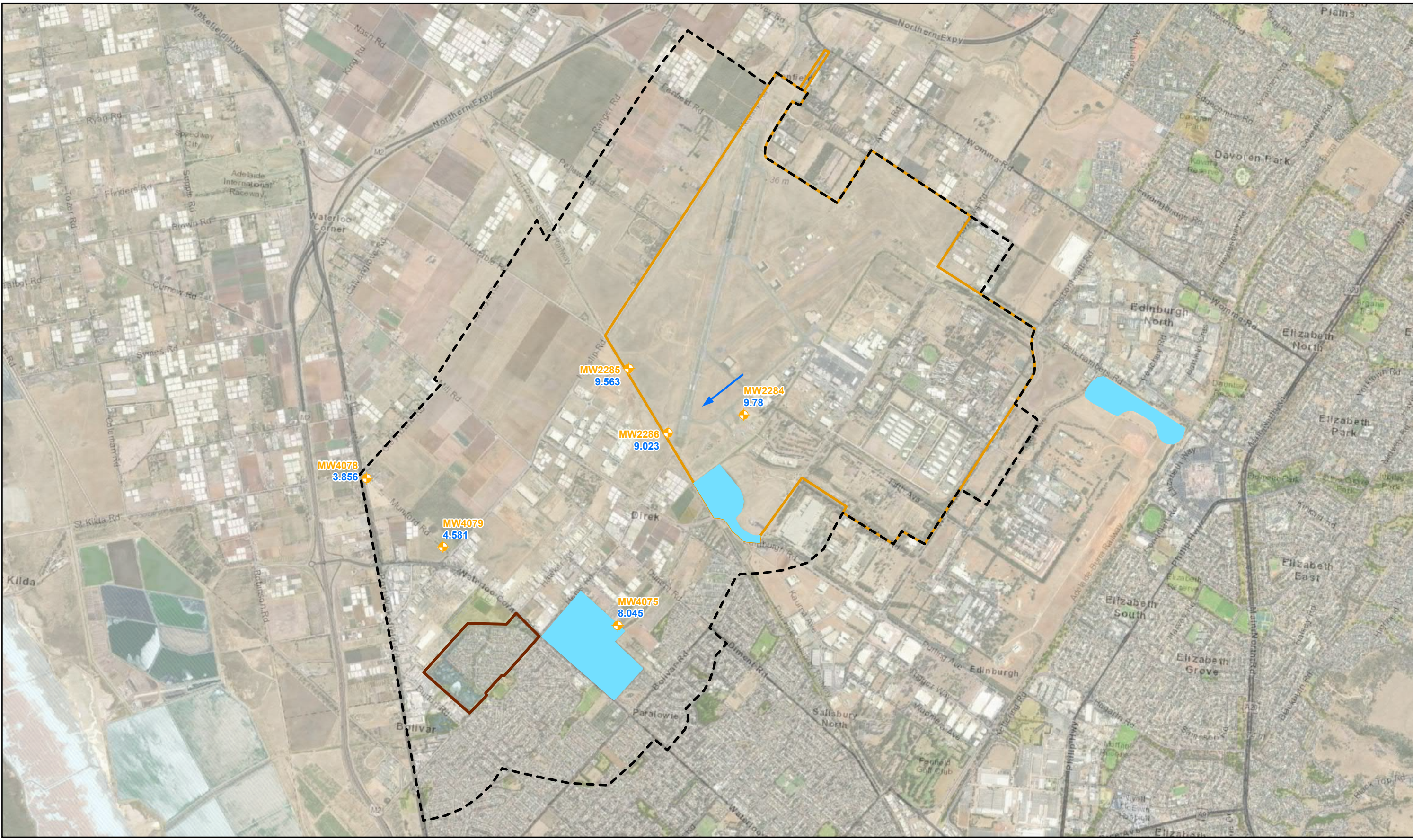
- Management Area
- RAAF Base Edinburgh Boundary
- Springbank Waters Estate
- Detention Basin

**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM
Inferred Groundwater Elevation
Q3 Monitoring Wells
July-August 2021**

PROJECT ID: 60612561	Figure
CREATED BY: FLETTN	4.3
LAST MODIFIED: FLETTN 28 SEP 2021	
VERSION: 1	

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 0.425 0.85 1.7
Kilometers

1:35,000 (when printed at A3)

Legend

- Q4 Aquifer
- 175.44 Groundwater Elevation (mAHd)
- Inferred Groundwater Flow Direction
- Management Area
- RAAF Base Edinburgh Boundary
- Springbank Waters Estate
- Detention Basin

**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM
Inferred Groundwater Elevation
Q4 Monitoring Wells
July-August 2021**

PROJECT ID: 60612561	Figure
CREATED BY: KAI.DU	4.4
LAST MODIFIED: KAI.DU 02 SEP 2021	
VERSION: 1	

Data sources:
Base Data: Imagery (c) 2017 ESRI

Appendix B

Tables

Appendix B Tables

Table T1 Field Parameters

Location ID	Date	Targeted Aquifer	Depth of Well (m BTOC)	R.L. Top of Casing	Depth to Water (m BTOC)	Corrected Groundwater Elevation (m AHD)	Well Condition	pH	Electrical Conductivity	Estimated TDS*	Dissolved Oxygen	Temperature	Redox Potential	Comments
								pH units	µS/cm	mg/L	mg/L	°C	mV	
MW2112	12/08/2021	Q1	8.34	15.877	4.116	11.761	Good condition	7.9	1056.4	686.66	1.66	19.99	-16.3	Light Brown, Low Turbidity, No odour
MW2114	02/08/2021	Q1	8.86	17.697	5.168	12.529	Good condition	7.4	14885.6	9675.64	3.8	18.43	-101.2	Grey / Brown, Low Turbidity, Slight Organic Odour
MW2116	02/08/2021	Q1	9.03	16.978	4.529	12.449	Good condition	7.09	5993.4	3895.71	4.38	17.27	213.5	Light Brown, Medium Turbidity, No odour
MW2118	13/08/2021	Q1	8.95	17.329	5.61	11.719	Good condition	Gauge only						
MW2120	13/08/2021	Q1	6.25	18.18	3.325	14.855	Good condition	9.04	1249.3	812.045	3.62	17.11	-82	Light Brown, Medium Turbidity, No odour
MW2126	12/08/2021	Q2	17.28	20.151	7.866	12.285	Good condition	7.04	11605.3	7543.445	2.94	19.53	-45.3	Clear, Low Turbidity, No odour
MW2129	12/08/2021	Q1	6.37	15.881	4.792	11.089	Good condition	7.84	4192.3	2724.995	3.28	20.2	7.1	Light Brown, Low Turbidity, No odour
MW2130	02/08/2021	Q1	8.38	17.483	4.28	13.203	Good condition	7.98	3491	2269.15	2.11	17.29	170	Clear, Low Turbidity, No odour
MW2131	02/08/2021	Q1	8.45	18.058	5.32	12.738	Good condition	8.06	1431	930.15	5.6	18.21	4	Clear, Low Turbidity, No odour
MW2134	02/08/2021	Q1	10.83	19.716	6.826	12.89	Good condition	7.51	10999	7149.35	3.19	17.4	5.4	Light Brown, Low Turbidity, No odour
MW2135	02/08/2021	Q1	10.97	20.504	7.422	13.082	Good condition	7.18	10726	6971.9	3.11	18.79	169.4	Light Brown, Low Turbidity, No odour
MW2137	12/08/2021	Q1	8.19	15.791	3.042	12.749	Good condition	7.83	2550.4	1657.76	4.38	19.85	4.9	Light Brown, Low Turbidity, No odour
MW2139	12/08/2021	Q1	11.33	18.653	6.937	11.716	Good condition	7.14	13134.4	8537.36	2.37	19.75	-136.7	Light Brown, Medium Turbidity, No odour
MW2145	12/08/2021	Q2	25	15.84	4.703	11.137	Good condition	7.3	8948.5	5816.525	5.6	20.25	-180.3	Light Brown, Low Turbidity, No odour
MW2148	02/08/2021	Q1	10.36	16.49	4.659	11.831	Good condition	9.76	6012	3907.8	5.02	18.79	110.8	Light Brown, Low Turbidity, No odour
MW2149	12/08/2021	Q1	7.38	16.626	4.216	12.41	Good condition	7.53	4852.4	3154.06	5.48	18.07	28.8	Light Brown, Low Turbidity, No odour
MW2150	12/08/2021	Q1	7.97	14.873	4.1	10.773	Good condition	7.54	3506	2278.9	2.98	19.78	-46.8	Grey / Brown, Medium Turbidity, No odour
MW2156	02/08/2021	Q1	9.05	19.773	6.875	12.898	Good condition	Gauge only						
MW2157	02/08/2021	Q2	18.23	17.777	4.517	13.26	Good condition	7.31	8726	5671.9	4.35	18.26	-211.2	Grey, Low Turbidity, Organic Odour
MW2158	02/08/2021	Q2	17.85	16.498	4.685	11.813	Good condition	8.62	7875	5118.75	4.28	17.57	204.8	Light Brown, Low Turbidity, No odour
MW2159	02/08/2021	Q1	8.5	20.478	7.617	12.861	Good condition	7.07	12793	8315.45	2.68	17.05	-58.3	Grey, Low Turbidity, Slight Organic Odour
MW2160	02/08/2021	Q2	22.5	20.433	7.454	12.979	Good condition	Gauge only						
MW2162	12/08/2021	Q2	21	19.721	7.589	12.132	Good condition	7.16	11140.6	7241.39	3.15	18.89	-226.9	Clear, Low Turbidity, Organic Odour
MW2163	12/08/2021	Q1	8.5	18.161	6.36	11.801	Good condition	Gauge only						
MW2164	12/08/2021	Q2	25.5	18.172	6.31	11.862	Good condition	Gauge only						
MW2166	12/08/2021	Q1	8	19.063	7.12	11.943	Good condition	6.84	11679.6	7591.74	2.07	19.28	-117	Black, Medium Turbidity, No odour
MW2169	12/08/2021	Q1	7.5	16.608	5.308	11.3	Good condition	7.33	11330.7	7364.955	4.05	19.98	-37.9	Light Brown, Low Turbidity, No odour
MW2171	12/08/2021	Q1	9.5	16.471	6.064	10.407	Good condition	Gauge only						
MW2172	12/08/2021	Q1	9.5	15.828	5.223	10.605	Good condition	7.36	19700.1	12805.065	3.03	20.77	-42	Clear, Low Turbidity, No odour
MW2173	12/08/2021	Q2	21	15.882	5.334	10.548	Good condition	7.14	30205.8	19633.77	1.91	20.08	-167.9	Black, Turbid, Organic Odour
MW2175	12/08/2021	Q1	8.3	14.438	4.625	9.813	Good condition	7.59	25256.7	16416.855	5.45	18.82	55.5	Light Brown, Medium Turbidity, No odour
MW2176	12/08/2021	Q2	22.2	14.282	4.489	9.793	Good condition	7.19	26355.9	17131.335	2.98	18.99	-154.6	Light Brown, Low Turbidity, No odour
MW2177	12/08/2021	Q1	7.2	13.902	4.213	9.689	Good condition	7.77	13200.8	8580.52	5.42	20.74	50.2	Light Brown, Medium Turbidity, No odour
MW2180	12/08/2021	Q1	10	14.195	4.42	9.775	Good condition	8.09	3411.4	2217.41	3.66	20.63	-38.5	Light Brown, Low Turbidity, No odour
MW2182	12/08/2021	Q1	10	13.821	3.366	10.455	Good condition	7.58	10231.6	6650.54	0.91	20.69	76.4	Light Brown, Low Turbidity, No odour
MW2183	12/08/2021	Q2	20	14.831	4.545	10.286	Good condition	7.18	15460.8	10049.52	2.15	20.41	118.1	Clear, Low Turbidity, No odour
MW2184	12/08/2021	Q1	8.3	14.438	3.737	10.701	Good condition	8.24	1527.2	992.68	2.77	21.45	13.9	Clear, Low Turbidity, No odour
MW2185	12/08/2021	Q2	18	15.286	4.59	10.696	Good condition	7.67	8383.9	5449.535	3.56	20.07	109.9	Clear, Low Turbidity, No odour
MW2188	13/08/2021	Q1	5.5	15.46	4.167	11.293	Good condition	7.74	10702.9	6956.885	7.5	17.76	-75.6	Clear, Low Turbidity, No odour

Table T1 Field Parameters

Location ID	Date	Targeted Aquifer	Depth of Well (m BTOC)	R.L. Top of Casing	Depth to Water (m BTOC)	Corrected Groundwater Elevation (m AHD)	Well Condition	pH	Electrical Conductivity	Estimated TDS*	Dissolved Oxygen	Temperature	Redox Potential	Comments
								pH units	µS/cm	mg/L	mg/L	°C	mV	
MW2189	13/08/2021	Q2	21	15.201	3.846	11.355	Good condition	7.73	3443.4	2238.21	1.74	17.4	-200.3	Clear, Low Turbidity, Organic Odour
MW2193	12/08/2021	Q1	6.5	15.918	3.778	12.14	Good condition	7.73	5585.9	3630.835	3.56	19.13	25.6	Light Brown, Low Turbidity, No odour
MW2194	12/08/2021	Q1	10	15.31	3.857	11.453	Good condition	7.22	24421.1	15873.715	2.97	20.38	-16.3	Black / Grey, Low Turbidity, No odour
MW2195	12/08/2021	Q2	24	16.05	4.465	11.585	Good condition							
MW2197	12/08/2021	Q1	7.5	17.642	5.387	12.255	Good condition	7.36	8469	5504.85	3.33	17.44	51.3	Brown, Turbid, No odour
MW2199	13/08/2021	Q2	24	17.177	5.386	11.791	Good condition							
MW2200	13/08/2021	Q2	19.5	17.903	5.456	12.447	Good condition	10.02	12696.7	8252.855	2.16	19.05	-210.6	Other, Medium Turbidity, No odour
MW2201	13/08/2021	Q1	10	16.395	4.046	12.349	Good condition	7.37	8590.1	5583.565	2.36	18.98	-136	Black / Grey, Turbid, Slight Organic Odour
MW2202	13/08/2021	Q2	24	16.473	4.097	12.376	Good condition	7.16	12628.7	8208.655	2.9	18.44	-151.9	Black / Grey, Medium Turbidity, Organic Odour
MW2203	13/08/2021	Q1	8	16.772	3.678	13.094	Good condition	7.78	3584.2	2329.73	3.7	18.92	-152	Clear, Low Turbidity, No odour
MW2209	02/08/2021	Q2	24	17.075	5.188	11.887	Good condition	7.54	9601.9	6241.235	3.02	17.41	-226.3	Light Grey, Low Turbidity, Organic Odour
MW2210	02/08/2021	Q2	20.4	18.087	5.576	12.511	Good condition	7.49	7636	4963.4	10.83	17.11	-147.1	Clear, Low Turbidity, Organic Odour
MW2216	02/08/2021	Q2	21	20.468	7.27	13.198	Good condition	7.21	7258	4717.7	5.44	18.12	90.6	Clear, Low Turbidity, No odour
MW2218	02/08/2021	Q2	20.5	19.774	7.35	12.424	Good condition	7.47	7921	5148.65	2.42	18.7	-198.2	Clear, Low Turbidity, Organic Odour
MW2270	02/08/2021	Q3	42	18.1	5.98	12.12	Good condition	6.96	10882.2	7073.43	2.45	19	-82.9	Light Brown, Low Turbidity, No odour
MW2272	02/08/2021	Q3	42	16.499	6.621	9.878	Good condition	12.5	9138	5939.7	3.09	17.9	-7.9	Clear, Low Turbidity, No odour
MW2275	12/08/2021	Q3	46.5	14.121	4.502	9.619	Good condition	7.4	8253	5364.45	1.99	20.79	-142.3	Grey / Brown, Medium Turbidity, No odour
MW2281	12/08/2021	Q3	39	15.229	5.532	9.697	Good condition	8.06	11269	7324.85	1.98	21.4	12.1	Clear, Low Turbidity, No odour
MW2284	02/08/2021	Q4	61	16.509	6.729	9.78	Good condition	9.5	5730	3724.5	2.63	18.44	-188.4	Clear, Low Turbidity, No odour
MW2285	12/08/2021	Q4	57	14.287	4.724	9.563	Good condition	7.45	6189.5	4023.175	2.46	20.2	-155.7	Black / Grey, Medium Turbidity, Organic Odour
MW2286	12/08/2021	Q4	57	15.323	6.3	9.023	Good condition	11.18	2802.6	1821.69	3.07	19.93	-274.2	Other, Turbid, No odour
MW2325	02/08/2021	Q1	10.9	19.127	7.036	12.091	Good condition	7.25	10060	6539	2.84	17.28	135.7	Light Brown, Low Turbidity, No odour
MW2358	12/08/2021	Q1	11.01	20.062	7.796	12.266	Good condition	7.01	11066.1	7192.965	2.7	18.23	-111.4	Light Brown, Low Turbidity, No odour
MW2394	12/08/2021	Q1	11.74	18.788	6.692	12.096	Good condition	7.34	13361.9	8685.235	1.91	19.07	-227.5	Black, Turbid, Organic Odour
MW2411	12/08/2021	Q1	10.42	18.718	6.522	12.196	Good condition	7.3	11098.9	7214.285	3.26	18.29	-225.4	Black / Grey, Medium Turbidity, Organic Odour
MW2490	02/08/2021	Q1	8.47	17.58	4.83	12.75	Good condition	7.49	6774.5	4403.425	4.39	16.2	76.9	Light Brown, Medium Turbidity, No odour
MW2499	12/08/2021	Q1	9.06	15.769	3.75	12.019	Good condition	8.11	1556.8	1011.92	7.57	17.94	8.7	Light Brown, Low Turbidity, No odour
MW2501	02/08/2021	Q1	10.61	15.673	2.97	12.703	Good condition	7.93	4338.1	2819.765	1.9	17	126.2	Light Brown, Low Turbidity, No odour
MW2528	02/08/2021	Q1	9.06	17.181	4.54	12.641	Good condition	7.88	2976	1934.4	3.5	18.17	-86.9	Grey, Low Turbidity, Organic Odour
MW4001	06/08/2021	Q1	9.56	12.909	2.835	10.074	Good condition	8.63	1682	1093.3	5.51	19.23	27.7	Light Brown, Medium Turbidity, No odour
MW4003	05/08/2021	Q1	7.63	13.46	1.563	11.897	Good condition	8.55	7954.6	5170.49	5.86	18.61	17.1	Grey / Brown, Medium Turbidity, No odour
MW4006	04/08/2021	Q1	7.25	13.283	2.032	11.251	Good condition							
MW4009	02/08/2021	Q1	9.5	14.37	3.794	10.576	Good condition	7.51	9059	5888.35	7.57	16.02	5.5	Light Brown, Low Turbidity, No odour
MW4013	06/08/2021	Q1	6.95	13.123	0.006	13.117	Good condition	8.12	2258	1467.7	5.48	14.61	117	Light Brown, Low Turbidity, No odour
MW4015	05/08/2021	Q1	6.96	13.627	1.534	12.093	Good condition	7.96	4306.1	2798.965	6.09	17.14	158.6	Light Brown, Medium Turbidity, No odour
MW4020	03/08/2021	Q1	8.4	13.97	3.504	10.466	Good condition	6.98	6596.1	4287.465	7.81	16.69	152.6	Light Brown, , No odour
MW4021	03/08/2021	Q2	18	13.697	3.325	10.372	Good condition	6.32	6610	4296.5	2.96	16.59	159.9	Light Brown, Low Turbidity, No odour
MW4022	02/08/2021	Q2	22.5	14.423	3.816	10.607	Good condition	7.46	6909.8	4491.37	3.09	16.1	-126.1	Black, Organic Odour
MW4023	03/08/2021	Q1	8	11.855	2.917	8.938	Good condition	7.46	31356	20381.4	4.39	15.7	-4.8	Brown, Medium Turbidity, No odour
MW4024	03/08/2021	Q2	21	11.895	3.034	8.861	Good condition	7.46	25287	16436.55	4.47	17.27	-147.4	Clear, No odour

Table T1 Field Parameters

Location ID	Date	Targeted Aquifer	Depth of Well (m BTOC)	R.L. Top of Casing	Depth to Water (m BTOC)	Corrected Groundwater Elevation (m AHD)	Well Condition	pH	Electrical Conductivity	Estimated TDS*	Dissolved Oxygen	Temperature	Redox Potential	Comments
								pH units	µS/cm	mg/L	mg/L	°C	mV	
MW4027	03/08/2021	Q1	8	9.532	-	-	Could not access, submerged in water							Could not access
MW4028	03/08/2021	Q1	8	10.396	2.19	8.206	Good condition							Gauge only
MW4029	03/08/2021	Q1	8.5	11.916	3.022	8.894	Good condition							Gauge only
MW4030	03/08/2021	Q1	8.5	11.755	2.022	9.733	Good condition							Gauge only
MW4031	03/08/2021	Q2	24	11.831	3.076	8.755	Good condition							Gauge only
MW4032	03/08/2021	Q2	19.5	12.948	3.039	9.909	Good condition							Gauge only
MW4035	05/08/2021	Q2	22.5	13.735	2.394	11.341	Good condition	9.29	2991.9	1944.735	2.38	19.11	177.5	Light Grey, Low Turbidity, Organic Odour
MW4037	03/08/2021	Q1	8	15.193	3.677	11.516	Good condition	7.52	6422.8	4174.82	6.45	18.82	172	Light Brown, Low Turbidity, No odour
MW4041	03/08/2021	Q1	10	14.606	5.875	8.731	Good condition	7.1	7836	5093.4	3.16	17.23	164	Light Brown, Low Turbidity, No odour
MW4043	03/08/2021	Q2	10	12.125	4.085	8.04	Good condition, well head flooded							Gauge only
MW4045	03/08/2021	Q2	18	7.328	1.457	5.871	Good condition	7.68	4166.6	2708.29	3.77	17.93	-90.5	Light Grey, Medium Turbidity, No odour
MW4046	03/08/2021	Q2	6.5	9.19	1.176	8.014	Good condition							Gauge only
MW4047	04/08/2021	Q1	8.5	11.657	2.92	8.737	Good condition							Gauge only
MW4048	06/08/2021	Q2	21	12.975	3.219	9.756	Good condition	8.99	1109	720.85	3.43	18.88	-54.2	Grey, Low Turbidity, Organic Odour
MW4049	05/08/2021	Q1	8.5	10.643	2.13	8.513	Good condition							Gauge only
MW4052	03/08/2021	Q1	9.5	12.057	4.442	7.615	Good condition	7.96	2122	1379.3	2.69	17.69	-54.2	Brown, Medium Turbidity, No odour
MW4053	03/08/2021	Q1	8.5	7.45	1.575	5.875	Good condition	8.05	2322.4	1509.56	5.43	18.06	41	Brown, Medium Turbidity, No odour
MW4055	03/08/2021	Q1	9	7.883	2.148	5.735	Good condition	7.64	4849.2	3151.98	6.41	17.4	181.9	Yellow / Brown, Low Turbidity, No odour
MW4057	05/08/2021	Q1	8	9.429	0.91	8.519	Good condition	8.3	6284.9	4085.185	5.28	17.47	239.7	Grey / Brown, Turbid, No odour
MW4058	03/08/2021	Q1	5.5	9.407	2.936	6.471	Good condition	7.84	2994	1946.1	5.28	15.74	39.3	Light Brown, Low Turbidity, Compost
MW4059	03/08/2021	Q1	8	10.204	1.94	8.264	Good condition	7.34	14018	9111.7	6.36	15.93	152	Brown, Medium Turbidity, No odour
MW4060	03/08/2021	Q1	6.9	11.386	2.3	9.086	Bolts damaged	7.87	2668	1734.2	6.28	16.24	76.9	Yellow / Brown, Turbid, No odour
MW4061	03/08/2021	Q1	8	16.538	-	-	Could not access, submerged in water							Could not access
MW4064	03/08/2021	Q1	8	5.885	0.758	5.127	Good condition	7.54	5922.1	3849.365	5.68	16.78	78.2	Light Brown, Low Turbidity, No odour
MW4065	02/08/2021	Q2	20	17.754	6.045	11.709	Good condition	7.35	5536.8	3598.92	4.011	16.6	-54.9	Black / Grey, Medium Turbidity, Organic Odour
MW4066	05/08/2021	Q2	18	9.478	1.043	8.435	Good condition	8.53	14368.8	9339.72	5.61	17.4	205.4	Light Brown, Low Turbidity, No odour
MW4068	05/08/2021	Q3	45	13.749	6.597	7.152	Good condition	12.02	3495.4	2272.01	4.04	18.77	98	Clear, Low Turbidity, No odour
MW4069	06/08/2021	Q3	36	12.92	3.352	9.568	Good condition	9.01	3009	1955.85	2.83	18.63	-55.5	Brown, Medium Turbidity, Slight Organic Odour
MW4070	03/08/2021	Q3	45	7.311	1.475	5.836	Good condition	7.74	2761.6	1795.04	4.65	17.56	-64.2	Black, Turbid, Organic Odour
MW4071	03/08/2021	Q3	30	12.009	2.945	9.064	Good condition	7.33	14405	9363.25	3.06	17.01	-256	Light Grey, Low Turbidity, Organic Odour
MW4072	03/08/2021	Q1	13	17.147	9.877	7.27	Good condition	7.9	1189	772.85	7.07	16.65	59.4	Brown, Medium Turbidity, No odour
MW4073	05/08/2021	Q3	43.5	9.458	1.256	8.202	Good condition	9.39	13901.2	9035.78	3.84	18.04	139.1	Brown, Medium Turbidity, No odour
MW4074	03/08/2021	Q3	39	14.06	4.559	9.501	Good condition	7.36	5439.8	3535.87	6.66	18.55	201.4	Clear, Low Turbidity, No odour
MW4075	06/08/2021	Q4	48	13.059	5.014	8.045	Good condition	9.22	2951	1918.15	4.07	17.66	-181.8	Grey, Turbid, Organic Odour
MW4076	03/08/2021	Q2	18	7.942	-	-	Could not access, submerged in water							Could not access
MW4077	03/08/2021	Q2	18	10.232	1.957	8.275	Good condition	7.4	15689	10197.85	3.27	17.23	-104.9	Other, Medium Turbidity, Organic Odour
MW4078	03/08/2021	Q4	54	9.537	5.681	3.856	Good condition	7.27	21076	13699.4	4.45	16.12	10.3	Clear, No odour
MW4079	05/08/2021	Q4	57	9.505	4.924	4.581	Good condition	12.89	13651	8873.15	7.43	17.05	41.3	Clear, Clear, No odour
MW4218	02/08/2021	Q1	10	21.857	7.718	14.139	Good condition	6.9	16176.3	10514.595	1.97	17.38	-103.7	Light Brown, Medium Turbidity, No odour
MW4219	03/08/2021	Q1	8.5	8.978	1.915	7.063	Good condition	7.55	11937	7759.05	4.23	18.27	102.7	Light Brown, Low Turbidity, No odour
MW4220	03/08/2021	T1	105	-	6.366	-	Key from DEW required for access	7.76	1853.1	1204.515	4.33	17.99	-69.1	Clear, Low Turbidity, No odour
MW4221	06/08/2021	T1	-	-	-	-	Good condition	7.7	2461	1599.65	3.87	18.03	-34.7	Clear, No odour
MW4222	06/08/2021	T1	-	-	-	-	Good condition	7.63	1446.5	940.225	2.86	19.77	-87.2	Clear, No odour
MW4223	03/08/2021	Q2	-	-	-	-	Good condition	6.4	5892.4	3830.1	5.63	19.4	37.4	Clear, Low Turbidity, No odour

Notes:
 m AHD: metres above Australian Height Datum
 m BTOC: metres Below Top Of Casing
 LNAPL: Light non aqueous phase liquid
 °C: Degrees Celsius
 mg/L: Milligrams per litre (ppm w/v)
 mV: Millivolts
 µS/cm: Micro Siemens per centimetre
 EC: Electrical Conductivity
 * Approximate value determined using the following equation: TDS (mg/L) = EC x 0.65
 - : no data/equipment or probe failure

Table T2 - Groundwater PFAS Analytical Results

		PFAS																																			
		Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexanoic acid (PFHxA)	Perfluorobutanoic acid (PFBA)	Perfluorooctanoic Acid (PFOA)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDDA)	Perfluorononanoic acid (PFNA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentanoic acid (PFPeA)	Perfluorotridecanoic acid (PFTriDA)	Perfluoroundecanoic acid (PFUnDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FIS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFHxS and PFOS	Sum of PFAS	Sum of PFAS (W.A.D.E.R List)					
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L					
LOR		0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.1	0.01	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.02	0.05	0.05	0.05	0.05	0.02	0.05	0.02	0.05	0.05	0.02	0.05	0.01	0.01	0.01
PFAS NEMP 2020 Drinking Water										0.56																											

Location Code	Field ID	Sample Date	Sample Type	Lab Report Number	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01
MW2325	0661_MW2325_210802	2/08/2021	Primary	EM2115885	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01	
MW2112	0939_MW2112_210812	12/08/2021	Primary	EM2116269	0.04	0.04	0.6	0.05	3.72	<0.04	0.09	<0.2	0.05	<0.04	<0.04	<0.04	<0.04	<0.09	<0.04	<0.04	<0.04	<0.05	<0.05	<0.05	<0.04	<0.09	<0.04	<0.09	<0.09	<0.09	<0.04	<0.09	4.32	4.59	4.5		
MW2114	0939_MW2114_210802	2/08/2021	Primary	EM2115885	14.8	11.2	67.6	8.72	108	<0.04	21.7	2.2	11.3	4.62	<0.04	<0.04	<0.04	<0.09	3.9	<0.04	<0.04	<0.05	0.43	<0.05	<0.05	<0.04	<0.09	<0.04	<0.09	<0.09	<0.09	<0.04	<0.09	176	254	234	
MW2116	0939_MW2116_210802	2/08/2021	Primary	EM2115885	277	263	2700	250	6860	<0.37	674	20.3	192	74.9	<0.37	<0.37	0.44	<0.93	115	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.93	<0.93	<0.93	<0.93	9560	11,400	10,900
MW2120	0939_MW2120_210813	13/08/2021	Primary	EM2116269	0.15	0.19	2.48	0.62	37.7	0.52	0.37	<0.2	0.44	0.07	<0.04	<0.04	<0.04	<0.1	0.06	<0.04	<0.04	<0.05	<0.05	<0.05	<0.05	0.48	<0.1	<0.04	<0.1	<0.1	<0.04	<0.1	40.2	43.1	41.3		
MW2120	0939_QC113_210813	13/08/2021	Intralab Duplicate	EM2116269	0.13	0.2	2.64	0.66	45.2	0.62	0.37	<0.2	0.44	0.07	<0.04	<0.04	<0.04	<0.1	0.05	<0.04	<0.04	<0.05	<0.05	<0.05	<0.05	0.48	<0.1	<0.04	<0.1	<0.1	<0.04	<0.1	47.8	50.8	48.9		
MW2120	0939_QC213_210813	13/08/2021	Intralab Duplicate	EM2116269	0.18	0.2	3.37	0.81	56.3	0.56	0.48	<0.2	0.56	0.08	<0.04	<0.04	<0.04	<0.1	0.07	<0.04	<0.04	<0.05	<0.05	<0.05	<0.05	0.68	<0.1	<0.04	<0.1	<0.1	<0.04	<0.1	59.7	63.3	61		
MW2120	0309_QC213_210813	13/08/2021	Interlab Duplicate	RN1328532	0.17	0.19	2.8	0.6	44	0.063	0.42	0.088	0.49	0.079	<0.01	<0.01	<0.01	<0.02	0.093	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	0.51	<0.01	<0.02	<0.05	<0.02	<0.01	<0.05	46.8	49.5	-		
MW2126	0939_MW2126_210812	12/08/2021	Primary	EM2116269	0.11	0.13	0.88	0.06	0.62	<0.02	0.2	<0.1	0.04	0.03	<0.02	<0.02	<0.02	<0.05	0.04	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	1.5	2.11	1.92	
MW2129	0939_MW2129_210812	12/08/2021	Primary	EM2116269	0.24	0.61	12.7	0.2	3.02	<0.04	1.82	<0.2	0.44	0.19	<0.04	<0.04	<0.04	<0.1	0.22	<0.04	<0.04	<0.05	<0.05	<0.05	<0.04	<0.1	<0.04	<0.1	<0.1	<0.04	<0.1	15.7	19.4	18.6			
MW2130	0939_MW2130_210802	2/08/2021	Primary	EM2115885	9.37	7.73	74	10.9	334	0.52	64	3.8	17.6	9.18	0.15	<0.04	0.58	<0.09	11.5	<0.04	<0.04	<0.05	0.68	0.31	<0.05	0.26	<0.09	<0.04	<0.09	<0.09	<0.04	<0.09	408	544	524		
MW2131	0939_MW2131_210802	2/08/2021	Primary	EM2115885	1.58	1.63	19.1	1	125	0.04	12.1	0.9	8.21	2.86	<0.04	<0.04	0.1	<0.1	4.97	<0.04	<0.04	<0.05	2.29	0.06	<0.05	0.66	<0.1	<0.04	<0.1	<0.1	<0.04	<0.1	144	180	177		
MW2134	0939_MW2134_210802	2/08/2021	Primary	EM2115885	<0.02	<0.02	0.04	<0.02	<0.01	<0.02	<0.02	<0.1	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.04	0.04	0.04	
MW2134	0939_QC101_210802	2/08/2021	Intralab Duplicate	EM2115885	<0.02	<0.02	0.05	<0.02	0.01	<0.02	<0.02	<0.1	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.06	0.06	0.06	
MW2134	0939_QC201_210802	2/08/2021	Interlab Duplicate	RN1327474	0.013	<0.01	0.05	<0.01	<0.02	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05	0.05	0.06	-	
MW2135	0939_MW2135_210802	2/08/2021	Primary	EM2115885	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01	
MW2137	0939_MW2137_210812	12/08/2021	Primary	EM2116269	0.86	1.44	13.4	0.53	9.98	<0.04	1.34	<0.2	0.36	0.14	<0.04	<0.04	<0.04	<0.09	0.2	<0.04	<0.04	<0.05	<0.05	<0.05	<0.02	<0.09	<0.04	<0.09	<0.09	<0.04	<0.09	23.1	28.2	26.3			
MW2139	0939_MW2139_210812	12/08/2021	Primary	EM2116269	<0.02	<0.02	0.17	<0.02	<0.01	<0.02	<0.02	<0.1	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.17	0.17	0.17	
MW2145	0939_MW2145_210812	12/08/2021	Primary	EM2116269	0.14	0.08	0.69	0.04	0.9	<0.02	0.13	<0.1	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	0.03	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	1.59	2.04	1.92	
MW2148	0939_MW2148_210802	2/08/2021	Primary	EM2115885	54.7	54	376	31.3	303	<0.04	80.1	3.8	25.4	10.7	<0.04	<0.04	<0.04	<0.09	14.4	<0.04	<0.04	<0.05	<0.05	<0.05	<0.02	<0.09	<0.04	<0.09	<0.09	<0.04	<0.09	679	953	868			
MW2149	0939_MW2149_210812	12/08/2021	Primary	EM2116269	10.4	13	68.4	6.3	137	<0.04	26.7	2.1	8.23	3.72	<0.04	<0.04	<0.04	<0.09	6.02	<0.04	<0.04	<0.05	0.59	<0.05	<0.05	0.14	<0.09	<0.04	<0.09	<0.09	<0.04	<0.09	205	283	263		
MW2150	0939_MW2150_210812	12/08/2021	Primary	EM2116269	0.19	0.34	4.29	0.22	9.96	<0.04	0.54	<0.2	0.12	0.05	<0.04	<0.04	<0.04	<0.1	0.09	<0.04	<0.04	<0.05	<0.05	<0.05	<0.04	<0.1	<0.04	<0.1	<0.1	<0.04	<0.1	14.2	15.8	15.2			
MW2157	0939_MW2157_210802	2/08/2021	Primary	EM2115885	0.58	0.72	4.82	0.54	10.2	<0.02	1.21	0.1	0.38	0.16	<0.02	<0.02	<0.02	<0.05	0.22	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	15	18.9	17.7	
MW2158	0939_MW2158_210802	2/08/2021	Primary	EM2115885	77.7	74	559	60.2	1460	<0.05	154	11.3	58.2	22	<0.05	<0.05	0.18	<0.12	28.8	<0.05	<0.05	<0.05	0.28	<0.12	<0.05	0.28	<0.										

Table T2 - Groundwater PFAS Analytical Results

PFAS	PFAS																																
	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexanoic acid (PFHxA)	Perfluorobutanoic acid (PFBA)	Perfluorooctanoic Acid (PFDOA)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDDoDA)	Perfluorononanoic acid (PFNA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentanoic acid (PFPeA)	Perfluorotridecanoic acid (PFTriDA)	Perfluoroundecanoic acid (PFUnDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FIS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOFA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	Sum of PFHxS and PFOS	Sum of PFAS	Sum of PFAS (WA DER List)		
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
LOR	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.1	0.01	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.05	0.02	0.05	0.05	0.05	0.02	0.05	0.02	0.05	0.02	0.05	0.05	0.02	0.01	0.01	0.01
PFAS NEMP 2020 Drinking Water										0.56																				0.07			

Location Code	Field ID	Sample Date	Sample Type	Lab Report Number	15.8	24.5	149	20.7	413	0.05	31.6	2.3	10.9	4.37	<0.04	<0.04	0.06	<0.09	6.1	<0.04	<0.04	<0.05	0.12	<0.05	<0.05	0.08	<0.09	<0.04	<0.09	<0.09	<0.09	<0.04	<0.09	562	678	633	
MW2197	0939_MW2197_210812	12/08/2021	Primary	EM2116269	15.8	24.5	149	20.7	413	0.05	31.6	2.3	10.9	4.37	<0.04	<0.04	0.06	<0.09	6.1	<0.04	<0.04	<0.05	0.12	<0.05	<0.05	0.08	<0.09	<0.04	<0.09	<0.09	<0.09	<0.04	<0.09	562	678	633	
MW2200	0939_MW2200_210813	13/08/2021	Primary	EM2116269	7.01	9.7	60.6	4.05	37.5	<0.04	12.3	0.5	3.27	1.63	<0.04	<0.04	<0.04	<0.1	2.1	<0.04	<0.04	<0.05	<0.05	<0.05	<0.05	<0.04	<0.1	<0.04	<0.1	<0.1	<0.04	<0.1	98.1	139	125		
MW2201	0939_MW2201_210813	13/08/2021	Primary	EM2116269	0.03	0.04	0.41	<0.02	0.64	<0.02	0.04	<0.1	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	1.05	1.16	1.12	
MW2202	0939_MW2202_210813	13/08/2021	Primary	EM2116269	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01	<0.01	
MW2203	0939_MW2203_210813	13/08/2021	Primary	EM2116269	58	60.7	763	62.8	3010	<0.04	143	8.8	49.6	20.8	0.05	<0.04	0.23	<0.1	30	<0.04	<0.04	<0.05	0.18	<0.05	<0.05	0.11	<0.1	<0.04	<0.1	<0.1	<0.04	<0.1	3770	4210	4080		
MW2209	0939_MW2209_210802	2/08/2021	Primary	EM2115885	<0.02	<0.02	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	0.06	0.06	0.06	
MW2210	0939_MW2210_210802	2/08/2021	Primary	EM2115885	16.9	11.9	87.5	16.1	163	<0.04	22.7	1.6	5.83	3.04	<0.04	<0.04	<0.04	<0.09	4.38	<0.04	<0.04	<0.05	<0.05	<0.05	<0.05	<0.04	<0.09	<0.04	<0.09	<0.09	<0.04	<0.09	250	333	305		
MW2216	0939_MW2216_210802	2/08/2021	Primary	EM2115885	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01	
MW2218	0939_MW2218_210802	2/08/2021	Primary	EM2115885	<0.02	<0.02	0.19	0.03	1.06	<0.02	0.02	<0.1	0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	1.25	1.31	1.28	
MW2270	0939_MW2270_210813	13/08/2021	Primary	EM2116269	0.09	0.06	0.72	0.03	0.3	<0.02	0.13	<0.1	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	1.02	1.38	1.29	
MW2272	0939_MW2272_210802	2/08/2021	Primary	EM2115885	34.2	21	182	16.2	115	0.1	62.2	2.8	17.3	8.42	<0.04	<0.04	<0.04	<0.1	12.2	<0.04	<0.04	<0.05	<0.05	<0.05	<0.04	<0.1	<0.04	<0.1	<0.1	<0.04	<0.1	297	471	434			
MW2275	0939_MW2275_210812	12/08/2021	Primary	EM2116269	0.06	0.03	1.53	0.02	0.17	<0.02	0.2	<0.1	0.13	0.02	<0.02	<0.02	<0.02	<0.05	0.02	<0.02	<0.02	<0.05	0.09	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	1.7	2.27	2.22
MW2281	0939_MW2281_210812	12/08/2021	Primary	EM2116269	0.14	0.07	0.68	0.05	1.8	<0.02	0.09	<0.1	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	2.48	2.86	2.74	
MW2284	0939_MW2284_210802	2/08/2021	Primary	EM2115885	5.91	3.87	35.8	2.9	26.5	<0.04	11.4	0.4	3.34	1.57	<0.04	<0.04	<0.04	<0.09	2.3	<0.04	<0.04	<0.05	<0.05	<0.05	<0.05	<0.04	<0.09	<0.04	<0.09	<0.09	<0.04	<0.09	62.3	94	87.2		
MW2285	0939_MW2285_210812	12/08/2021	Primary	EM2116269	<0.02	<0.02	0.04	<0.02	0.11	<0.02	<0.02	<0.1	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.15	0.15	0.15
MW2286	0939_MW2286_210812	12/08/2021	Primary	EM2116269	0.02	0.03	0.32	0.02	0.44	<0.02	0.03	<0.1	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.76	0.86	0.81		
MW2358	0939_MW2358_210812	12/08/2021	Primary	EM2116269	9.98	9.58	81.5	4.77	56.1	<0.04	21.5	1.1	3.35	2.52	<0.04	<0.04	<0.04	<0.1	3.79	<0.04	<0.04	<0.05	<0.05	<0.05	<0.05	<0.04	<0.1	<0.04	<0.1	<0.1	<0.04	<0.1	138	194	180		
MW2358	0939_QC112_210812	12/08/2021	Intralab Duplicate	EM2116269	9.69	9.94	85.6	4.83	56.2	<0.04	20.7	0.9	3.5	2.59	<0.04	<0.04	<0.04	<0.1	3.31	<0.04	<0.04	<0.05	<0.05	<0.05	<0.05	<0.04	<0.1	<0.04	<0.1	<0.1	<0.04	<0.1	142	197	182		
MW2358	0939_QC212_210812	12/08/2021	Interlab Duplicate	RN1327475	8.4	7.6	80	3	33	<0.01	16	2.1	2.4	2.2	<0.01	<0.01	<0.01	<0.02	3.5	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.02	<0.01	<0.02	<0.01	<0.02	113	158.2	-		
MW2394	0939_MW2394_210812	12/08/2021	Primary	EM2116269	<0.02	<0.02	0.04	<0.02	0.06	<0.02	<0.02	<0.1	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	0.11	0.1	0.1		
MW2411	0939_MW2411_210812	12/08/2021	Primary	EM2116269	0.13	0.12	0.47	0.02	0.96	<0.02	0.22	0.3	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	1.43	2.29	2.15		
MW2490	0939_MW2490_210802	2/08/2021	Primary	EM2115885	146	181	1930	161	2980	<0.36	322	9.4	122	41.9	<0.36	<0.36	<0.36	<0.9	53.2	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	0.43	<0.9	<0.36	<0.9	<0.9	<0.36	<0.9	4910	5950	5600		
MW2499	0939_MW2499_210812	12/08/2021	Primary	EM2116269	1.57	1.94	16.8	1.82	189	0.09	4.9	0.7	3.05	0.76	<0.04	<0.04	0.06	<0.09	2.58	<0.04	<0.04	<0.05	<0.05	<0.05	<0.05	0.23	<0.09	<0.04	<0.09	<0.09	<0.04	<0.09	206	224	219		
MW2501	0939_MW2501_210802	2/08/2021	Primary	EM2115885	<0.02	<0.02	0.08	<0.02	0.21	<0.02	0.04	<0.1	0.01	<0.02	<0.02	<0.02	<0.02	<0.05	0.04	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02						

Table T2 - Groundwater PFAS Analytical Results

Table with 25 columns for PFAS compounds and 3 rows of data. The compounds listed include Perfluorobutane sulfonic acid (PFBS), Perfluoropentane sulfonic acid (PFPeS), Perfluorohexane sulfonic acid (PFHxS), Perfluoroheptane sulfonic acid (PFHpS), Perfluorooctane sulfonic acid (PFOS), Perfluorodecane sulfonic acid (PFDS), Perfluorohexanoic acid (PFHxA), Perfluorobutanoic acid (PFBA), Perfluorooctanoic Acid (PFOA), Perfluoroheptanoic acid (PFHpA), Perfluorodecanoic acid (PFDA), Perfluorododecanoic acid (PFDDA), Perfluorononanoic acid (PFNA), Perfluorotetradecanoic acid (PFTeDA), Perfluoropentanoic acid (PFPeA), Perfluorotridecanoic acid (PFTriDA), Perfluoroundecanoic acid (PFUnDA), 4:2 Fluorotelomer sulfonic acid (4:2 FTS), 6:2 Fluorotelomer Sulfonate (6:2 FIS), 8:2 Fluorotelomer sulfonic acid (8:2 FTS), 10:2 Fluorotelomer sulfonic acid (10:2 FTS), Perfluorooctane sulfonamide (FOSA), N-Methyl perfluorooctane sulfonamide (MeFOSA), N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSA), N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE), N-Ethyl perfluorooctane sulfonamide (EFOSA), N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSA), N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE), Sum of PFHxS and PFOS, Sum of PFAS, and Sum of PFAS (WA DER List).

Table with 5 columns: Location Code, Field ID, Sample Date, Sample Type, Lab Report Number. This is a summary table for the data presented in the main table above, listing various monitoring wells (MW4052 to MW4223) and their corresponding sample details.

Notes:
Denotes first time detection above LOR for Sum of PFHxS+PFOS or PFOA
Denotes new exceedence of human health screening criteria
LOR: Limit of reporting
µg/L: micrograms per Litre

Table T3 Surface Water Field Parameters

Location ID	Date	pH	Electrical Conductivity	Estimated TDS*	Dissolved Oxygen	Temperature	Redox Potential	Comments
		pH units	µS/cm	mg/L	mg/L	°C	mV	
SW003	13/08/2021	8.15	399.6	239.8	6.92	15.57	-10.3	Clear, No odour. Approximately 5 m wide, 6 m high. Unlined drain/creek with vegetation.
SW006	11/08/2021	6.43	206.4	123.8	5.34	11	66.1	Clear, No odour. Approximately 3-5 m wide. Unlined drain with vegetation. Flows south west.
SW009	4/08/2021	8	266	159.6	9.06	14.22	188.6	Clear, No odour. Unlined drain/creek with vegetation, goes under road bridge. Approximately 15 m wide at the widest, 1-2 m high banks.
SW010	6/08/2021	8.48	192.4	115.4	9.98	14.87	233.7	Light Olive Brown, No odour. Approximately 3-5 m drain meets the dam. Unlined drain with vegetation. Flows south west into dam.
SW011	4/08/2021	7.99	39	23.4	11.1	13.25	162.2	Clear, No odour. Approximately 10 m wide by 5 m high. Water draining from wetlands. Drains into three pipes, terraced drop off to drains.
SW012	6/08/2021	8.27	209.3	125.6	8.63	13.96	196.3	Clear, No odour. Unlined drain/creek with vegetation, approximately 1-2 m wide. Flows south east.
SW017	13/08/2021	7.65	411.6	247.0	7.5	15.23	36.2	Clear, No odour. Approximately 5 m wide by 3 m high unlined drain with vegetation.
SW018	4/08/2021	7.67	189.8	113.9	8.56	13.77	376.2	Pale yellow, Low turbidity, No odour. Approximately 6-8 m wide, banks gentle slope to 2 m high. Unlined drain with vegetation. Flows south.
SW019	4/08/2021	7.86	107.6	64.6	8.41	14.71	209.5	Light Olive Brown, Medium turbidity, No odour. Approximately 2 m wide by 2 m high concrete drian, vegetation in drain. No apparent flow.
SW021	4/08/2021	8.08	153.9	92.3	9.19	15.04	266.6	Pale Yellow, Medium turbidity, No odour. Approximately 10-15 m wide unlined reed filled drain, no apparent flow direction.
SW028	4/08/2021	8.52	192.8	115.7	11.72	15.61	328	Light Olive Brown, Turbid, No odour.
SW029	4/08/2021	8.07	240.1	144.1	12.98	15.3	305	Brown Green, Turbid, No odour. Approximately 8-10 m wide, banks sloped 4-5 m high. Concrete drain with vegetation on banks.
SW032	4/08/2021	8.4	118.2	70.9	8.53	16.19	370.7	Light Olive Brown, Low turbidity, No odour. Approximately 4 m wide, banks slope gently 6 m high. Unlined drain with vegetation. No apparent flow direction.
SW033	4/08/2021	7.93	247.2	148.3	12.51	18.79	352.9	Clear, No odour. Approximately 7 m wide by 5 m high banks. Unlined. Evidence of recent excavation, tyre tracks in drain, soil stockpiled on banks. No apparent flow.
SW037	12/08/2021							Area is moist, insufficient water for sample and parameters.
SW050	4/08/2021	8.34	205	123.0	11.79	16.38	289.8	Clear, No odour. End of drain catchment in bird netted area, reeds and vegetation. No apparent flow direction.
SW054	4/08/2021	8.24	217.6	130.6	9.43	15.53	345.5	Clear, No odour. Bird netting area, approx 6-8 m wide, reeds and vegetation.
SW058	6/08/2021	8.63	219.8	131.9	8.6	15.66	209.6	Light Olive Brown, Low turbidity, No odour. At outlet/inlet of dam into the Kaurna Park wetlands. No apparent flow direction.
SW059	4/08/2021	8.26	103.5	62.1	9.48	12.9	329.5	Light Olive Brown, Low turbidity No odour. Approximately 1 m wide by 2 m high. Pollutant trap at drain. No apparent flow direction, drain orientated east-west. Oil-sheen at surface.
SW062	3/08/2021	8.22	337.7	202.6	10.3	14.26	87.5	Clear, No odour. Approximately 5 m wide, banks to 3 m high. Vegetated, unlined drain. Algae close to banks. Flows south west.
SW078	4/08/2021	8.84	234	140.4	6.1	13.08	173.5	Clear, No odour. Approximately 3 m wide by 4 m high banks. Concrete lined, vegetation at banks. Flows south into wetland.

Notes:

°C: Degrees Celsius

mg/L: Milligrams per litre (ppm w/v)

mV: Millivolts

µS/cm: Micro Siemens per centimetre

EC: Electrical Conductivity

* Approximate value determined using the following equation: TDS (mg/L) = EC x 0.65

Appendix C

Data Validation Reports

Appendix C Data Validation Reports

DATA VALIDATION REPORT

Project No.:	60612561	Validation by:	[REDACTED]	Date:	22/09/2021
Client:	Department of Defence				
Site:	RAAF Base Edinburgh				
Matrix type:	Groundwater, surface water	Data verified by:	[REDACTED]	Date:	28/09/2021
No. of primary samples:	102 groundwater, 20 surface water				
Laboratory:	ALS (Melbourne), NMI (Sydney)	Project Manager:	[REDACTED]		
Lab reference:	EM2115880, EM2115881, EM2116269, EM2115882, EM2115885, RN1328532, RN1327474, RN1327475				

Key Issues: No QA/QC issues were identified in the field or laboratory datasets that could have a material implication on data interpretation and therefore decision-making on the project.

Elevated RPDs for FOSA, PFBS, PFDS should be taken into consideration when interpreting data quantitatively and elevated RPDs should be taken into consideration where PFOA and PFHxS+PFOS are reported close to guidelines.

PFAS analytes listed below for surrogate spike recoveries and matrix spike recoveries reported outside of control limits have the potential to be bias low. These results should be taken into consideration when using the data quantitatively or where close to guidelines for PFOA and PFHxS+PFOS.

The data are considered appropriate for use to meet the project objectives and meet the DQOs set out in Section 3.5 of the report.

Field QA/QC

Sampling Personnel	Groundwater and surface water sampling was conducted by [REDACTED] between 30 July and 13 August 2021.
Sampling Methodology	Samples were collected using appropriate methods as identified within the main body of the report.
Chain of Custody (COC)	COC documents were completed as per AECOM procedures.
Field Blank	Thirteen field blank samples were collected at a frequency of one in ten primary samples. Concentrations were reported below the LOR for all analytes tested (see Table C4).
Rinsate Blank	<p>Thirteen rinsate blank samples were collected at a frequency of one in ten primary samples:</p> <ul style="list-style-type: none"> • 11 in total for groundwater (from interface probe) • 2 in total for surface water (from glove) <p>All concentrations of analytes were below LOR (see Table C4), with the following exception:</p> <ul style="list-style-type: none"> • 0939_QC313_210813: PFOS at 0.03 µg/L <p>The above trace concentration of PFOS, marginally above the LOR (0.01 µg/L), but below the drinking water guideline (0.07 µg/L) indicates the potential for a small degree of PFOS cross-contamination introduced into the samples from the IP. However, as concentrations of PFOS reported for samples collected on the same day were reported well above the drinking water guideline for PFHxS+PFOS or below the LOR, this does not appear to be a systematic error associated with the interface probe.</p> <p>The potential for cross contamination beyond this sample via sampling methods is considered unlikely based on the following:</p> <ul style="list-style-type: none"> • All sampling equipment was either dedicated, disposable or decontaminated with a solution of water and liquinox between sampling locations

- Clean disposable gloves were used to collect each sample
- The decontamination methods and field staff were consistent over the course of the sampling event
- Concentrations of all other analytes were reported below the LOR in all other rinsate samples analysed.

Trip Blanks Trip blank samples were collected at a frequency of one per cooler. Concentrations were reported below the LOR for all analytes tested (see **Table C4**).

Frequency of Field QC Field duplicates (intra-laboratory duplicates) and triplicates (inter-laboratory duplicates) were collected at a frequency of one in ten primary samples. A total of 122 primary surface water and groundwater samples were analysed.

Eleven duplicates and ten triplicates for groundwater, and three duplicates and triplicates for surface water were analysed (note an additional groundwater and an additional surface water field duplicate were also analysed due to COC error - see below). Therefore, the target frequency of 10% for field duplicates and triplicates for PFAS was achieved for groundwater and surface water combined.

Handling and Preservation Primary, duplicate and triplicate samples were received preserved and chilled at the laboratories. The following sample receipt temperatures were reported:

Batch Number	Temperature (°C)
EM2115885	12.9, ice present
EM2115882	12.9, ice present
EM2116269	8.1, ice present
EM2115881	12.9, ice present
EM2115880	12.9, ice present
RN1328532	Chilled
RN1327474	Chilled
RN1327475	Chilled

Sample receipt temperatures were outside of the recommended range ($\leq 6^{\circ}\text{C}$) in all primary batches. As the samples were received below ambient groundwater temperature at the time of sampling (15 to 21 °C) and the samples were immediately cooled upon collection, the potential for under reporting is not considered to materially affect the interpretation of results.

All samples were received at the laboratory in appropriate sample containers with no sample container / preservation non-compliances noted.

Equipment Calibration Calibration of the water quality meter was conducted on each day of sampling.

Laboratory QA/QC

Tests Requested/Reported Samples were analysed and reported as requested on the COC. Two inter-laboratory duplicate samples (0939_QC213_210813 and 0939_QC214_210813) were analysed by the primary laboratory (ALS) due to a transcription error on the COC. The two inter-laboratory duplicate samples were subsequently forwarded to NMI for analysis.

Sample 0939_QC202_210802 was not analysed by the secondary laboratory as the sample leaked in transit to the secondary laboratory.

Holding time Compliance Samples were extracted and analysed within recommended holding times.

Laboratory Accreditation The laboratory analysis was conducted by ALS Environmental Pty Ltd (Melbourne) a National Association of Testing Authorities (NATA) accredited laboratory. The triplicate samples were analysed at the national Measurement Institute (Sydney), also a NATA accredited laboratory.

Frequency of Laboratory QC The laboratory did not report sufficient frequency of quality control samples to assess whether the results have been reported to an acceptable accuracy and precision for surface water and groundwater.

Laboratory duplicate samples were not reported at the required frequency for all laboratory batches for PFAS:

- EM2115880: no laboratory duplicates reported
- EM2115881: no laboratory duplicates reported

- EM2116269: 5 laboratory duplicates reported (7 required for 62 samples)
- EM2115882: no laboratory duplicates reported
- EM2115885: 8 laboratory duplicates reported (11 required for 103 samples)

The precision of the data can be assessed as acceptable based on intra- and inter-laboratory duplicate RPDs which were reported at or above the required frequencies and generally within control limits. All reported laboratory duplicate samples were reported within control limits.

Matrix spikes were not reported at the required frequencies for PFAS..

- EM2115880, EM2115881, EM2115882: no MS reported
- EM2116269: 3 MS reported (4 required for 62 total samples)
- EM2115885: 6 MS reported sufficient (for 103 total samples)

The accuracy of the data can be assessed as acceptable based on method blanks, LCS and surrogate spike recoveries (which were reported at or above the required frequencies and within control limits).

Method Blank Method blank concentrations were not detected above the LOR for all analytes tested for groundwater and surface water.

Laboratory Duplicate RPDs Laboratory duplicate relative percentage differences (RPD) were within control limits.

Surrogate % Recoveries Surrogate spike recoveries were within control limits, with the exception of the following in batch EM2116269:

Lab Method & Surrogate	Sample ID	Recovery (%)	Limit (%)	Comment
EP231S: PFAS surrogate 13C4- PFOS	0939_MW2197_210812	64.4	65-140	Recovery less than lower data quality objective
EP231S: PFAS surrogate 13C4- PFOS	0939_MW2203_210813	60.6	65-140	Recovery less than lower data quality objective
EP231S: PFAS surrogate 13C8- PFOA	0939_MW2200_210813	66.9	71-133	Recovery less than lower data quality objective

The potential exists for PFAS in samples 0939_MW2197_210812, 0939_MW2203_210813 and 0939_MW2200_210813 to be under reported by up to 35.6%, 39.4% and 33.1% respectively.

This apparent lack of accuracy should be taken into consideration when interpreting concentrations for PFOA and sum of PFHxS and PFOS where close to guidelines.

Matrix Spike Recovery Matrix spike recoveries were not determined as background levels were greater than or equal to 4x spike levels for the following batches:

- EM2115885; PFHxS, PFOS
- EM2116269; PFBS, PFPeS, PFHxS, PFOS, PFHxA

These non-determinations do not reflect method bias and do not affect data interpretation. The accuracy of the data can be assessed as acceptable based on method blanks, LCS and surrogate spike recoveries (which were reported at or above the required frequencies and within control limits), and available matrix spike recoveries for the same analytical method group (which were reported within control limits).

Matrix spike (MS) recoveries (where reported) were within control limits, with the following exceptions:

Analyte	Recovery (%)	Range (%)	Comment
EM2115885			
PFBA	48.6	73-129	Recovery less than lower data quality objective
MeFOSA	57.5	68-141	Recovery less than lower data quality objective
EtFOSA	61.1	70-130	Recovery less than lower data quality objective
EtFOSE	69.4	70-130	Recovery less than lower data quality objective
EM2116269			
PFHpS	62.6	69-134	Recovery less than lower data quality objective
PFBA	54.6	73-129	Recovery less than lower data quality objective
PFTTrDA	35.3	65-144	Recovery less than lower data quality objective
FOSA	65.4	67-137	Recovery less than lower data quality objective
MeFOSA	55.9	68-141	Recovery less than lower data quality objective
EtFOSA	51	70-130	Recovery less than lower data quality objective
MeFOSE	62.9	70-130	Recovery less than lower data quality objective
EtFOSE	53	70-130	Recovery less than lower data quality objective
10:2 FTS	55.4	70-130	Recovery less than lower data quality objective

The potential exists for concentrations of the analytes listed to be bias low.

As there are no adopted guideline values for the analytes listed the potential for under reporting is not expected to affect interpretation of the results against guidelines. However, this potential for under reporting should be taken into consideration when using the data quantitatively.

Laboratory Control Spike

Laboratory control spike recoveries were within control limits for surface water and groundwater.

QA/QC Data Evaluation

Comparison of Field Observations and Laboratory Results

No anomalous results between field observations and analysis results were noted for surface water or groundwater.

Data Transcription

A random 10% check of the laboratory results identified no anomalies within the electronic data, the laboratory reports, and tables generated by AECOM.

Limits of Reporting

Limits of Reporting (LORs) were sufficiently low to enable assessment against adopted screening levels.

Field Duplicate RPDs

RPDs for groundwater and surface water are reported in **Tables C1** and **C2**, respectively.

Groundwater

Field duplicate RPDs were reported within control limits with the exception the following (the sample with the higher concentration is in bold):

Batch EM2115885:

- **0939_MW4023_210803** and 0939_QC103_210803 for PFOS (69%)

Batch EM2116269:

- **0939_MW2184_210812** and 0939_QC110_210803 for PFOS (39%), PFHxS+PFOS and sum of PFAS (41%)

- 0939_MW2120_210813 and **0939_QC213_210813** for PFOS (40%), PFHxS (30%), PFHxS+PFOS (39%), FOSA (34 %) and sum of PFAS (38%). Note 0939_QC213_210813 was analysed erroneously by the primary laboratory due to a transcription error on the COC. The RPDs reported for the intra-laboratory duplicate sample taken, 0939_QC113_210813, did not exceed the control limits. Sample 0939_QC213_210813 was forwarded to NMI for inter-laboratory PFAS analysis.

As there are no adopted guideline values for FOSA or sum of PFAS, the elevated RPDs are not expected to affect interpretation of the result of results against guidelines.

The elevated RPDs for PFOS should be taken into consideration where concentrations of PFOS are reported close to PFAS NEMP freshwater 95% species protection guideline, and concentrations of PFOS, PFHxS and PFHxS+PFOS should be taken into consideration where close to guidelines and when using the data quantitatively.

Field Triplicate RPDs

Field triplicate RPDs were reported within control limits with the exception of the following (the sample with the higher concentration is in bold):

Batch RN1327474:

- **0939_MW4023_210803** and 0939_QC203_210803 for PFOS (45%)
- **0939_MW4035_210805** and 0939_QC207_210805 for PFOS (31%) and PFBS (54%)
- 0939_SW012_210806 and **0939_QC208_210806** for PFHxS (179%)
- **0939_MW4013_210805** and 0939_QC209_210806 for PFOS (31%)

Batch RN1328532:

- **0939_MW2120_210813** and 0939_QC213_210813 for PFDS (157%)

The primary sample (0939_MW2177_210812) concentrations were reported 1 to 2 orders of magnitude greater than the inter-laboratory duplicate sample (0939_QC211_210812) with RPDs ranging from 137% to 196%. The primary (0939_MW2177_210812) and intra-laboratory duplicate (0939_QC111_210812) samples did not report any RPDs outside of the control limits and are within the historical range for this location, while the results for the inter-laboratory duplicate sample (0939_QC211_210812) do not conform to historical data for this location and are thus considered spurious.

The precision of the data can be assessed as acceptable based on the available intra-/inter-laboratory duplicate RPDs which were generally reported within control limits and available laboratory duplicates which were reported within control limits.

As there are no adopted guideline values for PFBS or PFDS the elevated RPDs are not expected to affect interpretation of the results against guidelines. The elevated RPDs should be taken into consideration where concentrations of PFOS are reported close to PFAS NEMP freshwater 95% species protection guideline, and PFOS and PFHxS should be taken into consideration where concentrations of PFHxS+PFOS are close to guidelines and when using the data quantitatively.

Other

Other observations

ALS laboratory noted in batch EM2116269:

- Poor matrix spike recovery for sample 0939_MW2137_210812 due to matrix interference. Confirmed by re-analysis.
- Poor surrogate spike recovery due to sample matrix. Confirmed by re-analysis.

And in batch EM2115885:

- Samples required dilution due to matrix interferences. LOR values have been adjusted accordingly.
- Poor matrix spike recovery in sample 0939_MW4068_210805 due to sample matrix interference.

Relative Percentage Difference Table

Lab Report Number	EM2115885	EM2115885		EM2115885	EM2115885		EM2115885	EM2115885		EM2115885	EM2115885		EM2115885	EM2115885
Field ID	0939_MW2134_210802	0939_QC101_210802	RPD	0939_MW2159_210802	0939_QC102_210802	RPD	0939_MW4023_210803	0939_QC103_210803	RPD	0939_MW4041_210803	0939_QC104_210803	RPD		
Sample Date	2/08/2021	2/08/2021		2/08/2021	2/08/2021		3/08/2021	3/08/2021		3/08/2021	3/08/2021			
Sample Type	Primary	Intralab Dup		Primary	Intralab Dup		Primary	Intralab Dup		Primary	Intralab Dup			
Reporting Group	Analyte	Units	LOR											
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	<0.01	0.01	0	<0.01	<0.01	0	0.92	0.45	69	<0.01	0.01
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	0.04	0.04	0	<0.01	<0.01
	Sum of PFHxS and PFOS	µg/L	0.01	0.04	0.06	40	<0.01	<0.01	0	1.92	1.48	26	<0.01	0.01
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)	0.04	0.05	22	<0.02	<0.02	0	1	1.03	3	<0.02	<0.02
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05
	6:2 Fluorotelomer Sulfonate (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05
	Perfluoroundecanoic acid (PFUdA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02
	Perfluorotridecanoic acid (PFTDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	0.08	0.08	0	<0.02	<0.02
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	0.02	0.02	0	<0.02	<0.02
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	0.17	0.18	6	<0.02	<0.02
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	0.08	0.08	0	<0.02	<0.02
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02
	Perfluorododecanoic acid (PFDDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02
	Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	0.05	0.05	0	<0.02	<0.02
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamidoethanol (EiFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamide (EiFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EiFOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	
Sum of PFAS	µg/L	0.01	0.04	0.06	40	<0.01	<0.01	0	2.36	1.93	20	<0.01	0.01	
Sum of PFAS (WA DER List)	µg/L	0.01	0.04	0.06	40	<0.01	<0.01	0	2.2	1.77	22	<0.01	0.01	

**High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 200 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))
 ***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

Relative Percentage Difference Table

Lab Report Number	EM2115885	EM2115885	EM2115885	EM2115885	EM2115885	EM2115885	EM2115885	EM2115885	EM2115885	EM2115885					
Field ID	0939_MW4053_210803	0939_QC105_210803	RPD	0939_SW018_210804	0939_QC106_210804	RPD	0939_MW4035_210805	0939_QC107_210805	RPD	0939_MW4013_210806	0939_QC108_210806	RPD			
Sample Date	3/08/2021	3/08/2021		4/08/2021	4/08/2021		5/08/2021	5/08/2021		6/08/2021	6/08/2021				
Sample Type	Primary	Intralab Dup		Primary	Intralab Dup		Primary	Intralab Dup		Primary	Intralab Dup				
Reporting Group	Analyte	Units	LOR												
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	0.49	0.56	13	0.02	0.02	0	13.7	15.2	10	3.98	3.72	7
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	0.02	0.02	0	<0.01	<0.01	0	0.32	0.36	12	0.11	0.12	9
	Sum of PFHxS and PFOS	µg/L	0.01	0.71	0.79	11	0.02	0.02	0	20.1	22	9	6.33	6.08	4
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)	0.22	0.23	4	<0.02	<0.02	0	6.4	6.85	7	2.35	2.36	0
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
	6:2 Fluorotelomer Sulfonate (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.04	<0.04	0	<0.04	<0.04	0
	Perfluorotridecanoic acid (PFTeDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.04	<0.04	0	<0.04	<0.04	0
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.09	<0.09	0	<0.09	<0.09	0
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0.03	0.03	0	<0.02	<0.02	0	0.62	0.69	11	0.26	0.28	7
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	0.15	0.16	6	0.12	0.12	0
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.04	<0.04	0	<0.04	<0.04	0
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	0.84	0.83	1	0.36	0.32	12
	Perfluorooheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	0.49	0.52	6	0.09	0.1	11
	Perfluorooheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	0.13	0.14	7	<0.04	0.05	22
	Perfluorododecane sulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.04	<0.04	0	<0.04	<0.04	0
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.04	<0.04	0	<0.04	<0.04	0
	Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.04	<0.04	0	<0.04	<0.04	0
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0.03	0.02	40	<0.02	<0.02	0	0.78	0.74	5	0.22	0.2	10
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.2	<0.2	0	<0.2	<0.2	0
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.09	<0.09	0	<0.09	<0.09	0
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.09	<0.09	0	<0.09	<0.09	0
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.09	<0.09	0	<0.09	<0.09	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.09	<0.09	0	<0.09	<0.09	0	
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.04	<0.04	0	<0.04	<0.04	0	
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.04	<0.04	0	<0.04	<0.04	0	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.04	<0.04	0	<0.04	<0.04	0	
Sum of PFAS	µg/L	0.01	0.79	0.86	8	0.02	0.02	0	23.4	25.5	9	7.49	7.27	3	
Sum of PFAS (WA DER List)	µg/L	0.01	0.76	0.83	9	0.02	0.02	0	22.3	24.3	9	7.14	6.89	4	

**High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 200 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x L)
 ***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row head

Relative Percentage Difference Table

Lab Report Number	EM2115885	EM2115885	EM2116269	EM2116269	EM2116269	EM2116269	EM2116269	EM2116269	EM2116269						
Field ID	0939_SW012_210806	0939_QC109_210806	RPD	0939_MW2184_210812	0939_QC110_210812	RPD	0939_MW2177_210812	0939_QC111_210812	RPD	0939_MW2358_210812	0939_QC112_210812	RPD			
Sample Date	6/08/2021	6/08/2021		12/08/2021	12/08/2021		12/08/2021	12/08/2021		12/08/2021	12/08/2021				
Sample Type	Primary	Intralab Dup		Primary	Intralab Dup		Primary	Intralab Dup		Primary	Intralab Dup				
Reporting Group	Analyte	Units	LOR												
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	0.03	0.04	29	0.8	0.54	39	4.13	4.12	0	56.1	56.2	0
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	0.15	0.15	0	3.35	3.5	4
	Sum of PFHxS and PFOS	µg/L	0.01	0.03	0.04	29	0.82	0.54	41	7.64	7.12	7	138	142	3
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	0.02	<0.02	0	3.51	3	16	81.5	85.6	5
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
	6:2 Fluorotelomer Sulfonate (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.04	<0.04	0	<0.04	<0.04	0
	Perfluorotridecanoic acid (PFTriDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.04	<0.04	0	<0.04	<0.04	0
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.09	<0.09	0	<0.1	<0.1	0
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	0.21	0.17	21	9.58	9.94	4
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	0.07	0.05	33	3.79	3.31	14
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.04	<0.04	0	<0.04	<0.04	0
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	0.51	0.56	9	21.5	20.7	4
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	0.29	0.28	4	4.77	4.83	1
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	0.05	0.05	0	2.52	2.59	3
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.04	<0.04	0	<0.04	<0.04	0
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.04	<0.04	0	<0.04	<0.04	0
	Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.04	<0.04	0	<0.04	<0.04	0
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	0.14	0.13	7	9.98	9.69	3
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.2	<0.2	0	1.1	0.9	20
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.09	<0.09	0	<0.1	<0.1	0
	N-Ethyl perfluorooctane sulfonamidoethanol (EiFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.09	<0.09	0	<0.1	<0.1	0
	N-Ethyl perfluorooctane sulfonamide (EiFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.09	<0.09	0	<0.1	<0.1	0
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.09	<0.09	0	<0.1	<0.1	0
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOsAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.04	<0.04	0	<0.04	<0.04	0
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.04	<0.04	0	<0.04	<0.04	0
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EiFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	<0.02	0	<0.04	<0.04	0	<0.04	<0.04	0
	Sum of PFAS	µg/L	0.01	0.03	0.04	29	0.82	0.54	41	9.16	8.51	7	194	197	2
	Sum of PFAS (WA DER List)	µg/L	0.01	0.03	0.04	29	0.82	0.54	41	8.66	8.06	7	180	182	1

**High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 200 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR)
 ***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row head

Relative Percentage Difference Table

Lab Report Number	EM2116269	EM2116269	RPD	EM2116269	EM2116269	RPD	EM2116269	EM2116269	RPD	EM2116269	EM2116269	RPD	EM2116269	EM2116269	RPD	
Field ID	0939_MW2120_210813	0939_QC113_210813		0939_MW2120_210813	0939_QC213_210813		0939_SW003_210813	0939_QC114_210813		0939_SW003_210813	0939_QC214_210813		0939_SW003_210813	0939_QC214_210813		
Sample Date	13/08/2021	13/08/2021		13/08/2021	13/08/2021		13/08/2021	13/08/2021		13/08/2021	13/08/2021		13/08/2021	13/08/2021		
Sample Type	Primary	Intralab Dup		Primary	Intralab Dup		Primary	Intralab Dup		Primary	Intralab Dup		Primary	Intralab Dup		
Reporting Group	Analyte	Units	LOR													
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	37.7	45.2	18	37.7	56.3	40	<0.01	<0.01	0	<0.01	<0.01	0	
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	0.44	0.44	0	0.44	0.56	24	<0.01	<0.01	0	<0.01	<0.01	0	
	Sum of PFHxS and PFOS	µg/L	0.01	40.2	47.8	17	40.2	59.7	39	<0.01	<0.01	0	<0.01	<0.01	0	
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)	2.48	2.64	6	2.48	3.37	30	<0.02	<0.02	0	<0.02	<0.02	0	
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	
	6:2 Fluorotelomer Sulfonate (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.04	<0.04	0	<0.04	<0.04	0	<0.02	<0.02	0	<0.02	<0.02	0	
	Perfluorotridecanoic acid (PFTDA)	µg/L	0.02	<0.04	<0.04	0	<0.04	<0.04	0	<0.02	<0.02	0	<0.02	<0.02	0	
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.05	<0.05	0	<0.05	<0.05	0	
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0.19	0.2	5	0.19	0.2	5	<0.02	<0.02	0	<0.02	<0.02	0	
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	0.06	0.05	18	0.06	0.07	15	<0.02	<0.02	0	<0.02	<0.02	0	
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.04	<0.04	0	<0.04	<0.04	0	<0.02	<0.02	0	<0.02	<0.02	0	
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.37	0.37	0	0.37	0.48	26	<0.02	<0.02	0	<0.02	<0.02	0	
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	0.62	0.66	6	0.62	0.81	27	<0.02	<0.02	0	<0.02	<0.02	0	
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	0.07	0.07	0	0.07	0.08	13	<0.02	<0.02	0	<0.02	<0.02	0	
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	0.52	0.62	18	0.52	0.56	7	<0.02	<0.02	0	<0.02	<0.02	0	
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.04	<0.04	0	<0.04	<0.04	0	<0.02	<0.02	0	<0.02	<0.02	0	
	Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.04	<0.04	0	<0.04	<0.04	0	<0.02	<0.02	0	<0.02	<0.02	0	
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0.15	0.13	14	0.15	0.18	18	<0.02	<0.02	0	<0.02	<0.02	0	
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.2	<0.2	0	<0.2	<0.2	0	<0.1	<0.1	0	<0.1	<0.1	0	
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.05	<0.05	0	<0.05	<0.05	0	
	N-Ethyl perfluorooctane sulfonamidoethanol (EiFOSE)	µg/L	0.05	<0.1	<0.1	0	<0.1	<0.1	0	<0.05	<0.05	0	<0.05	<0.05	0	
	N-Ethyl perfluorooctane sulfonamide (EiFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.05	<0.05	0	<0.05	<0.05	0	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.1	<0.1	0	<0.1	<0.1	0	<0.05	<0.05	0	<0.05	<0.05	0		
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.04	<0.04	0	<0.04	<0.04	0	<0.02	<0.02	0	<0.02	<0.02	0		
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	0.48	0.47	2	0.48	0.68	34	<0.02	<0.02	0	<0.02	<0.02	0		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EiFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.04	<0.04	0	<0.04	<0.04	0	<0.02	<0.02	0	<0.02	<0.02	0		
Sum of PFAS	µg/L	0.01	43.1	50.8	16	43.1	63.3	38	<0.01	<0.01	0	<0.01	<0.01	0		
Sum of PFAS (WA DER List)	µg/L	0.01	41.3	48.9	17	41.3	61	39	<0.01	<0.01	0	<0.01	<0.01	0		

**High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 200 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR)
 ***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row head

Relative Percentage Difference Table

Lab Report Number	EM2115885	RN1327474		EM2115885	RN1327474		EM2115885	RN1327474		EM2115885	RN1327474	
Field ID	0939_MW2134_210802	0939_QC201_210802	RPD	0939_MW4023_210803	0939_QC203_210803	RPD	0939_MW4041_210803	0939_QC204_210803	RPD	0939_MW4053_210803	0939_QC205_210803	RPD
Sample Date	2/08/2021	2/08/2021		3/08/2021	3/08/2021		3/08/2021	3/08/2021		3/08/2021	3/08/2021	
Sample Type	Primary	Interlab Dup		Primary	Interlab Dup		Primary	Interlab Dup		Primary	Interlab Dup	

Reporting Group	Analyte	Units	LOR												
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	<-0.01	<-0.02	0	0.92	0.58	45	<-0.01	<-0.02	0	0.49	0.48	2
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<-0.01	<-0.01	0	0.04	0.032	22	<-0.01	<-0.01	0	0.02	0.017	16
	Sum of PFHxS and PFOS	µg/L	0.01	0.04	<-0.03	0	1.92	1.68	13	<-0.01	<-0.03	0	0.71	0.71	0
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)	0.04	0.05	22	1	1.1	10	<-0.02	<-0.01	0	0.22	0.23	4
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<-0.05	<-0.01	0	<-0.05	<-0.01	0	<-0.05	<-0.01	0	<-0.05	<-0.01	0
	6:2 Fluorotelomer Sulfonate (6:2 FIS)	µg/L	0.05 : 0.01 (Interlab)	<-0.05	<-0.01	0	<-0.05	<-0.01	0	<-0.05	<-0.01	0	<-0.05	<-0.01	0
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<-0.05	<-0.01	0	<-0.05	<-0.01	0	<-0.05	<-0.01	0	<-0.05	<-0.01	0
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<-0.05	<-0.01	0	<-0.05	<-0.01	0	<-0.05	<-0.01	0	<-0.05	<-0.01	0
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<-0.02	<-0.01	0	<-0.02	<-0.01	0	<-0.02	<-0.01	0	<-0.02	<-0.01	0
	Perfluorotridecanoic acid (PFTTrDA)	µg/L	0.02	<-0.02	<-0.02	0	<-0.02	<-0.02	0	<-0.02	<-0.02	0	<-0.02	<-0.02	0
	Perfluorotetradecanoic acid (PFTTeDA)	µg/L	0.05 : 0.02 (Interlab)	<-0.05	<-0.02	0	<-0.05	<-0.02	0	<-0.05	<-0.02	0	<-0.05	<-0.02	0
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<-0.02	<-0.01	0	0.08	0.071	12	<-0.02	<-0.01	0	0.03	0.025	18
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<-0.02	<-0.02	0	0.02	0.023	14	<-0.02	<-0.02	0	<-0.02	<-0.02	0
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<-0.02	<-0.01	0	<-0.02	<-0.01	0	<-0.02	<-0.01	0	<-0.02	<-0.01	0
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<-0.02	<-0.01	0	0.17	0.16	6	<-0.02	<-0.01	0	<-0.02	0.015	0
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<-0.02	<-0.01	0	0.08	0.054	39	<-0.02	<-0.01	0	<-0.02	<-0.01	0
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<-0.02	<-0.01	0	<-0.02	0.018	0	<-0.02	<-0.01	0	<-0.02	<-0.01	0
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<-0.02	<-0.01	0	<-0.02	<-0.01	0	<-0.02	<-0.01	0	<-0.02	<-0.01	0
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<-0.02	<-0.01	0	<-0.02	<-0.01	0	<-0.02	<-0.01	0	<-0.02	<-0.01	0
	Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<-0.02	<-0.01	0	<-0.02	<-0.01	0	<-0.02	<-0.01	0	<-0.02	<-0.01	0
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<-0.02	0.013	0	0.05	0.049	2	<-0.02	<-0.01	0	0.03	0.027	11
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<-0.1	<-0.05	0	<-0.1	<-0.05	0	<-0.1	<-0.05	0	<-0.1	0.052	0
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<-0.05	<-0.02	0	<-0.05	<-0.02	0	<-0.05	<-0.02	0	<-0.05	<-0.02	0
	N-Ethyl perfluorooctane sulfonamidoethanol (EiFOSE)	µg/L	0.05	<-0.05	<-0.05	0	<-0.05	<-0.05	0	<-0.05	<-0.05	0	<-0.05	<-0.05	0
	N-Ethyl perfluorooctane sulfonamide (EiFOSA)	µg/L	0.05 : 0.02 (Interlab)	<-0.05	<-0.02	0	<-0.05	<-0.02	0	<-0.05	<-0.02	0	<-0.05	<-0.02	0
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<-0.05	<-0.05	0	<-0.05	<-0.05	0	<-0.05	<-0.05	0	<-0.05	<-0.05	0
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<-0.02	<-0.01	0	<-0.02	<-0.01	0	<-0.02	<-0.01	0	<-0.02	<-0.01	0
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	<-0.02	<-0.01	0	<-0.02	<-0.01	0	<-0.02	<-0.01	0	<-0.02	<-0.01	0
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EiFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<-0.02	<-0.01	0	<-0.02	<-0.01	0	<-0.02	<-0.01	0	<-0.02	<-0.01	0
	Sum of PFAS	µg/L	0.01	0.04	<-0.03	0	2.36	2.36	0	<-0.01	<-0.03	0	0.79	0.846	7
	Sum of PFAS (WA DER List)	µg/L	0.01	0.04	-	-	2.2	-	-	<-0.01	-	-	0.76	-	-

**High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 200 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR)
 ***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row head

Relative Percentage Difference Table

Lab Report Number	EM2115885	RN1327474		EM2115885	RN1327474		EM2115885	RN1327474		EM2115885	RN1327474	
Field ID	0939_SW018_210804	0939_QC206_210804	RPD	0939_MW4035_210805	0939_QC207_210805	RPD	0939_SW012_210806	0939_QC208_210806	RPD	0939_MW4013_210806	0939_QC209_210806	RPD
Sample Date	4/08/2021	4/08/2021		5/08/2021	5/08/2021		6/08/2021	6/08/2021		6/08/2021	6/08/2021	
Sample Type	Primary	Interlab Dup		Primary	Interlab Dup		Primary	Interlab Dup		Primary	Interlab Dup	

Reporting Group	Analyte	Units	LOR												
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	0.02	<0.02	0	13.7	10	31	0.03	0.036	18	3.98	2.0	31
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	0	0.32	0.28	13	<0.01	<0.01	0	0.11	0.099	11
	Sum of PFHxS and PFOS	µg/L	0.01	0.02	<0.03	0	20.1	15.8	24	0.03	0.047	44	6.33	5	23
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	6.4	5.8	10	<0.02	0.011	179	2.35	2.1	11
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0
	6:2 Fluorotelomer Sulfonate (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.04	<0.01	0	<0.02	<0.01	0	<0.04	<0.01	0
	Perfluorotridecanoic acid (PFTDA)	µg/L	0.02	<0.02	<0.02	0	<0.04	<0.02	0	<0.02	<0.02	0	<0.04	<0.02	0
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	0	<0.09	<0.02	0	<0.05	<0.02	0	<0.09	<0.02	0
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	0.62	0.5	21	<0.02	<0.01	0	0.26	0.23	12
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	0	0.15	0.13	14	<0.02	<0.02	0	0.12	0.12	143
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.04	<0.01	0	<0.02	<0.01	0	<0.04	<0.01	0
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	0.84	0.69	20	<0.02	<0.01	0	0.36	0.32	12
	Perfluorohexane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	0.49	0.39	23	<0.02	<0.01	0	0.09	0.091	128
	Perfluorooheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	0.13	0.12	8	<0.02	<0.01	0	<0.04	0.047	81
	Perfluorododecane sulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.04	<0.01	0	<0.02	<0.01	0	<0.04	<0.01	0
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.04	<0.01	0	<0.02	<0.01	0	<0.04	<0.01	0
	Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.04	<0.01	0	<0.02	<0.01	0	<0.04	<0.01	0
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	0.78	0.45	54	<0.02	<0.01	0	0.22	0.21	5
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.05	0	<0.2	0.13	0	<0.1	<0.05	0	<0.2	0.13	26
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	0	<0.09	<0.02	0	<0.05	<0.02	0	<0.09	<0.02	0
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.09	<0.05	0	<0.05	<0.05	0	<0.09	<0.05	0
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	0	<0.09	<0.02	0	<0.05	<0.02	0	<0.09	<0.02	0
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.09	<0.05	0	<0.05	<0.05	0	<0.09	<0.05	0
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.04	<0.01	0	<0.02	<0.01	0	<0.04	<0.01	0
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.04	<0.01	0	<0.02	<0.01	0	<0.04	<0.01	0
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.04	<0.01	0	<0.02	<0.01	0	<0.04	<0.01	0
	Sum of PFAS	µg/L	0.01	0.02	<0.03	0	23.4	16.3	0	0.03	0.05	50	7.49	6.25	18
	Sum of PFAS (WA DER List)	µg/L	0.01	0.02	-	-	22.3	-	-	0.03	-	-	7.14	-	-

**High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 200 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x L)
 ***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row head

Relative Percentage Difference Table

		EM2116269			RN1327475			EM2116269			RN1328532			EM2116269			RN1328532		
		0939_MW2184_210812			0939_QC210_210812			0939_MW2177_210812			0309_QC213_210813			0939_QC114_210813			0309_QC214_210813		
		12/08/2021			12/08/2021			12/08/2021			13/08/2021			13/08/2021			13/08/2021		
		Primary			Interlab Dup			Primary			Interlab Dup			Primary			Interlab Dup		
Reporting Group	Analyte	Units	LOR																
PFAS	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01 : 0.02 (Interlab)	0.8	1	22	4.13	0.85	132	37.7	44	15	<0.01	<0.02	0				
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	0	0.15	<0.01	175	0.44	0.49	11	<0.01	<0.01	0				
	Sum of PFHxS and PFOS	µg/L	0.01	0.82	1.033	23	7.64	0.912	157	40.2	46.8	15	<0.03	<0.03	0				
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02 : 0.01 (Interlab)	0.02	0.033	49	3.51	0.031	196	2.48	2.8	12	<0.02	<0.01	0				
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0				
	6:2 Fluorotelomer Sulfonate (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0				
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0				
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0	<0.05	<0.01	0				
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.04	<0.01	0	<0.04	<0.01	0	<0.02	<0.01	0				
	Perfluorotridecanoic acid (PFTeDA)	µg/L	0.02	<0.02	<0.02	0	<0.04	<0.02	0	<0.04	<0.02	0	<0.02	<0.02	0				
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	0	<0.09	<0.02	0	<0.1	<0.02	0	<0.05	<0.02	0				
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	0.21	<0.01	182	0.19	0.19	0	<0.02	<0.01	0				
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	0	0.07	<0.02	111	0.06	0.093	43	<0.02	<0.02	0				
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.04	<0.01	0	<0.04	<0.01	0	<0.02	<0.01	0				
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	0.61	<0.01	194	0.37	0.42	13	<0.02	<0.01	0				
	Perfluorheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	0.29	<0.01	187	0.62	0.6	3	<0.02	<0.01	0				
	Perfluorheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	0.05	<0.01	133	0.07	0.079	12	<0.02	<0.01	0				
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.04	<0.01	0	0.52	0.063	157	<0.02	<0.01	0				
	Perfluorodecanoic acid (PFDoDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.04	<0.01	0	<0.04	<0.01	0	<0.02	<0.01	0				
	Perfluorodecanoic acid (PFDA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.04	<0.01	0	<0.04	<0.01	0	<0.02	<0.01	0				
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	0.14	<0.01	173	0.15	0.17	13	<0.02	<0.01	0				
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.05	0	<0.2	<0.05	0	<0.2	0.088	0	<0.1	<0.05	0				
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	0	<0.09	<0.02	0	<0.1	<0.02	0	<0.05	<0.02	0				
	N-Ethyl perfluorooctane sulfonamidoethanol (EiFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.09	<0.05	0	<0.1	<0.05	0	<0.05	<0.05	0				
	N-Ethyl perfluorooctane sulfonamide (EiFOSA)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	0	<0.09	<0.02	0	<0.1	<0.02	0	<0.05	<0.02	0				
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.09	<0.05	0	<0.1	<0.05	0	<0.05	<0.05	0				
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.04	<0.01	0	<0.04	<0.01	0	<0.02	<0.01	0				
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.04	<0.01	0	0.48	0.51	6	<0.02	<0.01	0				
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EiFOSA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	0	<0.04	<0.01	0	<0.04	<0.01	0	<0.02	<0.01	0				
	Sum of PFAS	µg/L	0.01	0.82	1.033	23	9.16	1.793	2	43.1	49.503	14	<0.03	<0.03	0				
	Sum of PFAS (WA DER List)	µg/L	0.01	0.82	-	-	8.66	-	-	41.3	-	-	-	-	-				

**High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 200 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR)
 ***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row head

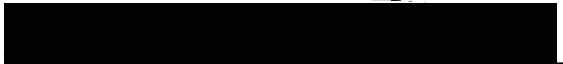
Appendix D

Chain of Custody

Appendix D Chain of Custody



Custody Document for Submissions via ALS Compass App

Project: SA-0939_PFA5amp. Client: Department of Defence Project Manager: 

Phone:

ALS Compass CDC Reference: 26304 # Samples: 65

Sampler:



Phone:

Turnaround Requirements: Standard Urgent

Special Instructions:

Issues with ALS Compass & Sample names after refreshing the app. All sampler should be 0939_MWxxx-2108yy (or ~~0939~~ 0939-QCxxx-2108yy for QC samples).
Bottles are labelled with correct location ~~names~~ names.

Custody:

Relinquished by: 	Received by: 	Relinquished by:	Received by:
Date / Time: 16/8/21	Date / Time: 17/8 13:00	Date / Time:	Date / Time:

SCANNED



ALS Use Only

Custody Document for Submissions via ALS Compass App

Project: SA-0939-PFASOMP
~~129820~~

Client: Department of Defence

Project Manager:

Phone:

ALS Compass COC Reference: 26304

Samples: 65

Sampler:



Phone:

Turnaround Requirements: Standard Urgent

Special Instructions:

ALS Compass app appears to have removed some of the sample names from the COC. All samples should be named 0939-MWxxxx-2108YY (bottles are labelled with location name), xxxx is location & YY is sample date.

Custody:

Relinquished by:  Date / Time: <u>16/8/21</u>	Received by:  Date / Time: <u>17/8 13:00</u>	Relinquished by: Date / Time:	Received by: Date / Time:
---	---	----------------------------------	------------------------------

CHAIN OF CUSTODY
 ALS COC#: 26304 ALS Laboratory: EM Melbourne

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: SA_0939_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

PROJECT MANAGER:
 PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

Random Sample Temperature on Receipt: °C
 Other comments:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0939_SW006_210812		12/08/2021 09:26 AM	Water	ALS: 2 Non ALS: 0	No	X		
002	0939_MW2197_210812		12/08/2021 09:55 AM	Water	ALS: 2 Non ALS: 0	No	X		
003	0939_MW2499_210812		12/08/2021 10:08 AM	Water	ALS: 2 Non ALS: 0	No	X		
004	0939_MW2149_210812		12/08/2021 10:20 AM	Water	ALS: 2 Non ALS: 0	No	X		
005	0939_MW2193_210812		12/08/2021 10:39 AM	Water	ALS: 2 Non ALS: 0	No	X		
006	0939_MW2194_210812		12/08/2021 11:09 AM	Water	ALS: 2 Non ALS: 0	No	X		
007	0939_MW2150_210812		12/08/2021 11:27 AM	Water	ALS: 2 Non ALS: 0	No	X		
008	0939_MW2112_210812	Extra vol for lab qc	12/08/2021 11:52 AM	Water	ALS: 4 Non ALS: 0	No	X		
009	0939_MW2137_210812		12/08/2021 12:08 PM	Water	ALS: 4 Non ALS: 0	No	X		

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: SA_0939_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
010	0939_MW2286_210812		12/08/2021 12:24 PM	Water	ALS: 2 Non ALS: 0	No	X		
011	0939_MW2281_210812		12/08/2021 12:34 PM	Water	ALS: 2 Non ALS: 0	No	X		
012	0939_MW2184_210812		12/08/2021 12:45 PM	Water	ALS: 2 Non ALS: 0	No	X		
013	0939_QC110_210812		12/08/2021 12:45 PM	Water	ALS: 2 Non ALS: 0	No	X		
014	0939_QC210_210812	Please forward to NMI	12/08/2021 12:46 PM	Water	ALS: 2 Non ALS: 0	Yes	-		
015	0939_MW2185_210812		12/08/2021 12:55 PM	Water	ALS: 2 Non ALS: 0	No	X		
016	0939_MW2183_210812		12/08/2021 01:09 PM	Water	ALS: 2 Non ALS: 0	No	X		
017	0939_MW2285_210812		12/08/2021 01:27 PM	Water	ALS: 2 Non ALS: 0	No	X		
018	0939_MW2180_210812		12/08/2021 01:46 PM	Water	ALS: 2 Non ALS: 0	No	X		

CHAIN OF CUSTODY
 (ALS) COC#: 26304 ALS Laboratory: EM Melbourne

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: SA_0939_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	0939_MW2177_210812		12/08/2021 02:44 PM	Water	ALS: 2 Non ALS: 0	No	X		
020	0939_QC111_210812		12/08/2021 02:46 PM	Water	ALS: 2 Non ALS: 0	No	X		
021	0939_QC211_210812	Please forward to NMI	12/08/2021 02:46 PM	Water	ALS: 2 Non ALS: 0	Yes	-		
022	0939_MW2175_210812		12/08/2021 02:59 PM	Water	ALS: 2 Non ALS: 0	No	X		
023	0939_MW2176_210812		12/08/2021 03:00 PM	Water	ALS: 2 Non ALS: 0	No	X		
024	0939_MW2172_210812		12/08/2021 03:23 PM	Water	ALS: 2 Non ALS: 0	No	X		
025	0939_MW2173_210812		12/08/2021 03:24 PM	Water	ALS: 2 Non ALS: 0	No	X		
026	0939_MW2145_210812		12/08/2021 03:41 PM	Water	ALS: 2 Non ALS: 0	No	X		
027	0939_MW2129_210812		12/08/2021 03:40 PM	Water	ALS: 2 Non ALS: 0	No	X		

CHAIN OF CUSTODY
 (ALS) COC#: 26304 ALS Laboratory: EM Melbourne

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: SA_0939_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1
 PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

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

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
028	0939_MW2169_210812		12/08/2021 03:59 PM	Water	ALS: 2 Non ALS: 0	No	X		
029	0939_MW2139_210812	Extra vol for lab QC	12/08/2021 04:10 PM	Water	ALS: 4 Non ALS: 0	No	X		
030	0939_MW2182_210812	Extra vol for lab qc	12/08/2021 01:13 PM	Water	ALS: 0 Non ALS: 0	No	X		
031	0939_MW2275_210812		12/08/2021 01:33 PM	Water	ALS: 0 Non ALS: 0	No	X		
032	0939_MW2126_210812		12/08/2021 04:50 PM	Water	ALS: 2 Non ALS: 0	No	X		
033	0939_MW2358_210812		12/08/2021 04:58 PM	Water	ALS: 2 Non ALS: 0	No	X		
034	0939_QC112_210812		12/08/2021 04:59 PM	Water	ALS: 2 Non ALS: 0	No	X		
035	0939_QC212_210812	Please forward to NMI	12/08/2021 04:59 PM	Water	ALS: 2 Non ALS: 0	Yes	-		
036	0939_MW2162_210812		12/08/2021 05:10 PM	Water	ALS: 2 Non ALS: 0	No	X		

62
63

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: SA_0939_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

Random Sample Temperature on Receipt: C
 Other comments:

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
037	0939_MW2411_210812		12/08/2021 05:19 PM	Water	ALS: 2 Non ALS: 0	No	X		
038	0939_MW2394_210812		12/08/2021 05:32 PM	Water	ALS: 2 Non ALS: 0	No	X		
039	0939_QC310_210812		12/08/2021 07:02 PM	Water	ALS: 2 Non ALS: 0	No	X		
040	0939_QC311_210812		12/08/2021 07:02 PM	Water	ALS: 2 Non ALS: 0	No	X		
041	0939_QC312_210812		12/08/2021 07:02 PM	Water	ALS: 2 Non ALS: 0	No	X		
042	0939_MW2188_210813		13/08/2021 09:48 AM	Water	ALS: 2 Non ALS: 0	No	X		
043	0939_MW2189_210813		13/08/2021 09:48 AM	Water	ALS: 2 Non ALS: 0	No	X		
044	0939_MW2202_210813		13/08/2021 10:31 AM	Water	ALS: 2 Non ALS: 0	No	X		
045	0939_MW2201_210813		13/08/2021 10:39 AM	Water	ALS: 2 Non ALS: 0	No	X		

**CHAIN OF CUSTODY**

COC#: 26304

ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE DETAILS**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED		ADDITIONAL INFORMATION
							PFAS Waters WATER	ALTERNATIVE ANALYSIS	
046	0939_MW2270_210813		13/08/2021 10:52 AM	Water	ALS: 2 Non ALS: 0	No	X		
047	0939_MW2120_210813		13/08/2021 10:53 AM	Water	ALS: 2 Non ALS: 0	No	X		
048	0939_QC113_210813		13/08/2021 10:53 AM	Water	ALS: 2 Non ALS: 0	No	X		
049	0939_QC213_210813		13/08/2021 10:54 AM	Water	ALS: 2 Non ALS: 0	No	X		
050	0939_MW2200_210813		13/08/2021 10:56 AM	Water	ALS: 2 Non ALS: 0	No	X		
051	0939_SW003_210813		13/08/2021 11:37 AM	Water	ALS: 2 Non ALS: 0	No	X		
052	0939_QC114_210813		13/08/2021 11:38 AM	Water	ALS: 2 Non ALS: 0	No	X		
053	0939_QC214_210813		13/08/2021 11:38 AM	Water	ALS: 2 Non ALS: 0	No	X		
054	0939_SW017_210813		13/08/2021 11:55 AM	Water	ALS: 2 Non ALS: 0	No	X		

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

CONTACT PH: SAMPLER MOBILE:
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: SA_0939_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1
 PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
055	0939_MW2203_210813	Extra volume for lab qc	13/08/2021 04:00 PM	Water	ALS: 2 Non ALS: 0	No	X		
056	0939_QC313_210813		13/08/2021 09:31 PM	Water	ALS: 2 Non ALS: 0	No	X		
057	0939_QC413_210813		13/08/2021 04:12 PM	Water	ALS: 2 Non ALS: 0	No	X		
058	0939_QC504_210812		12/08/2021 09:00 AM	Water	ALS: 2 Non ALS: 0	No	X		
059	0939_QC410_210812		12/08/2021 10:30 AM	Water	ALS: 2 Non ALS: 0	No	X		
060	0939_QC411_210812		12/08/2021 03:00 PM	Water	ALS: 2 Non ALS: 0	No	X		
061	0939_QC412_210812		12/08/2021 05:36 PM	Water	ALS: 2 Non ALS: 0	No	X		
062	0939_MW2182_210812	Extra vol for lab qc. Please check bottle for location name, the app glitched	12/08/2021 01:13 PM	Water	ALS: 4 Non ALS: 0	No	X		
063	0939_MW2275_210812	Please check bottle for location name, the app glitched	12/08/2021 01:33 PM	Water	ALS: 2 Non ALS: 0	No	X		

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: SA_0939_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1
 PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

CONTACT PH: [REDACTED] SAMPLER MOBILE: / ES2019AECOMAU003
 QUOTE NO: SY/139/19 V3

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

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
064	0939_MW2166_210812	Extra vol for lab QC	12/08/2021 04:26 PM	Water	ALS: 4 Non ALS: 0	No	X		
065	0939_QC505_210813		13/08/2021 09:30 AM	Water	ALS: 2 Non ALS: 0	No	X		

66. 0939 - SW054
 67. 0939 - SW054.

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: SA_0939_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE:
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

Random Sample Temperature on Receipt: °C
 Other comments:

EMAIL INVOICES TO: [REDACTED]

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0939_SW006_210812	HDPE (no PTFE)	20 mL	00352101063351	Grey	No	
001	0939_SW006_210812	HDPE (no PTFE)	20 mL	00352101063438	Grey	No	
002	0939_MW2197_210812	HDPE (no PTFE)	20 mL	00352101063294	Grey	No	
002	0939_MW2197_210812	HDPE (no PTFE)	20 mL	00352101061493	Grey	No	
003	0939_MW2499_210812	HDPE (no PTFE)	20 mL	00352101061397	Grey	No	
003	0939_MW2499_210812	HDPE (no PTFE)	20 mL	00352101061425	Grey	No	
004	0939_MW2149_210812	HDPE (no PTFE)	20 mL	00352101063292	Grey	No	
004	0939_MW2149_210812	HDPE (no PTFE)	20 mL	00352101063312	Grey	No	
005	0939_MW2193_210812	HDPE (no PTFE)	20 mL	00352101074390	Grey	No	
005	0939_MW2193_210812	HDPE (no PTFE)	20 mL	00352101061268	Grey	No	
006	0939_MW2194_210812	HDPE (no PTFE)	20 mL	00352010058323	Grey	No	
006	0939_MW2194_210812	HDPE (no PTFE)	20 mL	00352010058398	Grey	No	
007	0939_MW2150_210812	HDPE (no PTFE)	20 mL	00352101063375	Grey	No	
007	0939_MW2150_210812	HDPE (no PTFE)	20 mL	00352101061476	Grey	No	
008	0939_MW2112_210812	HDPE (no PTFE)	20 mL	00352101063376	Grey	No	
008	0939_MW2112_210812	HDPE (no PTFE)	20 mL	00352101063219	Grey	No	
008	0939_MW2112_210812	HDPE (no PTFE)	20 mL	00352101061394	Grey	No	
008	0939_MW2112_210812	HDPE (no PTFE)	20 mL	00352101063227	Grey	No	
009	0939_MW2137_210812	HDPE (no PTFE)	20 mL	00352101063430	Grey	No	
009	0939_MW2137_210812	HDPE (no PTFE)	20 mL	00352101061317	Grey	No	
009	0939_MW2137_210812	HDPE (no PTFE)	20 mL	00352101074342	Grey	No	
009	0939_MW2137_210812	HDPE (no PTFE)	20 mL	00352101074372	Grey	No	
010	0939_MW2286_210812	HDPE (no PTFE)	20 mL	00352101063412	Grey	No	
010	0939_MW2286_210812	HDPE (no PTFE)	20 mL	00352101074348	Grey	No	
011	0939_MW2281_210812	HDPE (no PTFE)	20 mL	00352101061341	Grey	No	
011	0939_MW2281_210812	HDPE (no PTFE)	20 mL	00352101063321	Grey	No	

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: SA_0939_PFSOMP
 SITE: SA_0939_PFSOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

EMAIL INVOICES TO: [REDACTED]

012	0939_MW2184_210812	HDPE (no PTFE)	20 mL	00352101064198	Grey	No	
012	0939_MW2184_210812	HDPE (no PTFE)	20 mL	00352101064110	Grey	No	
013	0939_QC110_210812	HDPE (no PTFE)	20 mL	00352101064209	Grey	No	
013	0939_QC110_210812	HDPE (no PTFE)	20 mL	00352101064254	Grey	No	
014	0939_QC210_210812	HDPE (no PTFE)	20 mL	00352101064288	Grey	No	
014	0939_QC210_210812	HDPE (no PTFE)	20 mL	00352101064214	Grey	No	
015	0939_MW2185_210812	HDPE (no PTFE)	20 mL	00352101064125	Grey	No	
015	0939_MW2185_210812	HDPE (no PTFE)	20 mL	00352101064061	Grey	No	
016	0939_MW2183_210812	HDPE (no PTFE)	20 mL	00352101064275	Grey	No	
016	0939_MW2183_210812	HDPE (no PTFE)	20 mL	00352101064311	Grey	No	
017	0939_MW2285_210812	HDPE (no PTFE)	20 mL	00352101063229	Grey	No	
017	0939_MW2285_210812	HDPE (no PTFE)	20 mL	00352101061503	Grey	No	
018	0939_MW2180_210812	HDPE (no PTFE)	20 mL	00352101064306	Grey	No	
018	0939_MW2180_210812	HDPE (no PTFE)	20 mL	00352101064312	Grey	No	
019	0939_MW2177_210812	HDPE (no PTFE)	20 mL	00352101064248	Grey	No	
019	0939_MW2177_210812	HDPE (no PTFE)	20 mL	00352101064324	Grey	No	
020	0939_QC111_210812	HDPE (no PTFE)	20 mL	00352101064210	Grey	No	
020	0939_QC111_210812	HDPE (no PTFE)	20 mL	00352101064252	Grey	No	
021	0939_QC211_210812	HDPE (no PTFE)	20 mL	00352101064295	Grey	No	
021	0939_QC211_210812	HDPE (no PTFE)	20 mL	00352101064323	Grey	No	
022	0939_MW2175_210812	HDPE (no PTFE)	20 mL	00352101061245	Grey	No	
022	0939_MW2175_210812	HDPE (no PTFE)	20 mL	00352101063196	Grey	No	
023	0939_MW2176_210812	HDPE (no PTFE)	20 mL	00352101064236	Grey	No	
023	0939_MW2176_210812	HDPE (no PTFE)	20 mL	00352101064121	Grey	No	
024	0939_MW2172_210812	HDPE (no PTFE)	20 mL	00352101064296	Grey	No	
024	0939_MW2172_210812	HDPE (no PTFE)	20 mL	00352101064329	Grey	No	
025	0939_MW2173_210812	HDPE (no PTFE)	20 mL	00352101064150	Grey	No	

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFSOMP

SITE: SA_0939_PFSOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

025	0939_MW2173_210812	HDPE (no PTFE)	20 mL	00352101064059	Grey	No	
026	0939_MW2145_210812	HDPE (no PTFE)	20 mL	00352101064244	Grey	No	
026	0939_MW2145_210812	HDPE (no PTFE)	20 mL	00352101064215	Grey	No	
027	0939_MW2129_210812	HDPE (no PTFE)	20 mL	00352101064227	Grey	No	
027	0939_MW2129_210812	HDPE (no PTFE)	20 mL	00352101064241	Grey	No	
028	0939_MW2169_210812	HDPE (no PTFE)	20 mL	00352101064208	Grey	No	
028	0939_MW2169_210812	HDPE (no PTFE)	20 mL	00352101064205	Grey	No	
029	0939_MW2139_210812	HDPE (no PTFE)	20 mL	00352101064231	Grey	No	
029	0939_MW2139_210812	HDPE (no PTFE)	20 mL	00352101064279	Grey	No	
029	0939_MW2139_210812	HDPE (no PTFE)	20 mL	00352101064224	Grey	No	
029	0939_MW2139_210812	HDPE (no PTFE)	20 mL	00352101064074	Grey	No	
032	0939_MW2126_210812	HDPE (no PTFE)	20 mL	00352101064192	Grey	No	
032	0939_MW2126_210812	HDPE (no PTFE)	20 mL	00352101064308	Grey	No	
033	0939_MW2358_210812	HDPE (no PTFE)	20 mL	00352101064132	Grey	No	
033	0939_MW2358_210812	HDPE (no PTFE)	20 mL	00352101064130	Grey	No	
034	0939_QC112_210812	HDPE (no PTFE)	20 mL	00352101064249	Grey	No	
034	0939_QC112_210812	HDPE (no PTFE)	20 mL	00352101064046	Grey	No	
035	0939_QC212_210812	HDPE (no PTFE)	20 mL	00352101064076	Grey	No	
035	0939_QC212_210812	HDPE (no PTFE)	20 mL	00352101063415	Grey	No	
036	0939_MW2162_210812	HDPE (no PTFE)	20 mL	00352101064122	Grey	No	
036	0939_MW2162_210812	HDPE (no PTFE)	20 mL	00352101064271	Grey	No	
037	0939_MW2411_210812	HDPE (no PTFE)	20 mL	00352101064190	Grey	No	
037	0939_MW2411_210812	HDPE (no PTFE)	20 mL	00352101064267	Grey	No	
038	0939_MW2394_210812	HDPE (no PTFE)	20 mL	00352101064237	Grey	No	
038	0939_MW2394_210812	HDPE (no PTFE)	20 mL	00352101064142	Grey	No	
039	0939_QC310_210812	HDPE (no PTFE)	20 mL	00352101064326	Grey	No	
039	0939_QC310_210812	HDPE (no PTFE)	20 mL	00352101064082	Grey	No	



CHAIN OF CUSTODY

COC#: 26304 ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

°C

Other comments:

ID	Sample ID	Material	Volume	Barcode	Color	Seal Intact	Free Ice	Temp	Comments
040	0939_QC311_210812	HDPE (no PTFE)	20 mL	00352101064202	Grey	No			
040	0939_QC311_210812	HDPE (no PTFE)	20 mL	00352101064173	Grey	No			
041	0939_QC312_210812	HDPE (no PTFE)	20 mL	00352101064286	Grey	No			
041	0939_QC312_210812	HDPE (no PTFE)	20 mL	00352101064103	Grey	No			
042	0939_MW2188_210813	HDPE (no PTFE)	20 mL	00352101063291	Grey	No			
042	0939_MW2188_210813	HDPE (no PTFE)	20 mL	00352101063409	Grey	No			
043	0939_MW2189_210813	HDPE (no PTFE)	20 mL	00352101064106	Grey	No			
043	0939_MW2189_210813	HDPE (no PTFE)	20 mL	00352101064201	Grey	No			
044	0939_MW2202_210813	HDPE (no PTFE)	20 mL	00352101064204	Grey	No			
044	0939_MW2202_210813	HDPE (no PTFE)	20 mL	00352101064220	Grey	No			
045	0939_MW2201_210813	HDPE (no PTFE)	20 mL	00352101064128	Grey	No			
045	0939_MW2201_210813	HDPE (no PTFE)	20 mL	00352101064292	Grey	No			
046	0939_MW2270_210813	HDPE (no PTFE)	20 mL	00352101064315	Grey	No			
046	0939_MW2270_210813	HDPE (no PTFE)	20 mL	00352101064334	Grey	No			
047	0939_MW2120_210813	HDPE (no PTFE)	20 mL	00352101064212	Grey	No			
047	0939_MW2120_210813	HDPE (no PTFE)	20 mL	00352101064117	Grey	No			
048	0939_QC113_210813	HDPE (no PTFE)	20 mL	00352101064073	Grey	No			
048	0939_QC113_210813	HDPE (no PTFE)	20 mL	00352101064289	Grey	No			
049	0939_QC213_210813	HDPE (no PTFE)	20 mL	00352101064339	Grey	No			
049	0939_QC213_210813	HDPE (no PTFE)	20 mL	00352101064042	Grey	No			
050	0939_MW2200_210813	HDPE (no PTFE)	20 mL	00352101064260	Grey	No			
050	0939_MW2200_210813	HDPE (no PTFE)	20 mL	00352101064256	Grey	No			
051	0939_SW003_210813	HDPE (no PTFE)	20 mL	00352101064069	Grey	No			
051	0939_SW003_210813	HDPE (no PTFE)	20 mL	00352101064178	Grey	No			
052	0939_QC114_210813	HDPE (no PTFE)	20 mL	00352101064172	Grey	No			
052	0939_QC114_210813	HDPE (no PTFE)	20 mL	00352101064137	Grey	No			
053	0939_QC214_210813	HDPE (no PTFE)	20 mL	00352101064287	Grey	No			

CHAIN OF CUSTODY

ALS COC#: 26304 ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003

LABORATORY USE ONLY (Circle)

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

°C

Other comments:

ID	Sample ID	Material	Volume	Barcode	Color	Seal	Temp	Comments
053	0939_QC214_210813	HDPE (no PTFE)	20 mL	00352101064284	Grey	No		
054	0939_SW017_210813	HDPE (no PTFE)	20 mL	00352101064186	Grey	No		
054	0939_SW017_210813	HDPE (no PTFE)	20 mL	00352101064221	Grey	No		
055	0939_MW2203_210813	HDPE (no PTFE)	20 mL	00352101064197	Grey	No		
055	0939_MW2203_210813	HDPE (no PTFE)	20 mL	00352101064144	Grey	No		
056	0939_QC313_210813	HDPE (no PTFE)	20 mL	00352101064320	Grey	No		
056	0939_QC313_210813	HDPE (no PTFE)	20 mL	00352101064095	Grey	No		
057	0939_QC413_210813	HDPE (no PTFE)	20 mL	00352101064134	Grey	No		
057	0939_QC413_210813	HDPE (no PTFE)	20 mL	00352101064229	Grey	No		
058	0939_QC504_210812	HDPE (no PTFE)	20 mL	00352101064233	Grey	No		
058	0939_QC504_210812	HDPE (no PTFE)	20 mL	00352101064118	Grey	No		
059	0939_QC410_210812	HDPE (no PTFE)	20 mL	00352101064222	Grey	No		
059	0939_QC410_210812	HDPE (no PTFE)	20 mL	00352101064155	Grey	No		
060	0939_QC411_210812	HDPE (no PTFE)	20 mL	00352101064191	Grey	No		
060	0939_QC411_210812	HDPE (no PTFE)	20 mL	00352101064181	Grey	No		
061	0939_QC412_210812	HDPE (no PTFE)	20 mL	00352101064219	Grey	No		
061	0939_QC412_210812	HDPE (no PTFE)	20 mL	00352101064259	Grey	No		
062	0939_MW2182_210812	HDPE (no PTFE)	20 mL	00352101061477	Grey	No		
062	0939_MW2182_210812	HDPE (no PTFE)	20 mL	00352101063256	Grey	No		
062	0939_MW2182_210812	HDPE (no PTFE)	20 mL	00352101063309	Grey	No		
062	0939_MW2182_210812	HDPE (no PTFE)	20 mL	00352101063347	Grey	No		
063	0939_MW2275_210812	HDPE (no PTFE)	20 mL	00352101064189	Grey	No		
063	0939_MW2275_210812	HDPE (no PTFE)	20 mL	00352101064143	Grey	No		
064	0939_MW2166_210812	HDPE (no PTFE)	20 mL	00352101064318	Grey	No		
064	0939_MW2166_210812	HDPE (no PTFE)	20 mL	00352101064146	Grey	No		
064	0939_MW2166_210812	HDPE (no PTFE)	20 mL	00352010039889	Grey	No		
064	0939_MW2166_210812	HDPE (no PTFE)	20 mL	00352010039884	Grey	No		

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

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: SA_0939_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

LABORATORY USE ONLY (Circle)

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

PROJECT MANAGER: [REDACTED] CONTACT PH: SAMPLER MOBILE:
 PRIMARY SAMPLER: [REDACTED] QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0
 EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

065	0939_QC505_210813	HDPE (no PTFE)	20 mL	00352101064340	Grey	No	
065	0939_QC505_210813	HDPE (no PTFE)	20 mL	00352101064327	Grey	No	

Total Bottle Count: ALS: 136, Non ALS: 0

COC uploaded on 12/08/2021 @ 13:09



FREIGHT



Environmental Division
Melbourne
Work Order Reference
EM2115885



Telephone : +61-3-8549 9600

Custody Document for Submissions via ALS Compass App

Project: SA-0939-PFASOMP Client: Department of Defence Project Manager: [Redacted]
Phone: [Redacted]

ALS Compass COC Reference: 25860 # Samples: 114 Sampler: [Redacted]
26141, 26142, 26143 Phone: [Redacted]

Turnaround Requirements: Standard _____ Urgent _____

Special Instructions:

please see notes for samples with additional volume for lab QC.

Forwarded to
Secondary Lab (NMI Sydney)
Initiated Date 13/8

Custody:

Relinquished by: [Redacted]	Received by:	Relinquished by:	Received by: [Redacted]
Date / Time: <u>9/8/21</u>	Date / Time:	Date / Time:	Date / Time: <u>11/8, 12:30</u>

**CHAIN OF CUSTODY**

ALS COC#: 25860 ALS Laboratory: EM Melbourne

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER: [REDACTED]
PRIMARY SAMPLER: [REDACTED]CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
0

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE DETAILS**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0939_MW2116_210802		02/08/2021 09:33 AM	Water	ALS: 2 Non ALS: 0	No	X		
002	0939_MW2490_210802		02/08/2021 09:58 AM	Water	ALS: 2 Non ALS: 0	No	X		
003	0939_MW2284_210802		02/08/2021 10:23 AM	Water	ALS: 2 Non ALS: 0	No	X		
004	0939_MW2272_210802		02/08/2021 10:43 AM	Water	ALS: 2 Non ALS: 0	No	X		
005	0939_MW2148_210802		02/08/2021 10:52 AM	Water	ALS: 2 Non ALS: 0	No	X		
006	0939_MW2158_210802		02/08/2021 11:00 AM	Water	ALS: 2 Non ALS: 0	No	X		
007	0939_MW2501_210802	Extra volume for lab QC	02/08/2021 11:28 AM	Water	ALS: 4 Non ALS: 0	No	X		
008	0661_MW2325_210802	Extra volume for lab QC	02/08/2021 11:46 AM	Water	ALS: 4 Non ALS: 0	No	X		
009	0939_MW2218_210802		02/08/2021 12:07 PM	Water	ALS: 2 Non ALS: 0	No	X		

**CHAIN OF CUSTODY**

COC#: 25860

ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:



PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

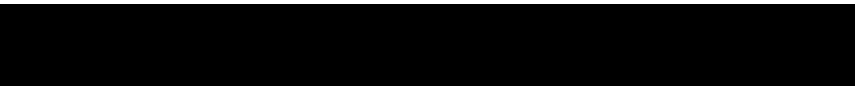
Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

EMAIL REPORTS TO:



EMAIL INVOICES TO:

SAMPLE DETAILS**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
010	0939_QC101_210802		02/08/2021 12:22 PM	Water	ALS: 2 Non ALS: 0	No	X		
011	0939_MW2134_210802		02/08/2021 12:24 PM	Water	ALS: 2 Non ALS: 0	No	X		
012	0939_QC201_210802	Please forward to NMI	02/08/2021 12:24 PM	Water	ALS: 2 Non ALS: 0	Yes	-		
013	0939_MW2216_210802		02/08/2021 12:48 PM	Water	ALS: 2 Non ALS: 0	No	X		
014	0939_MW2135_210802		02/08/2021 12:49 PM	Water	ALS: 2 Non ALS: 0	No	X		
015	0939_MW2130_210802		02/08/2021 01:19 PM	Water	ALS: 2 Non ALS: 0	No	X		
016	0939_MW2210_210802	Extra volume for lab QC	02/08/2021 01:35 PM	Water	ALS: 4 Non ALS: 0	No	X		
017	0939_MW2131_210802		02/08/2021 01:40 PM	Water	ALS: 2 Non ALS: 0	No	X		
018	0939_MW2528_210802		02/08/2021 01:56 PM	Water	ALS: 2 Non ALS: 0	No	X		

**CHAIN OF CUSTODY**

COC#: 25860 ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE DETAILS**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	0939_MW2157_210802		02/08/2021 02:04 PM	Water	ALS: 2 Non ALS: 0	No	X		
020	0939_MW2209_210802		02/08/2021 02:15 PM	Water	ALS: 2 Non ALS: 0	No	X		
021	0939_MW2114_210802		02/08/2021 02:25 PM	Water	ALS: 2 Non ALS: 0	No	X		
022	0939_MW4218_210802		02/08/2021 03:51 PM	Water	ALS: 2 Non ALS: 0	No	X		
023	0939_MW2159_210802		02/08/2021 04:16 PM	Water	ALS: 2 Non ALS: 0	No	X		
024	0939_QC102_210802		02/08/2021 04:25 PM	Water	ALS: 2 Non ALS: 0	No	X		
025	0939_QC202_210802	Please forward to NMI	02/08/2021 04:26 PM	Water	ALS: 2 Non ALS: 0	Yes	-		
026	0939_MW4065_210802		02/08/2021 04:47 PM	Water	ALS: 2 Non ALS: 0	No	X		
027	0939_MW4022_210802		02/08/2021 05:10 PM	Water	ALS: 2 Non ALS: 0	No	X		

**CHAIN OF CUSTODY**

COC#: 25860 ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER: [REDACTED]
PRIMARY SAMPLER: [REDACTED]CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
0

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

SAMPLE DETAILS**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
028	0939_MW4009_210802		02/08/2021 05:17 PM	Water	ALS: 2 Non ALS: 0	No	X		
029	0939_QC301_210802		02/08/2021 05:26 PM	Water	ALS: 2 Non ALS: 0	No	X		
030	0939_QC302_210802		02/08/2021 05:27 PM	Water	ALS: 2 Non ALS: 0	No	X		
031	0939_QC303_210802		02/08/2021 05:28 PM	Water	ALS: 2 Non ALS: 0	No	X		
032	0939_QC401_210802		02/08/2021 05:29 PM	Water	ALS: 2 Non ALS: 0	No	X		
033	0939_QC402_210802		02/08/2021 05:30 PM	Water	ALS: 2 Non ALS: 0	No	X		
034	0939_QC403_210802		02/08/2021 05:31 PM	Water	ALS: 2 Non ALS: 0	No	X		
035	0939_QC501_210802		02/08/2021 05:32 PM	Water	ALS: 2 Non ALS: 0	No	X		
036	0939_MW4021_210803		03/08/2021 09:28 AM	Water	ALS: 2 Non ALS: 0	No	X		

**CHAIN OF CUSTODY**

COC#: 25860 ALS Laboratory: EM Melbourne

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER: [REDACTED]
PRIMARY SAMPLER: [REDACTED]CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
0

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE DETAILS**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
037	0939_MW4020_210803		03/08/2021 09:49 AM	Water	ALS: 2 Non ALS: 0	No	X		
038	0939_MW4071_210803	Extra volume for lab qc	03/08/2021 10:09 AM	Water	ALS: 4 Non ALS: 0	No	X		
039	0939_MW4024_210803	Extra volume for lab qc	03/08/2021 10:13 AM	Water	ALS: 4 Non ALS: 0	No	X		
040	0939_MW4023_210803		03/08/2021 10:14 AM	Water	ALS: 2 Non ALS: 0	No	X		
041	0939_QC103_210803		03/08/2021 10:15 AM	Water	ALS: 2 Non ALS: 0	No	X		
042	0939_QC203_210803	Please forward to NMI	03/08/2021 10:19 AM	Water	ALS: 2 Non ALS: 0	Yes	-		
043	0939_MW4060_210803		03/08/2021 10:48 AM	Water	ALS: 2 Non ALS: 0	No	X		
044	0939_MW4059_210803		03/08/2021 11:13 AM	Water	ALS: 2 Non ALS: 0	No	X		
045	0939_MW4077_210803		03/08/2021 11:18 AM	Water	ALS: 2 Non ALS: 0	No	X		

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: SA_0939_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
046	0939_MW4078_210803		03/08/2021 11:58 AM	Water	ALS: 2 Non ALS: 0	No	X		
047	0939_MW4058_210803		03/08/2021 12:03 PM	Water	ALS: 2 Non ALS: 0	No	X		
048	0939_MW4064_210803		03/08/2021 12:19 PM	Water	ALS: 2 Non ALS: 0	No	X		
049	0939_MW4219_210803		03/08/2021 12:33 PM	Water	ALS: 2 Non ALS: 0	No	X		
050	0939_MW4052_210803		03/08/2021 02:10 PM	Water	ALS: 2 Non ALS: 0	No	X		
051	0939_MW4072_210803	Extra vol for lab QC	03/08/2021 02:21 PM	Water	ALS: 4 Non ALS: 0	No	X		
052	0939_QC104_210803		03/08/2021 02:45 PM	Water	ALS: 2 Non ALS: 0	No	X		
053	0939_MW4041_210803		03/08/2021 02:37 PM	Water	ALS: 2 Non ALS: 0	No	X		
054	0939_QC204_210803	Please forward to NMI sydney	03/08/2021 02:46 PM	Water	ALS: 2 Non ALS: 0	Yes	-		

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: SA_0939_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
055	0939_MW4074_210803		03/08/2021 02:53 PM	Water	ALS: 2 Non ALS: 0	No	X		
056	0939_MW4037_210803		03/08/2021 03:09 PM	Water	ALS: 2 Non ALS: 0	No	X		
057	0939_MW4070_210803		03/08/2021 04:10 PM	Water	ALS: 2 Non ALS: 0	No	X		
058	0939_MW4045_210803		03/08/2021 04:26 PM	Water	ALS: 2 Non ALS: 0	No	X		
059	0939_MW4053_210803		03/08/2021 04:32 PM	Water	ALS: 2 Non ALS: 0	No	X		
060	0939_QC105_210803		03/08/2021 04:32 PM	Water	ALS: 2 Non ALS: 0	No	X		
061	0939_QC205_210803	Please forward to NMI sydney	03/08/2021 04:40 PM	Water	ALS: 2 Non ALS: 0	Yes	-		
062	0939_MW4055_210803	Extra vol for lab QC	03/08/2021 05:06 PM	Water	ALS: 4 Non ALS: 0	No	X		
063	0939_QC304_210803		03/08/2021 05:30 PM	Water	ALS: 2 Non ALS: 0	No	X		

**CHAIN OF CUSTODY**

COC#: 25860

ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

CONTACT PH: [REDACTED]

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

°C

Other comments:

SAMPLE DETAILS**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
064	0939_QC305_210803		03/08/2021 05:30 PM	Water	ALS: 2 Non ALS: 0	No	X		
065	0939_QC404_210803		05/08/2021 12:15 PM	Water	ALS: 2 Non ALS: 0	No	X		
066	0939_QC405_210803		05/08/2021 12:15 PM	Water	ALS: 2 Non ALS: 0	No	X		
067	0939_QC502_210803		05/08/2021 12:16 PM	Water	ALS: 2 Non ALS: 0	No	X		
068	0939_SW062_210804		04/08/2021 09:34 AM	Water	ALS: 2 Non ALS: 0	No	X		
069	0939_SW078_210804		04/08/2021 10:24 AM	Water	ALS: 2 Non ALS: 0	No	X		
070	0939_SW011_210804		04/08/2021 11:01 AM	Water	ALS: 2 Non ALS: 0	No	X		
071	0939_SW059_210804		04/08/2021 11:00 AM	Water	ALS: 2 Non ALS: 0	No	X		
072	0939_SW009_210804	Extra vol for lab QC	04/08/2021 11:21 AM	Water	ALS: 4 Non ALS: 0	No	X		

**CHAIN OF CUSTODY**

ALS COC#: 25860 ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

°C

Other comments:

SAMPLE DETAILS**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
073	0939_SW033_210804	Extra vol for lab QC	04/08/2021 12:00 PM	Water	ALS: 4 Non ALS: 0	No	X		
074	0939_SW032_210804		04/08/2021 12:22 PM	Water	ALS: 2 Non ALS: 0	No	X		
075	0939_SW029_210804		04/08/2021 12:45 PM	Water	ALS: 2 Non ALS: 0	No	X		
076	0939_SW028_210804		04/08/2021 01:04 PM	Water	ALS: 2 Non ALS: 0	No	X		
077	0939_SW050_210804] samples] not received	04/08/2021 01:34 PM	Water	ALS: 2 Non ALS: 0	No	X		
078	0939_SW054_210804		04/08/2021 02:04 PM	Water	ALS: 2 Non ALS: 0	No	X		
079	0939_SW021_210804		04/08/2021 02:06 PM	Water	ALS: 2 Non ALS: 0	No	X		
080	0939_SW019_210804		04/08/2021 02:17 PM	Water	ALS: 2 Non ALS: 0	No	X		
081	0939_SW018_210804	Extra volume for lab QC	04/08/2021 02:30 PM	Water	ALS: 4 Non ALS: 0	No	X		

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: SA_0939_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

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

CONTACT PH: [REDACTED] SAMPLER MOBILE:
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
082	0939_QC106_210804		04/08/2021 02:31 PM	Water	ALS: 2 Non ALS: 0	No	X		
083	0939_QC206_210804	Please forward to NMI	04/08/2021 02:32 PM	Water	ALS: 2 Non ALS: 0	Yes	-		
084	0939_QC306_210804		04/08/2021 03:35 PM	Water	ALS: 2 Non ALS: 0	No	X		
085	0939_QC307_210804		04/08/2021 03:36 PM	Water	ALS: 2 Non ALS: 0	No	X		
086	0939_QC406_210804		04/08/2021 03:37 PM	Water	ALS: 2 Non ALS: 0	No	X		
087	0939_QC407_210804		04/08/2021 03:38 PM	Water	ALS: 2 Non ALS: 0	No	X		
088	0939_QC503_210804		03/08/2021 03:38 PM	Water	ALS: 2 Non ALS: 0	No	X		
089	0939_MW4079_210805		05/08/2021 09:25 AM	Water	ALS: 2 Non ALS: 0	No	X		
090	0939_MW4073_210805		05/08/2021 09:39 AM	Water	ALS: 2 Non ALS: 0	No	X		

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

CONTACT PH:

SAMPLER MOBILE:

PRIMARY SAMPLER:

QUOTE NO: SY/139/19 V3

/ ES2019AECOMAU003
0

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE DETAILS

ANALYSIS REQUIRED

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
091	0939_MW4066_210805		05/08/2021 09:47 AM	Water	ALS: 2 Non ALS: 0	No	X		
092	0939_MW4057_210805		05/08/2021 09:57 AM	Water	ALS: 2 Non ALS: 0	No	X		
093	0939_MW4015_210805		05/08/2021 11:02 AM	Water	ALS: 2 Non ALS: 0	No	X		
094	0939_MW4068_210805		05/08/2021 11:22 AM	Water	ALS: 2 Non ALS: 0	No	X		
095	0939_MW4035_210805		05/08/2021 11:48 AM	Water	ALS: 2 Non ALS: 0	No	X		
096	0939_QC207_210805	Please forward to NMI	05/08/2021 11:49 AM	Water	ALS: 2 Non ALS: 0	Yes	-		
097	0939_QC107_210805		05/08/2021 11:50 AM	Water	ALS: 2 Non ALS: 0	No	X		
098	0939_MW4003_210805		05/08/2021 11:55 AM	Water	ALS: 2 Non ALS: 0	No	X		
099	0939_QC308_210805		05/08/2021 12:04 PM	Water	ALS: 2 Non ALS: 0	No	X		

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: SA_0939_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
100	0939_QC408_210805		05/08/2021 12:23 PM	Water	ALS: 2 Non ALS: 0	No	X		
101	0939_MW4075_210806		06/08/2021 09:50 AM	Water	ALS: 2 Non ALS: 0	No	X		
102	0939_MW4069_210806		06/08/2021 09:59 AM	Water	ALS: 2 Non ALS: 0	No	X		
103	0939_MW4048_210806		06/08/2021 10:13 AM	Water	ALS: 2 Non ALS: 0	No	X		
104	0939_MW4001_210806		06/08/2021 10:24 AM	Water	ALS: 2 Non ALS: 0	No	X		
105	0939_SW010_210806		06/08/2021 10:40 AM	Water	ALS: 2 Non ALS: 0	No	X		
106	0939_SW058_210806		06/08/2021 10:41 AM	Water	ALS: 2 Non ALS: 0	No	X		
107	0939_MW4013_210806	Extra vol for lab qc	06/08/2021 11:15 AM	Water	ALS: 4 Non ALS: 0	No	X		
108	0939_QC108_210806		06/08/2021 11:16 AM	Water	ALS: 2 Non ALS: 0	No	X		

CHAIN OF CUSTODY
 (ALS) COC#: 25860 ALS Laboratory: EM Melbourne

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: SA_0939_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
109	0939_QC208_210806	Please forward to NMI	06/08/2021 11:16 AM	Water	ALS: 2 Non ALS: 0	Yes	-	Please forward to NMI	
110	0939_SW012_210806		06/08/2021 11:20 AM	Water	ALS: 2 Non ALS: 0	No	X		
111	0939_QC109_210806		06/08/2021 11:21 AM	Water	ALS: 2 Non ALS: 0	No	X		
112	0939_QC209_210806	Please forward to NMI	06/08/2021 11:21 AM	Water	ALS: 2 Non ALS: 0	Yes	-		
113	0939_QC309_210806		06/08/2021 11:34 AM	Water	ALS: 2 Non ALS: 0	No	X		
114	0939_QC409_210806		06/08/2021 11:34 AM	Water	ALS: 2 Non ALS: 0	No	X		

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

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

EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0939_MW2116_210802	HDPE (no PTFE)	20 mL	00352101063392	Grey	No	
001	0939_MW2116_210802	HDPE (no PTFE)	20 mL	00352101061522	Grey	No	
002	0939_MW2490_210802	HDPE (no PTFE)	20 mL	00352101061467	Grey	No	
002	0939_MW2490_210802	HDPE (no PTFE)	20 mL	00352101061241	Grey	No	
003	0939_MW2284_210802	HDPE (no PTFE)	20 mL	00352101063272	Grey	No	
003	0939_MW2284_210802	HDPE (no PTFE)	20 mL	00352101061267	Grey	No	
004	0939_MW2272_210802	HDPE (no PTFE)	20 mL	00352101061482	Grey	No	
004	0939_MW2272_210802	HDPE (no PTFE)	20 mL	00352101063241	Grey	No	
005	0939_MW2148_210802	HDPE (no PTFE)	20 mL	00352101061361	Grey	No	
005	0939_MW2148_210802	HDPE (no PTFE)	20 mL	00352101061283	Grey	No	
006	0939_MW2158_210802	HDPE (no PTFE)	20 mL	00352101063254	Grey	No	
006	0939_MW2158_210802	HDPE (no PTFE)	20 mL	00352101061433	Grey	No	
007	0939_MW2501_210802	HDPE (no PTFE)	20 mL	00352101061525	Grey	No	
007	0939_MW2501_210802	HDPE (no PTFE)	20 mL	00352101063296	Grey	No	
007	0939_MW2501_210802	HDPE (no PTFE)	20 mL	00352101063400	Grey	No	
007	0939_MW2501_210802	HDPE (no PTFE)	20 mL	00352101061539	Grey	No	
008	0661_MW2325_210802	HDPE (no PTFE)	20 mL	00352101061484	Grey	No	
008	0661_MW2325_210802	HDPE (no PTFE)	20 mL	00352101061334	Grey	No	
008	0661_MW2325_210802	HDPE (no PTFE)	20 mL	00352101061312	Grey	No	
008	0661_MW2325_210802	HDPE (no PTFE)	20 mL	00352101061429	Grey	No	
009	0939_MW2218_210802	HDPE (no PTFE)	20 mL	00352101061428	Grey	No	
009	0939_MW2218_210802	HDPE (no PTFE)	20 mL	00352101061491	Grey	No	
010	0939_QC101_210802	HDPE (no PTFE)	20 mL	00352101063364	Grey	No	
010	0939_QC101_210802	HDPE (no PTFE)	20 mL	00352101063299	Grey	No	
011	0939_MW2134_210802	HDPE (no PTFE)	20 mL	00352101061385	Grey	No	
011	0939_MW2134_210802	HDPE (no PTFE)	20 mL	00352101074362	Grey	No	

**CHAIN OF CUSTODY**

COC#: 25860 ALS Laboratory: EM Melbourne

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFSOMP

SITE: SA_0939_PFSOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER: [REDACTED]
PRIMARY SAMPLER: [REDACTED]CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
0TURNAROUND REQUIREMENTS : 5 Days
Biohazard info:**LABORATORY USE ONLY (Circle)**
 Custody Seal intact? Yes No N/A
 Free ice / frozen ice bricks present upon receipt? Yes No N/A
 Random Sample Temperature on Receipt: °C
 Other comments:
EMAIL REPORTS TO: [REDACTED]
EMAIL INVOICES TO: [REDACTED]

012	0939_QC201_210802	HDPE (no PTFE)	20 mL	00352101061500	Grey	No	
012	0939_QC201_210802	HDPE (no PTFE)	20 mL	00352101061451	Grey	No	
013	0939_MW2216_210802	HDPE (no PTFE)	20 mL	00352101061488	Grey	No	
013	0939_MW2216_210802	HDPE (no PTFE)	20 mL	00352101074357	Grey	No	
014	0939_MW2135_210802	HDPE (no PTFE)	20 mL	00352101063222	Grey	No	
014	0939_MW2135_210802	HDPE (no PTFE)	20 mL	00352101063431	Grey	No	
015	0939_MW2130_210802	HDPE (no PTFE)	20 mL	00352101061305	Grey	No	
015	0939_MW2130_210802	HDPE (no PTFE)	20 mL	00352101061372	Grey	No	
016	0939_MW2210_210802	HDPE (no PTFE)	20 mL	00352101061253	Grey	No	
016	0939_MW2210_210802	HDPE (no PTFE)	20 mL	00352101063266	Grey	No	
016	0939_MW2210_210802	HDPE (no PTFE)	20 mL	00352101061499	Grey	No	
016	0939_MW2210_210802	HDPE (no PTFE)	20 mL	00352101061282	Grey	No	
017	0939_MW2131_210802	HDPE (no PTFE)	20 mL	00352101063261	Grey	No	
017	0939_MW2131_210802	HDPE (no PTFE)	20 mL	00352101061322	Grey	No	
018	0939_MW2528_210802	HDPE (no PTFE)	20 mL	00352101061366	Grey	No	
018	0939_MW2528_210802	HDPE (no PTFE)	20 mL	00352101061257	Grey	No	
019	0939_MW2157_210802	HDPE (no PTFE)	20 mL	00352101061432	Grey	No	
019	0939_MW2157_210802	HDPE (no PTFE)	20 mL	00352101061324	Grey	No	
020	0939_MW2209_210802	HDPE (no PTFE)	20 mL	00352101061504	Grey	No	
020	0939_MW2209_210802	HDPE (no PTFE)	20 mL	00352101061359	Grey	No	
021	0939_MW2114_210802	HDPE (no PTFE)	20 mL	00352101061346	Grey	No	
021	0939_MW2114_210802	HDPE (no PTFE)	20 mL	00352101063250	Grey	No	
022	0939_MW4218_210802	HDPE (no PTFE)	20 mL	00352101061277	Grey	No	
022	0939_MW4218_210802	HDPE (no PTFE)	20 mL	00352101061314	Grey	No	
023	0939_MW2159_210802	HDPE (no PTFE)	20 mL	00352101063322	Grey	No	
023	0939_MW2159_210802	HDPE (no PTFE)	20 mL	00352010039528	Grey	No	
024	0939_QC102_210802	HDPE (no PTFE)	20 mL	00352010039329	Grey	No	

**CHAIN OF CUSTODY**

COC#: 25860 ALS Laboratory: EM Melbourne

RELINQUISHED BY:**RECEIVED BY:****RELINQUISHED BY:****RECEIVED BY:**

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

CONTACT PH: [REDACTED]

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

024	0939_QC102_210802	HDPE (no PTFE)	20 mL	00352101061536	Grey	No	
025	0939_QC202_210802	HDPE (no PTFE)	20 mL	00352101061338	Grey	No	
025	0939_QC202_210802	HDPE (no PTFE)	20 mL	00352101061520	Grey	No	
026	0939_MW4065_210802	HDPE (no PTFE)	20 mL	00352101063320	Grey	No	
026	0939_MW4065_210802	HDPE (no PTFE)	20 mL	00352101063331	Grey	No	
027	0939_MW4022_210802	HDPE (no PTFE)	20 mL	00352010039685	Grey	No	
027	0939_MW4022_210802	HDPE (no PTFE)	20 mL	00352010039755	Grey	No	
028	0939_MW4009_210802	HDPE (no PTFE)	20 mL	00352101061446	Grey	No	
028	0939_MW4009_210802	HDPE (no PTFE)	20 mL	00352101061540	Grey	No	
029	0939_QC301_210802	HDPE (no PTFE)	20 mL	00352010039684	Grey	No	
029	0939_QC301_210802	HDPE (no PTFE)	20 mL	00352010039363	Grey	No	
030	0939_QC302_210802	HDPE (no PTFE)	20 mL	00352010039517	Grey	No	
030	0939_QC302_210802	HDPE (no PTFE)	20 mL	00352010039359	Grey	No	
031	0939_QC303_210802	HDPE (no PTFE)	20 mL	00352010039646	Grey	No	
031	0939_QC303_210802	HDPE (no PTFE)	20 mL	00352010039569	Grey	No	
032	0939_QC401_210802	HDPE (no PTFE)	20 mL	00352010039318	Grey	No	
032	0939_QC401_210802	HDPE (no PTFE)	20 mL	00352010039826	Grey	No	
033	0939_QC402_210802	HDPE (no PTFE)	20 mL	00352010039753	Grey	No	
033	0939_QC402_210802	HDPE (no PTFE)	20 mL	00352010039333	Grey	No	
034	0939_QC403_210802	HDPE (no PTFE)	20 mL	00352010039556	Grey	No	
034	0939_QC403_210802	HDPE (no PTFE)	20 mL	00352010039421	Grey	No	
035	0939_QC501_210802	HDPE (no PTFE)	20 mL	00352010039417	Grey	No	
035	0939_QC501_210802	HDPE (no PTFE)	20 mL	00352010039408	Grey	No	
036	0939_MW4021_210803	HDPE (no PTFE)	20 mL	00352101064332	Grey	No	
036	0939_MW4021_210803	HDPE (no PTFE)	20 mL	00352101064089	Grey	No	
037	0939_MW4020_210803	HDPE (no PTFE)	20 mL	00352101064314	Grey	No	
037	0939_MW4020_210803	HDPE (no PTFE)	20 mL	00352101064310	Grey	No	

**CHAIN OF CUSTODY**

COC#: 25860 ALS Laboratory: EM Melbourne

RELINQUISHED BY:**RECEIVED BY:****RELINQUISHED BY:****RECEIVED BY:**

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFSOMP

SITE: SA_0939_PFSOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

038	0939_MW4071_210803	HDPE (no PTFE)	20 mL	00352101064051	Grey	No	
038	0939_MW4071_210803	HDPE (no PTFE)	20 mL	00352101064071	Grey	No	
038	0939_MW4071_210803	HDPE (no PTFE)	20 mL	00352101064085	Grey	No	
038	0939_MW4071_210803	HDPE (no PTFE)	20 mL	00352101064053	Grey	No	
039	0939_MW4024_210803	HDPE (no PTFE)	20 mL	00352101064270	Grey	No	
039	0939_MW4024_210803	HDPE (no PTFE)	20 mL	00352101064217	Grey	No	
039	0939_MW4024_210803	HDPE (no PTFE)	20 mL	00352101064148	Grey	No	
039	0939_MW4024_210803	HDPE (no PTFE)	20 mL	00352101064062	Grey	No	
040	0939_MW4023_210803	HDPE (no PTFE)	20 mL	00352101063185	Grey	No	
040	0939_MW4023_210803	HDPE (no PTFE)	20 mL	00352101064124	Grey	No	
041	0939_QC103_210803	HDPE (no PTFE)	20 mL	00352101064136	Grey	No	
041	0939_QC103_210803	HDPE (no PTFE)	20 mL	00352101064077	Grey	No	
042	0939_QC203_210803	HDPE (no PTFE)	20 mL	00352101064283	Grey	No	
042	0939_QC203_210803	HDPE (no PTFE)	20 mL	00352101064151	Grey	No	
043	0939_MW4060_210803	HDPE (no PTFE)	20 mL	00352101064090	Grey	No	
043	0939_MW4060_210803	HDPE (no PTFE)	20 mL	00352101064218	Grey	No	
044	0939_MW4059_210803	HDPE (no PTFE)	20 mL	00352101064278	Grey	No	
044	0939_MW4059_210803	HDPE (no PTFE)	20 mL	00352101064234	Grey	No	
045	0939_MW4077_210803	HDPE (no PTFE)	20 mL	00352101064067	Grey	No	
045	0939_MW4077_210803	HDPE (no PTFE)	20 mL	00352101064230	Grey	No	
046	0939_MW4078_210803	HDPE (no PTFE)	20 mL	00352101064199	Grey	No	
046	0939_MW4078_210803	HDPE (no PTFE)	20 mL	00352101064266	Grey	No	
047	0939_MW4058_210803	HDPE (no PTFE)	20 mL	00352101064304	Grey	No	
047	0939_MW4058_210803	HDPE (no PTFE)	20 mL	00352101064206	Grey	No	
048	0939_MW4064_210803	HDPE (no PTFE)	20 mL	00352101064101	Grey	No	
048	0939_MW4064_210803	HDPE (no PTFE)	20 mL	00352101064179	Grey	No	
049	0939_MW4219_210803	HDPE (no PTFE)	20 mL	00352101064331	Grey	No	

**CHAIN OF CUSTODY**

COC#: 25860

ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

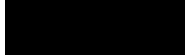
CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFSOMP

SITE: SA_0939_PFSOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:



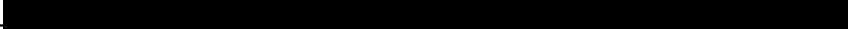
PRIMARY SAMPLER:



EMAIL REPORTS TO:



EMAIL INVOICES TO:



TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 V3

/ ES2019AECOMAU003
0

049	0939_MW4219_210803	HDPE (no PTFE)	20 mL	00352101064184	Grey	No	
050	0939_MW4052_210803	HDPE (no PTFE)	20 mL	00352101064268	Grey	No	
050	0939_MW4052_210803	HDPE (no PTFE)	20 mL	00352101064159	Grey	No	
051	0939_MW4072_210803	HDPE (no PTFE)	20 mL	00352101064187	Grey	No	
051	0939_MW4072_210803	HDPE (no PTFE)	20 mL	00352101064193	Grey	No	
051	0939_MW4072_210803	HDPE (no PTFE)	20 mL	00352101064317	Grey	No	
051	0939_MW4072_210803	HDPE (no PTFE)	20 mL	00352101064127	Grey	No	
052	0939_QC104_210803	HDPE (no PTFE)	20 mL	00352101064107	Grey	No	
052	0939_QC104_210803	HDPE (no PTFE)	20 mL	00352101064043	Grey	No	
053	0939_MW4041_210803	HDPE (no PTFE)	20 mL	00352101064336	Grey	No	
053	0939_MW4041_210803	HDPE (no PTFE)	20 mL	00352101064096	Grey	No	
054	0939_QC204_210803	HDPE (no PTFE)	20 mL	00352101064044	Grey	No	
054	0939_QC204_210803	HDPE (no PTFE)	20 mL	00352101064050	Grey	No	
055	0939_MW4074_210803	HDPE (no PTFE)	20 mL	00352101064075	Grey	No	
055	0939_MW4074_210803	HDPE (no PTFE)	20 mL	00352101064250	Grey	No	
056	0939_MW4037_210803	HDPE (no PTFE)	20 mL	00352101064272	Grey	No	
056	0939_MW4037_210803	HDPE (no PTFE)	20 mL	00352101064087	Grey	No	
057	0939_MW4070_210803	HDPE (no PTFE)	20 mL	00352101064115	Grey	No	
057	0939_MW4070_210803	HDPE (no PTFE)	20 mL	00352101064120	Grey	No	
058	0939_MW4045_210803	HDPE (no PTFE)	20 mL	00352101064285	Grey	No	
058	0939_MW4045_210803	HDPE (no PTFE)	20 mL	00352101064274	Grey	No	
059	0939_MW4053_210803	HDPE (no PTFE)	20 mL	00352101064262	Grey	No	
059	0939_MW4053_210803	HDPE (no PTFE)	20 mL	00352101064040	Grey	No	
060	0939_QC105_210803	HDPE (no PTFE)	20 mL	00352101064104	Grey	No	
060	0939_QC105_210803	HDPE (no PTFE)	20 mL	00352101064045	Grey	No	
061	0939_QC205_210803	HDPE (no PTFE)	20 mL	00352101064113	Grey	No	
061	0939_QC205_210803	HDPE (no PTFE)	20 mL	00352101064145	Grey	No	

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: SA_0939_PFSOMP
 SITE: SA_0939_PFSOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

Other comments:

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

062	0939_MW4055_210803	HDPE (no PTFE)	20 mL	00352101064126	Grey	No	
062	0939_MW4055_210803	HDPE (no PTFE)	20 mL	00352101064200	Grey	No	
062	0939_MW4055_210803	HDPE (no PTFE)	20 mL	00352101064185	Grey	No	
062	0939_MW4055_210803	HDPE (no PTFE)	20 mL	00352101064149	Grey	No	
063	0939_QC304_210803	HDPE (no PTFE)	20 mL	00352101064088	Grey	No	
063	0939_QC304_210803	HDPE (no PTFE)	20 mL	00352101064246	Grey	No	
064	0939_QC305_210803	HDPE (no PTFE)	20 mL	00352101064168	Grey	No	
064	0939_QC305_210803	HDPE (no PTFE)	20 mL	00352101064299	Grey	No	
065	0939_QC404_210803	HDPE (no PTFE)	20 mL	00352101064078	Grey	No	
065	0939_QC404_210803	HDPE (no PTFE)	20 mL	00352101064255	Grey	No	
066	0939_QC405_210803	HDPE (no PTFE)	20 mL	00352101064080	Grey	No	
066	0939_QC405_210803	HDPE (no PTFE)	20 mL	00352101064154	Grey	No	
067	0939_QC502_210803	HDPE (no PTFE)	20 mL	00352101064251	Grey	No	
067	0939_QC502_210803	HDPE (no PTFE)	20 mL	00352101064054	Grey	No	
068	0939_SW062_210804	HDPE (no PTFE)	20 mL	00352101064319	Grey	No	
068	0939_SW062_210804	HDPE (no PTFE)	20 mL	00352101064300	Grey	No	
069	0939_SW078_210804	HDPE (no PTFE)	20 mL	00352101064261	Grey	No	
069	0939_SW078_210804	HDPE (no PTFE)	20 mL	00352101064188	Grey	No	
070	0939_SW011_210804	HDPE (no PTFE)	20 mL	00352101064052	Grey	No	
070	0939_SW011_210804	HDPE (no PTFE)	20 mL	00352101064039	Grey	No	
071	0939_SW059_210804	HDPE (no PTFE)	20 mL	00352101064147	Grey	No	
071	0939_SW059_210804	HDPE (no PTFE)	20 mL	00352101064257	Grey	No	
072	0939_SW009_210804	HDPE (no PTFE)	20 mL	00352101064175	Grey	No	
072	0939_SW009_210804	HDPE (no PTFE)	20 mL	00352101064213	Grey	No	
072	0939_SW009_210804	HDPE (no PTFE)	20 mL	00352101064093	Grey	No	
072	0939_SW009_210804	HDPE (no PTFE)	20 mL	00352101064131	Grey	No	
073	0939_SW033_210804	HDPE (no PTFE)	20 mL	00352101064169	Grey	No	

**CHAIN OF CUSTODY**

COC#: 25860 ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFSOMP

SITE: SA_0939_PFSOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003

0

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

073	0939_SW033_210804	HDPE (no PTFE)	20 mL	00352101064239	Grey	No	
073	0939_SW033_210804	HDPE (no PTFE)	20 mL	00352101064328	Grey	No	
073	0939_SW033_210804	HDPE (no PTFE)	20 mL	00352101064253	Grey	No	
074	0939_SW032_210804	HDPE (no PTFE)	20 mL	00352101064108	Grey	No	
074	0939_SW032_210804	HDPE (no PTFE)	20 mL	00352101064277	Grey	No	
075	0939_SW029_210804	HDPE (no PTFE)	20 mL	00352101064258	Grey	No	
075	0939_SW029_210804	HDPE (no PTFE)	20 mL	00352101064264	Grey	No	
076	0939_SW028_210804	HDPE (no PTFE)	20 mL	00352101064321	Grey	No	
076	0939_SW028_210804	HDPE (no PTFE)	20 mL	00352101064171	Grey	No	
077	0939_SW050_210804	HDPE (no PTFE)	20 mL	00352101064111	Grey	No	
077	0939_SW050_210804	HDPE (no PTFE)	20 mL	00352101064116	Grey	No	
078	0939_SW054_210804	HDPE (no PTFE)	20 mL	00352101064041	Grey	No	
078	0939_SW054_210804	HDPE (no PTFE)	20 mL	00352101064058	Grey	No	
079	0939_SW021_210804	HDPE (no PTFE)	20 mL	00352101064092	Grey	No	
079	0939_SW021_210804	HDPE (no PTFE)	20 mL	00352101064083	Grey	No	
080	0939_SW019_210804	HDPE (no PTFE)	20 mL	00352101064303	Grey	No	
080	0939_SW019_210804	HDPE (no PTFE)	20 mL	00352101064079	Grey	No	
081	0939_SW018_210804	HDPE (no PTFE)	20 mL	00352101063371	Grey	No	
081	0939_SW018_210804	HDPE (no PTFE)	20 mL	00352101061413	Grey	No	
081	0939_SW018_210804	HDPE (no PTFE)	20 mL	00352101064226	Grey	No	
081	0939_SW018_210804	HDPE (no PTFE)	20 mL	00352101063186	Grey	No	
082	0939_QC106_210804	HDPE (no PTFE)	20 mL	00352101064063	Grey	No	
082	0939_QC106_210804	HDPE (no PTFE)	20 mL	00352101064091	Grey	No	
083	0939_QC206_210804	HDPE (no PTFE)	20 mL	00352101064330	Grey	No	
083	0939_QC206_210804	HDPE (no PTFE)	20 mL	00352101064291	Grey	No	
084	0939_QC306_210804	HDPE (no PTFE)	20 mL	00352101064265	Grey	No	
084	0939_QC306_210804	HDPE (no PTFE)	20 mL	00352010029060	Grey	No	

**CHAIN OF CUSTODY**

COC#: 25860

ALS Laboratory: EM Melbourne

RELINQUISHED BY:**RECEIVED BY:****RELINQUISHED BY:****RECEIVED BY:**

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFSOMP

SITE: SA_0939_PFSOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

°C

Other comments:

085	0939_QC307_210804	HDPE (no PTFE)	20 mL	00352101064322	Grey	No	
085	0939_QC307_210804	HDPE (no PTFE)	20 mL	00352101064269	Grey	No	
086	0939_QC406_210804	HDPE (no PTFE)	20 mL	00352101064099	Grey	No	
086	0939_QC406_210804	HDPE (no PTFE)	20 mL	00352101064139	Grey	No	
087	0939_QC407_210804	HDPE (no PTFE)	20 mL	00352101064228	Grey	No	
087	0939_QC407_210804	HDPE (no PTFE)	20 mL	00352101064153	Grey	No	
088	0939_QC503_210804	HDPE (no PTFE)	20 mL	00352101064065	Grey	No	
088	0939_QC503_210804	HDPE (no PTFE)	20 mL	00352101064084	Grey	No	
089	0939_MW4079_210805	HDPE (no PTFE)	20 mL	00352101064290	Grey	No	
089	0939_MW4079_210805	HDPE (no PTFE)	20 mL	00352101064170	Grey	No	
090	0939_MW4073_210805	HDPE (no PTFE)	20 mL	00352101064225	Grey	No	
090	0939_MW4073_210805	HDPE (no PTFE)	20 mL	00352101064114	Grey	No	
091	0939_MW4066_210805	HDPE (no PTFE)	20 mL	00352101064223	Grey	No	
091	0939_MW4066_210805	HDPE (no PTFE)	20 mL	00352101064135	Grey	No	
092	0939_MW4057_210805	HDPE (no PTFE)	20 mL	00352101064196	Grey	No	
092	0939_MW4057_210805	HDPE (no PTFE)	20 mL	00352101064242	Grey	No	
093	0939_MW4015_210805	HDPE (no PTFE)	20 mL	00352101064141	Grey	No	
093	0939_MW4015_210805	HDPE (no PTFE)	20 mL	00352101064282	Grey	No	
094	0939_MW4068_210805	HDPE (no PTFE)	20 mL	00352101064056	Grey	No	
094	0939_MW4068_210805	HDPE (no PTFE)	20 mL	00352101064293	Grey	No	
095	0939_MW4035_210805	HDPE (no PTFE)	20 mL	00352101064276	Grey	No	
095	0939_MW4035_210805	HDPE (no PTFE)	20 mL	00352101064325	Grey	No	
096	0939_QC207_210805	HDPE (no PTFE)	20 mL	00352101064119	Grey	No	
096	0939_QC207_210805	HDPE (no PTFE)	20 mL	00352101064211	Grey	No	
097	0939_QC107_210805	HDPE (no PTFE)	20 mL	00352101064333	Grey	No	
097	0939_QC107_210805	HDPE (no PTFE)	20 mL	00352101064294	Grey	No	
098	0939_MW4003_210805	HDPE (no PTFE)	20 mL	00352101064072	Grey	No	

**CHAIN OF CUSTODY**

COC#: 25860

ALS Laboratory: EM Melbourne

RELINQUISHED BY:**RECEIVED BY:****RELINQUISHED BY:****RECEIVED BY:**

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003

0

098	0939_MW4003_210805	HDPE (no PTFE)	20 mL	00352101064280	Grey	No	
099	0939_QC308_210805	HDPE (no PTFE)	20 mL	00352101064138	Grey	No	
099	0939_QC308_210805	HDPE (no PTFE)	20 mL	00352101064088	Grey	No	
100	0939_QC408_210805	HDPE (no PTFE)	20 mL	00352101063187	Grey	No	
100	0939_QC408_210805	HDPE (no PTFE)	20 mL	00352101064152	Grey	No	
101	0939_MW4075_210806	HDPE (no PTFE)	20 mL	00352101064305	Grey	No	
101	0939_MW4075_210806	HDPE (no PTFE)	20 mL	00352101064298	Grey	No	
102	0939_MW4069_210806	HDPE (no PTFE)	20 mL	00352101064316	Grey	No	
102	0939_MW4069_210806	HDPE (no PTFE)	20 mL	00352101064064	Grey	No	
103	0939_MW4048_210806	HDPE (no PTFE)	20 mL	00352101063259	Grey	No	
103	0939_MW4048_210806	HDPE (no PTFE)	20 mL	00352101063235	Grey	No	
104	0939_MW4001_210806	HDPE (no PTFE)	20 mL	00352101064174	Grey	No	
104	0939_MW4001_210806	HDPE (no PTFE)	20 mL	00352101064273	Grey	No	
105	0939_SW010_210806	HDPE (no PTFE)	20 mL	00352101064094	Grey	No	
105	0939_SW010_210806	HDPE (no PTFE)	20 mL	00352101064140	Grey	No	
106	0939_SW058_210806	HDPE (no PTFE)	20 mL	00352101064301	Grey	No	
106	0939_SW058_210806	HDPE (no PTFE)	20 mL	00352101064102	Grey	No	
107	0939_MW4013_210806	HDPE (no PTFE)	20 mL	00352101064157	Grey	No	
107	0939_MW4013_210806	HDPE (no PTFE)	20 mL	00352101064097	Grey	No	
107	0939_MW4013_210806	HDPE (no PTFE)	20 mL	00352101064232	Grey	No	
107	0939_MW4013_210806	HDPE (no PTFE)	20 mL	00352101064263	Grey	No	
108	0939_QC108_210806	HDPE (no PTFE)	20 mL	00352101064123	Grey	No	
108	0939_QC108_210806	HDPE (no PTFE)	20 mL	00352101064086	Grey	No	
109	0939_QC208_210806	HDPE (no PTFE)	20 mL	00352101064109	Grey	No	
109	0939_QC208_210806	HDPE (no PTFE)	20 mL	00352101064057	Grey	No	
110	0939_SW012_210806	HDPE (no PTFE)	20 mL	00352101064183	Grey	No	
110	0939_SW012_210806	HDPE (no PTFE)	20 mL	00352101063199	Grey	No	

**CHAIN OF CUSTODY**

COC#: 25860 ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFSOMP

SITE: SA_0939_PFSOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

°C

Other comments:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

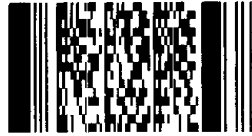
111	0939_QC109_210806	HDPE (no PTFE)	20 mL	00352101063242	Grey	No	
111	0939_QC109_210806	HDPE (no PTFE)	20 mL	00352101064112	Grey	No	
112	0939_QC209_210806	HDPE (no PTFE)	20 mL	00352101064129	Grey	No	
112	0939_QC209_210806	HDPE (no PTFE)	20 mL	00352101063333	Grey	No	
113	0939_QC309_210806	HDPE (no PTFE)	20 mL	00352101064243	Grey	No	
113	0939_QC309_210806	HDPE (no PTFE)	20 mL	00352101064098	Grey	No	
114	0939_QC409_210806	HDPE (no PTFE)	20 mL	00352101064297	Grey	No	
114	0939_QC409_210806	HDPE (no PTFE)	20 mL	00352101064182	Grey	No	

Total Bottle Count: ALS: 250, Non ALS: 0

COC uploaded on 12/08/2021 @ 13:09



Environmental Division
Melbourne
Work Order Reference
EM2115882
Telephone : +61-3-8549 9600



Custody Document for Submissions via ALS Compass App

Project: SA-0939 PFASOMP Client: Department of Defence

Project Manager:

Phone:

ALS Compass COC Reference: 25860 # Samples: 114

26141, 26142, (26143)

Sampler:

Phone:

Turnaround Requirements: Standard _____ Urgent _____

Special Instructions:

please see rates for samples with additional volume for lab QC.

Custody:

Relinquished by:	Received by:	Relinquished by:	Received by: <u>proven</u> <u>(bn)</u>
Date / Time: <u>9/8/21</u>	Date / Time:	Date / Time:	Date / Time: <u>11/8,</u> <u>12-35</u>

CHAIN OF CUSTODY

ALS COC#: 26143 ALS Laboratory: EM Melbourne

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: SA_0939_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1
 PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003

LABORATORY USE ONLY (Circle)

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

SAMPLE DETAILS

ANALYSIS REQUIRED

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED		
							PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0939_MW4220_210803		03/08/2021 03:33 PM	Water	ALS: 2 Non ALS: 0	No	X		

CHAIN OF CUSTODY

ALS COC#: 26143 ALS Laboratory: EM Melbourne

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 V3

/ ES2019AECOMAU003

LABORATORY USE ONLY (Circle)

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

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0939_MW4220_210803	HDPE (no PTFE)	20 mL	00352101064240	Grey	No	
001	0939_MW4220_210803	HDPE (no PTFE)	20 mL	00352101064180	Grey	No	
Total Bottle Count: ALS: 2, Non ALS: 0							



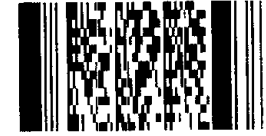
ALS Compass
SAMPLING *Intelligence*

COC uploaded 12/08/2021 @ 13:09



Environmental Division
Melbourne

Work Order Reference
EM2115881



Telephone + 61-3-8649 9600

Custody Document for Submissions via ALS Compass App

Project: SA-0939-PFASOMP Client: Department of Defence Project Manager: [Redacted]
Phone: [Redacted]

ALS Compass COC Reference: 25860, # Samples: 114 Sampler: [Redacted]
26141, (26142), 26143 Phone: [Redacted]

Turnaround Requirements: Standard _____ Urgent _____

Special Instructions:

please see notes for samples with additional volume for lab QC.

Custody:

Relinquished by: [Redacted]	Received by:	Relinquished by:	Received by: <i>[Signature]</i> <i>[Signature]</i>
Date / Time: <i>9/8/21</i>	Date / Time:	Date / Time:	Date / Time: <i>11/8, 12:35</i>

CHAIN OF CUSTODY
 (ALS) COC#: 26142 ALS Laboratory: EM Melbourne

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: SA_0939_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1
 PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

CONTACT PH: SAMPLER MOBILE:
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

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

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0939_MW4221_210806		06/08/2021 08:40 AM	Water	ALS: 2 Non ALS: 0	No	X		
002	0939_MW4222_210806		06/08/2021 09:00 AM	Water	ALS: 2 Non ALS: 0	No	X		

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

CONTACT PH: SAMPLER MOBILE:
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0939_MW4221_210806	HDPE (no PTFE)	20 mL	00352101064055	Grey	No	
001	0939_MW4221_210806	HDPE (no PTFE)	20 mL	00352101064207	Grey	No	
002	0939_MW4222_210806	HDPE (no PTFE)	20 mL	00352101064177	Grey	No	
002	0939_MW4222_210806	HDPE (no PTFE)	20 mL	00352101064195	Grey	No	

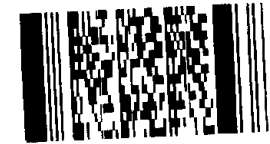
Total Bottle Count: ALS: 4, Non ALS: 0



COC uploaded on 12/08/2021 @ 13:09


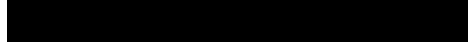
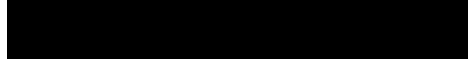
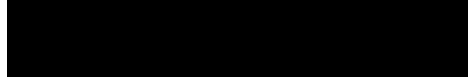


Environmental Division
Melbourne
Work Order Reference
EM2115880




Telephone: +61-3-8549 9600

Custody Document for Submissions via ALS Compass App

Project: SA-0939-PFASOMP Client: Department of Defence Project Manager: 
 Phone: 
 ALS Compass COC Reference: 25860, # Samples: 114 Sampler: 
26141, 26142, 26143 Phone: 
 Turnaround Requirements: Standard _____ Urgent _____

Special Instructions:
 please see notes for samples with additional volume for lab QC.

Custody:			
Relinquished by: 	Received by:	Relinquished by:	Received by: <u>monu</u> <u>BN1</u>
Date / Time: <u>9/8/21</u>	Date / Time:	Date / Time:	Date / Time: <u>11/8,</u> <u>12:35</u>



CHAIN OF CUSTODY

COC#: 26141 ALS Laboratory: EM Melbourne

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:
PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:
QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
0

TURNAROUND REQUIREMENTS : 5 Days
Biohazard info:

LABORATORY USE ONLY (Circle)

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

EMAIL REPORTS TO:
EMAIL INVOICES TO:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0939_MW4223_210730		30/07/2021 06:35 PM	Water	ALS: 2 Non ALS: 0	No	X		

**CHAIN OF CUSTODY**

COC#: 26141 ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003

0

LABORATORY USE ONLY (Circle)

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

°C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0939_MW4223_210730	HDPE (no PTFE)	20 mL	00352101061523	Grey	No	
001	0939_MW4223_210730	HDPE (no PTFE)	20 mL	00352101063234	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

Appendix E

Laboratory Certificates

Appendix E Laboratory Certificates

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM2116269	Page	: 1 of 10
Amendment	: 1		
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: [REDACTED]	Telephone	: [REDACTED]
Project	: SA_0939_PFASOMP	Date Samples Received	: 17-Aug-2021
Site	: SA_0939_PFASOMP	Issue Date	: 26-Aug-2021
Sampler	: [REDACTED]	No. of samples received	: 62
Order number	: 60612561 6.1	No. of samples analysed	: 62

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: WATER

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	EM2116269--009	0939_MW2137_210812	Perfluorobutane sulfonic acid (PFBS)	375-73-5	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP231A: Perfluoroalkyl Sulfonic Acids	EM2116269--009	0939_MW2137_210812	Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP231A: Perfluoroalkyl Sulfonic Acids	EM2116269--009	0939_MW2137_210812	Perfluorohexane sulfonic acid (PFHxS)	355-46-4	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP231A: Perfluoroalkyl Sulfonic Acids	EM2116269--009	0939_MW2137_210812	Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	62.6 %	69.0-134%	Recovery less than lower data quality objective
EP231A: Perfluoroalkyl Sulfonic Acids	EM2116269--009	0939_MW2137_210812	Perfluorooctane sulfonic acid (PFOS)	1763-23-1	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP231B: Perfluoroalkyl Carboxylic Acids	EM2116269--009	0939_MW2137_210812	Perfluorobutanoic acid (PFBA)	375-22-4	54.6 %	73.0-129%	Recovery less than lower data quality objective
EP231B: Perfluoroalkyl Carboxylic Acids	EM2116269--009	0939_MW2137_210812	Perfluorohexanoic acid (PFHxA)	307-24-4	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP231B: Perfluoroalkyl Carboxylic Acids	EM2116269--009	0939_MW2137_210812	Perfluorotridecanoic acid (PFTrDA)	72629-94-8	35.3 %	65.0-144%	Recovery less than lower data quality objective
EP231C: Perfluoroalkyl Sulfonamides	EM2116269--009	0939_MW2137_210812	Perfluorooctane sulfonamide (FOSA)	754-91-6	65.4 %	67.0-137%	Recovery less than lower data quality objective
EP231C: Perfluoroalkyl Sulfonamides	EM2116269--009	0939_MW2137_210812	N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	55.9 %	68.0-141%	Recovery less than lower data quality objective
EP231C: Perfluoroalkyl Sulfonamides	EM2116269--009	0939_MW2137_210812	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	51.0 %	70.0-130%	Recovery less than lower data quality objective
EP231C: Perfluoroalkyl Sulfonamides	EM2116269--009	0939_MW2137_210812	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	62.9 %	70.0-130%	Recovery less than lower data quality objective
EP231C: Perfluoroalkyl Sulfonamides	EM2116269--009	0939_MW2137_210812	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	53.0 %	70.0-130%	Recovery less than lower data quality objective



Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries - Continued							
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EM2116269--009	0939_MW2137_210812	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	55.4 %	70.0-130%	Recovery less than lower data quality objective

Regular Sample Surrogates

Sub-Matrix: **GROUNDWATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP231S: PFAS Surrogate	EM2116269-002	0939_MW2197_210812	13C4-PFOS	----	64.4 %	65.0-140 %	Recovery less than lower data quality objective
EP231S: PFAS Surrogate	EM2116269-055	0939_MW2203_210813	13C4-PFOS	----	60.6 %	65.0-140 %	Recovery less than lower data quality objective
EP231S: PFAS Surrogate	EM2116269-050	0939_MW2200_210813	13C8-PFOA	----	66.9 %	71.0-133 %	Recovery less than lower data quality objective

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	5	85	5.88	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	3	85	3.53	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **WATER**

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

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



Matrix: WATER

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0939_SW006_210812, 0939_MW2499_210812, 0939_MW2193_210812, 0939_MW2150_210812, 0939_MW2137_210812, 0939_MW2281_210812, 0939_QC110_210812, 0939_MW2183_210812, 0939_MW2180_210812, 0939_QC111_210812, 0939_MW2176_210812, 0939_MW2173_210812, 0939_MW2129_210812, 0939_MW2139_210812 - Extra vol for lab QC, 0939_MW2358_210812, 0939_MW2162_210812, 0939_MW2394_210812, 0939_QC311_210812, 0939_QC504_210812, 0939_QC411_210812, 0939_MW2182_210812 - Extra vol for lab QC, 0939_MW2166_210812 - Extra vol for lab QC	0939_MW2197_210812, 0939_MW2149_210812, 0939_MW2194_210812, 0939_MW2112_210812 - Extra vol for lab qc, 0939_MW2286_210812, 0939_MW2184_210812, 0939_MW2185_210812, 0939_MW2285_210812, 0939_MW2177_210812, 0939_MW2175_210812, 0939_MW2172_210812, 0939_MW2145_210812, 0939_MW2169_210812, 0939_MW2126_210812, 0939_QC112_210812, 0939_MW2411_210812, 0939_QC310_210812, 0939_QC312_210812, 0939_QC410_210812, 0939_QC412_210812, 0939_MW2275_210812	12-Aug-2021	20-Aug-2021	08-Feb-2022	✓	20-Aug-2021	08-Feb-2022	✓
HDPE (no PTFE) (EP231X)								
0939_MW2188_210813, 0939_MW2202_210813, 0939_MW2270_210813, 0939_QC113_210813, 0939_MW2200_210813, 0939_QC114_210813, 0939_SW017_210813, 0939_QC313_210813	0939_MW2189_210813, 0939_MW2201_210813, 0939_MW2120_210813, 0939_QC213_210813, 0939_SW003_210813, 0939_QC214_210813, 0939_MW2203_210813, 0939_QC413_210813	13-Aug-2021	20-Aug-2021	09-Feb-2022	✓	20-Aug-2021	09-Feb-2022	✓
HDPE (no PTFE) (EP231X)								
0939_QC505_210813		13-Aug-2021	23-Aug-2021	09-Feb-2022	✓	23-Aug-2021	09-Feb-2022	✓
HDPE (no PTFE) (EP231X)								
0939_SW050_210813,	0939_SW054_210813	13-Aug-2021	24-Aug-2021	09-Feb-2022	✓	24-Aug-2021	09-Feb-2022	✓



Matrix: WATER

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
0939_SW006_210812, 0939_MW2499_210812, 0939_MW2193_210812, 0939_MW2150_210812, 0939_MW2137_210812, 0939_MW2281_210812, 0939_QC110_210812, 0939_MW2183_210812, 0939_MW2180_210812, 0939_QC111_210812, 0939_MW2176_210812, 0939_MW2173_210812, 0939_MW2129_210812, 0939_MW2139_210812 - Extra vol for lab QC, 0939_MW2358_210812, 0939_MW2162_210812, 0939_MW2394_210812, 0939_QC311_210812, 0939_QC504_210812, 0939_QC411_210812, 0939_MW2182_210812 - Extra vol for lab QC, 0939_MW2166_210812 - Extra vol for lab QC	0939_MW2197_210812, 0939_MW2149_210812, 0939_MW2194_210812, 0939_MW2112_210812 - Extra vol for lab qc, 0939_MW2286_210812, 0939_MW2184_210812, 0939_MW2185_210812, 0939_MW2285_210812, 0939_MW2177_210812, 0939_MW2175_210812, 0939_MW2172_210812, 0939_MW2145_210812, 0939_MW2169_210812, 0939_MW2126_210812, 0939_QC112_210812, 0939_MW2411_210812, 0939_QC310_210812, 0939_QC312_210812, 0939_QC410_210812, 0939_QC412_210812, 0939_MW2275_210812	12-Aug-2021	20-Aug-2021	08-Feb-2022	✓	20-Aug-2021	08-Feb-2022	✓
HDPE (no PTFE) (EP231X)								
0939_MW2188_210813, 0939_MW2202_210813, 0939_MW2270_210813, 0939_QC113_210813, 0939_MW2200_210813, 0939_QC114_210813, 0939_SW017_210813, 0939_QC313_210813	0939_MW2189_210813, 0939_MW2201_210813, 0939_MW2120_210813, 0939_QC213_210813, 0939_SW003_210813, 0939_QC214_210813, 0939_MW2203_210813, 0939_QC413_210813	13-Aug-2021	20-Aug-2021	09-Feb-2022	✓	20-Aug-2021	09-Feb-2022	✓
HDPE (no PTFE) (EP231X)								
0939_QC505_210813		13-Aug-2021	23-Aug-2021	09-Feb-2022	✓	23-Aug-2021	09-Feb-2022	✓
HDPE (no PTFE) (EP231X)								
0939_SW050_210813,	0939_SW054_210813	13-Aug-2021	24-Aug-2021	09-Feb-2022	✓	24-Aug-2021	09-Feb-2022	✓



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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
0939_SW006_210812, 0939_MW2499_210812, 0939_MW2193_210812, 0939_MW2150_210812, 0939_MW2137_210812, 0939_MW2281_210812, 0939_QC110_210812, 0939_MW2183_210812, 0939_MW2180_210812, 0939_QC111_210812, 0939_MW2176_210812, 0939_MW2173_210812, 0939_MW2129_210812, 0939_MW2139_210812 - Extra vol for lab QC, 0939_MW2358_210812, 0939_MW2162_210812, 0939_MW2394_210812, 0939_QC311_210812, 0939_QC504_210812, 0939_QC411_210812, 0939_MW2182_210812 - Extra vol for lab QC, 0939_MW2166_210812 - Extra vol for lab QC	0939_MW2197_210812, 0939_MW2149_210812, 0939_MW2194_210812, 0939_MW2112_210812 - Extra vol for lab qc, 0939_MW2286_210812, 0939_MW2184_210812, 0939_MW2185_210812, 0939_MW2285_210812, 0939_MW2177_210812, 0939_MW2175_210812, 0939_MW2172_210812, 0939_MW2145_210812, 0939_MW2169_210812, 0939_MW2126_210812, 0939_QC112_210812, 0939_MW2411_210812, 0939_QC310_210812, 0939_QC312_210812, 0939_QC410_210812, 0939_QC412_210812, 0939_MW2275_210812	12-Aug-2021	20-Aug-2021	08-Feb-2022	✓	20-Aug-2021	08-Feb-2022	✓
HDPE (no PTFE) (EP231X)								
0939_MW2188_210813, 0939_MW2202_210813, 0939_MW2270_210813, 0939_QC113_210813, 0939_MW2200_210813, 0939_QC114_210813, 0939_SW017_210813, 0939_QC313_210813	0939_MW2189_210813, 0939_MW2201_210813, 0939_MW2120_210813, 0939_QC213_210813, 0939_SW003_210813, 0939_QC214_210813, 0939_MW2203_210813, 0939_QC413_210813	13-Aug-2021	20-Aug-2021	09-Feb-2022	✓	20-Aug-2021	09-Feb-2022	✓
HDPE (no PTFE) (EP231X)								
0939_QC505_210813		13-Aug-2021	23-Aug-2021	09-Feb-2022	✓	23-Aug-2021	09-Feb-2022	✓
HDPE (no PTFE) (EP231X)								
0939_SW050_210813,	0939_SW054_210813	13-Aug-2021	24-Aug-2021	09-Feb-2022	✓	24-Aug-2021	09-Feb-2022	✓



Matrix: WATER

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0939_SW006_210812, 0939_MW2499_210812, 0939_MW2193_210812, 0939_MW2150_210812, 0939_MW2137_210812, 0939_MW2281_210812, 0939_QC110_210812, 0939_MW2183_210812, 0939_MW2180_210812, 0939_QC111_210812, 0939_MW2176_210812, 0939_MW2173_210812, 0939_MW2129_210812, 0939_MW2139_210812 - Extra vol for lab QC, 0939_MW2358_210812, 0939_MW2162_210812, 0939_MW2394_210812, 0939_QC311_210812, 0939_QC504_210812, 0939_QC411_210812, 0939_MW2182_210812 - Extra vol for lab QC, 0939_MW2166_210812 - Extra vol for lab QC	0939_MW2197_210812, 0939_MW2149_210812, 0939_MW2194_210812, 0939_MW2112_210812 - Extra vol for lab qc, 0939_MW2286_210812, 0939_MW2184_210812, 0939_MW2185_210812, 0939_MW2285_210812, 0939_MW2177_210812, 0939_MW2175_210812, 0939_MW2172_210812, 0939_MW2145_210812, 0939_MW2169_210812, 0939_MW2126_210812, 0939_QC112_210812, 0939_MW2411_210812, 0939_QC310_210812, 0939_QC312_210812, 0939_QC410_210812, 0939_QC412_210812, 0939_MW2275_210812,	12-Aug-2021	20-Aug-2021	08-Feb-2022	✓	20-Aug-2021	08-Feb-2022	✓
HDPE (no PTFE) (EP231X)								
0939_MW2188_210813, 0939_MW2202_210813, 0939_MW2270_210813, 0939_QC113_210813, 0939_MW2200_210813, 0939_QC114_210813, 0939_SW017_210813, 0939_QC313_210813,	0939_MW2189_210813, 0939_MW2201_210813, 0939_MW2120_210813, 0939_QC213_210813, 0939_SW003_210813, 0939_QC214_210813, 0939_MW2203_210813, 0939_QC413_210813	13-Aug-2021	20-Aug-2021	09-Feb-2022	✓	20-Aug-2021	09-Feb-2022	✓
HDPE (no PTFE) (EP231X)								
0939_QC505_210813		13-Aug-2021	23-Aug-2021	09-Feb-2022	✓	23-Aug-2021	09-Feb-2022	✓
HDPE (no PTFE) (EP231X)								
0939_SW050_210813,	0939_SW054_210813	13-Aug-2021	24-Aug-2021	09-Feb-2022	✓	24-Aug-2021	09-Feb-2022	✓



Matrix: WATER

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X)								
0939_SW006_210812, 0939_MW2499_210812, 0939_MW2193_210812, 0939_MW2150_210812, 0939_MW2137_210812, 0939_MW2281_210812, 0939_QC110_210812, 0939_MW2183_210812, 0939_MW2180_210812, 0939_QC111_210812, 0939_MW2176_210812, 0939_MW2173_210812, 0939_MW2129_210812, 0939_MW2139_210812 - Extra vol for lab QC, 0939_MW2358_210812, 0939_MW2162_210812, 0939_MW2394_210812, 0939_QC311_210812, 0939_QC504_210812, 0939_QC411_210812, 0939_MW2182_210812 - Extra vol for lab QC, 0939_MW2166_210812 - Extra vol for lab QC	0939_MW2197_210812, 0939_MW2149_210812, 0939_MW2194_210812, 0939_MW2112_210812 - Extra vol for lab qc, 0939_MW2286_210812, 0939_MW2184_210812, 0939_MW2185_210812, 0939_MW2285_210812, 0939_MW2177_210812, 0939_MW2175_210812, 0939_MW2172_210812, 0939_MW2145_210812, 0939_MW2169_210812, 0939_MW2126_210812, 0939_QC112_210812, 0939_MW2411_210812, 0939_QC310_210812, 0939_QC312_210812, 0939_QC410_210812, 0939_QC412_210812, 0939_MW2275_210812,	12-Aug-2021	20-Aug-2021	08-Feb-2022	✓	20-Aug-2021	08-Feb-2022	✓
HDPE (no PTFE) (EP231X)								
0939_MW2188_210813, 0939_MW2202_210813, 0939_MW2270_210813, 0939_QC113_210813, 0939_MW2200_210813, 0939_QC114_210813, 0939_SW017_210813, 0939_QC313_210813,	0939_MW2189_210813, 0939_MW2201_210813, 0939_MW2120_210813, 0939_QC213_210813, 0939_SW003_210813, 0939_QC214_210813, 0939_MW2203_210813, 0939_QC413_210813	13-Aug-2021	20-Aug-2021	09-Feb-2022	✓	20-Aug-2021	09-Feb-2022	✓
HDPE (no PTFE) (EP231X)								
0939_QC505_210813		13-Aug-2021	23-Aug-2021	09-Feb-2022	✓	23-Aug-2021	09-Feb-2022	✓
HDPE (no PTFE) (EP231X)								
0939_SW050_210813,	0939_SW054_210813	13-Aug-2021	24-Aug-2021	09-Feb-2022	✓	24-Aug-2021	09-Feb-2022	✓



Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	5	85	5.88	10.00	✘	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	5	85	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	5	85	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	85	3.53	5.00	✘	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

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

QUALITY CONTROL REPORT

Work Order : EM2116269
Page : 1 of 17
Amendment : 1
Client : AECOM Australia Pty Ltd
Laboratory : Environmental Division Melbourne
Contact : [REDACTED]
Contact : [REDACTED]
Address : [REDACTED]
Address : [REDACTED]
Telephone : ----
Telephone : [REDACTED]
Project : SA_0939_PFASOMP
Date Samples Received : 17-Aug-2021
Order number : 60612561 6.1
Date Analysis Commenced : 20-Aug-2021
C-O-C number : 26304
Issue Date : 26-Aug-2021
Sampler : [REDACTED]
Site : SA_0939_PFASOMP
Quote number : SY/139/19 V3
No. of samples received : 62
No. of samples analysed : 62


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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Accreditation Category
[REDACTED]	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3857709)									
EM2116269-008	0939_MW2112_210812 Extra vol for lab qc	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	3.72	3.21	14.6	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.60	0.62	3.4	0% - 50%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.05	<0.04	31.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.04	<0.04	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3858095)									
EM2116269-029	0939_MW2139_210812 Extra vol for lab QC	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.17	0.17	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3858104)									
EM2116269-062	0939_MW2182_210812 Extra vol for lab QC	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.05	0.04	25.8	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.04	0.03	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3858104) - continued									
EM2116269-064	0939_MW2166_210812 Extra vol for lab QC	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3859548)									
EM2116590-017	Anonymous	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3857709)									
EM2116269-008	0939_MW2112_210812 Extra vol for lab qc	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.05	0.05	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.09	0.08	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.09	<0.09	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.2	<0.2	0.0	No Limit		
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3858095)									
EM2116269-029	0939_MW2139_210812 Extra vol for lab QC	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3858104)									
EM2116269-062	0939_MW2182_210812 Extra vol for lab QC	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EM2116269-064	0939_MW2166_210812 Extra vol for lab QC	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3859548)	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3857709)	EM2116269-008 0939_MW2112_210812 Extra vol for lab qc	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.04	<0.04	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3857709) - continued									
EM2116269-008	0939_MW2112_210812 Extra vol for lab qc	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.09	<0.09	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.09	<0.09	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.09	<0.09	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.09	<0.09	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3858095)									
EM2116269-029	0939_MW2139_210812 Extra vol for lab QC	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3858104)									
EM2116269-062	0939_MW2182_210812 Extra vol for lab QC	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3858104) - continued									
EM2116269-062	0939_MW2182_210812 Extra vol for lab QC	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EM2116269-064	0939_MW2166_210812 Extra vol for lab QC	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3859548)									
EM2116590-017	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3857709)									
EM2116269-008	0939_MW2112_210812 Extra vol for lab qc	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3858095)									



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3858095) - continued									
EM2116269-029	0939_MW2139_210812 Extra vol for lab QC	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3858104)									
EM2116269-062	0939_MW2182_210812 Extra vol for lab QC	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EM2116269-064	0939_MW2166_210812 Extra vol for lab QC	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3859548)									
EM2116590-017	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 3857709)									
EM2116269-008	0939_MW2112_210812 Extra vol for lab qc	EP231X: Sum of PFAS	----	0.01	µg/L	4.59	4.04	12.7	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	4.32	3.83	12.0	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	4.50	4.00	11.8	0% - 20%
EP231P: PFAS Sums (QC Lot: 3858095)									



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231P: PFAS Sums (QC Lot: 3858095) - continued									
EM2116269-029	0939_MW2139_210812 Extra vol for lab QC	EP231X: Sum of PFAS	----	0.01	µg/L	0.17	0.17	0.0	0% - 50%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.17	0.17	0.0	0% - 50%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.17	0.17	0.0	0% - 50%
EP231P: PFAS Sums (QC Lot: 3858104)									
EM2116269-062	0939_MW2182_210812 Extra vol for lab QC	EP231X: Sum of PFAS	----	0.01	µg/L	0.09	0.07	25.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.09	0.07	25.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.09	0.07	25.0	No Limit
EM2116269-064	0939_MW2166_210812 Extra vol for lab QC	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 3859548)									
EM2116590-017	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



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

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

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3857709)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	86.1	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	92.1	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	93.8	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	84.3	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	89.8	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	82.9	53.0	142	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3858095)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	97.1	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	91.9	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	90.8	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	85.1	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	91.6	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	81.2	53.0	142	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3858104)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	118	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	106	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	108	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	93.6	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	107	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	93.4	53.0	142	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3859548)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	110	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	111	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	113	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	100	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	124	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	112	53.0	142	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3863500)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	102	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	103	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	105	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	92.5	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	105	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	91.8	53.0	142	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Acceptable Limits (%)	
					Concentration	LCS	Low	High	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3857709)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	89.7	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	92.4	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	83.1	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	88.4	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	82.8	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	84.0	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	90.6	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	97.1	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	89.1	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.125 µg/L	79.8	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.9375 µg/L	102	71.0	132	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3858095)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	97.6	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	100	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	87.7	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	93.4	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	86.9	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	85.2	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	82.1	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.7	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	87.0	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	73.5	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.9375 µg/L	93.9	71.0	132	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3858104)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	108	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	106	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	98.5	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	99.1	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	99.1	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	99.7	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	100	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.9375 µg/L	114	71.0	132	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3859548)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	107	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	129	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Acceptable Limits (%)	
					Concentration	LCS	Low	High	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3859548) - continued									
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	109	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	116	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	106	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	106	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	108	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	115	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	115	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	85.2	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.9375 µg/L	127	71.0	132	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3863500)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	106	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	109	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	99.8	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	94.3	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	90.7	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	97.4	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	104	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	96.6	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	83.0	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.9375 µg/L	108	71.0	132	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3857709)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	85.3	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	89.0	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	78.8	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	94.7	70.0	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	76.3	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	93.9	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	84.6	61.0	135	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3858095)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	89.4	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	92.1	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	79.7	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	99.5	70.0	130	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3858095) - continued									
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	91.3	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	104	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	99.2	61.0	135	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3858104)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	95.3	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	104	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.9	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	113	70.0	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	108	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	130	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	121	61.0	135	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3859548)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	99.0	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	125	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	106	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	116	70.0	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	102	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	130	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	134	61.0	135	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3863500)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	95.9	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	93.9	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	88.8	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	104	70.0	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	97.1	70.0	130	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3863500) - continued									
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	123	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	114	61.0	135	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3857709)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	86.8	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	86.7	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	94.7	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	73.2	70.0	130	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3858095)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	88.8	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	83.4	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	100	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	84.8	70.0	130	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3858104)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	104	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	106	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	111	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	99.5	70.0	130	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3859548)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	104	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	106	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	125	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	96.9	70.0	130	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3863500)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	99.3	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	90.4	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	106	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	90.2	70.0	130	
EP231P: PFAS Sums (QCLot: 3857709)									
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----	
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----	
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----	
EP231P: PFAS Sums (QCLot: 3858095)									
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----	
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
EP231P: PFAS Sums (QCLot: 3858095) - continued								
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 3858104)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 3859548)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 3863500)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Acceptable Limits (%)	
					Low	High	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3857709)							
EM2116269-009	0939_MW2137_210812	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	# Not Determined	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	# Not Determined	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	# Not Determined	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	# 62.6	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	# Not Determined	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	68.2	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3858095)							
EM2116269-029	0939_MW2139_210812 Extra vol for lab QC	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	110	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	99.6	71.0	127



Sub-Matrix: WATER

				Matrix Spike (MS) Report					
				Spike	SpikeRecovery(%)	Acceptable Limits (%)			
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High		
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3858095) - continued									
EM2116269-029	0939_MW2139_210812 Extra vol for lab QC	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	110	68.0	131		
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	100	69.0	134		
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	108	65.0	140		
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	96.9	53.0	142		
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3858104)									
EM2116269-062	0939_MW2182_210812 Extra vol for lab QC	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	121	72.0	130		
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	97.3	71.0	127		
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	121	68.0	131		
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	97.9	69.0	134		
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	94.4	65.0	140		
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	92.8	53.0	142		
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3857709)									
EM2116269-009	0939_MW2137_210812	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	# 54.6	73.0	129		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	114	72.0	129		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	# Not Determined	72.0	129		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	107	72.0	130		
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	75.3	71.0	133		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	80.3	69.0	130		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	75.0	71.0	129		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	70.2	69.0	133		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	82.7	72.0	134		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	# 35.3	65.0	144		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.9375 µg/L	99.2	71.0	132		
		EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3858095)							
EM2116269-029	0939_MW2139_210812 Extra vol for lab QC	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	105	73.0	129		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	116	72.0	129		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	103	72.0	129		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	104	72.0	130		
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	95.4	71.0	133		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	98.2	69.0	130		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	102	71.0	129		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	105	69.0	133		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	103	72.0	134		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	89.8	65.0	144		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.9375 µg/L	107	71.0	132		
		EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3858104)							
		EM2116269-062	0939_MW2182_210812 Extra vol for lab QC	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	74.6	73.0	129



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3858104) - continued							
EM2116269-062	0939_MW2182_210812 Extra vol for lab QC	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	105	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	109	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	103	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	102	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	106	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	106	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	120	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	103	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	99.1	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.9375 µg/L	122	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3857709)							
EM2116269-009	0939_MW2137_210812	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	# 65.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	# 55.9	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	# 51.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	# 62.9	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	# 53.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	77.3	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	68.2	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3858095)							
EM2116269-029	0939_MW2139_210812 Extra vol for lab QC	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	91.0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	115	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	97.9	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	103	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	92.7	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	120	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	121	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3858104)							
EM2116269-062	0939_MW2182_210812 Extra vol for lab QC	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	94.9	67.0	137



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3858104) - continued							
EM2116269-062	0939_MW2182_210812 Extra vol for lab QC	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	119	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	108	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	89.6	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	88.8	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	134	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	131	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3857709)							
EM2116269-009	0939_MW2137_210812	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	88.5	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	110	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	71.7	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	# 55.4	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3858095)							
EM2116269-029	0939_MW2139_210812 Extra vol for lab QC	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	100	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	103	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	102	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	85.2	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3858104)							
EM2116269-062	0939_MW2182_210812 Extra vol for lab QC	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	104	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	117	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	100	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	103	70.0	130

CERTIFICATE OF ANALYSIS

Work Order	: EM2116269	Page	: 1 of 31
Amendment	: 1	Laboratory	: Environmental Division Melbourne
Client	: AECOM Australia Pty Ltd	Contact	: [REDACTED]
Contact	: [REDACTED]	Telephone	: [REDACTED]
Address	: [REDACTED]		
Telephone	: [REDACTED]	Date Samples Received	: 17-Aug-2021 13:00
Project	: SA_0939_PFASOMP	Date Analysis Commenced	: 20-Aug-2021
Order number	: 60612561 6.1	Issue Date	: 26-Aug-2021 11:16
C-O-C number	: 26304		
Sampler	: [REDACTED]		
Site	: SA_0939_PFASOMP		
Quote number	: SY/139/19 V3		
No. of samples received	: 62		
No. of samples analysed	: 62		



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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
[REDACTED]	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

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

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

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

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

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

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

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

- EP231X: Samples (EM2116269) required dilution due to matrix interferences. LOR values have been adjusted accordingly.
- EP231X: Poor matrix spike recovery for sample EM2116269-009 due to sample matrix interference. Confirmed by re-analysis.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (26/8/21): This report has been amended to update sampling ID's for samples 66 & 67
- EP231: EM2116269 Poor surrogate spike recovery due to sample matrix. Confirmed by re-analysis.
- Additional samples were received by ALS and have been marked on the COC as samples 066 "0939_SW050" & 067 "0939_SW054". These samples will be placed on hold until further instructions are received.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0939_MW2197_21081 2	0939_MW2499_21081 2	0939_MW2149_21081 2	0939_MW2193_21081 2	0939_MW2194_21081 2
Sampling date / time					12-Aug-2021 09:25	12-Aug-2021 09:38	12-Aug-2021 09:50	12-Aug-2021 10:09	12-Aug-2021 10:39
Compound	CAS Number	LOR	Unit	EM2116269-002 Result	EM2116269-003 Result	EM2116269-004 Result	EM2116269-005 Result	EM2116269-006 Result	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	15.8	1.57	10.4	4.32	0.08	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	24.5	1.94	13.0	5.28	0.08	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	149	16.8	68.4	31.8	0.75	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	20.7	1.82	6.30	2.02	0.06	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	413	189	137	54.1	1.55	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	0.05	0.09	<0.04	<0.04	<0.02	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	2.3	0.7	2.1	0.5	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	6.10	2.58	6.02	1.60	0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	31.6	4.90	26.7	8.79	0.15	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	4.37	0.76	3.72	0.80	0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	10.9	3.05	8.23	1.52	0.05	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.06	0.06	<0.04	<0.04	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.04	<0.04	<0.04	<0.04	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.04	<0.04	<0.04	<0.04	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.04	<0.04	<0.04	<0.04	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.04	<0.04	<0.04	<0.04	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.09	<0.09	<0.09	<0.09	<0.05	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	0.08	0.23	0.14	<0.04	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.09	<0.09	<0.09	<0.09	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.09	<0.09	<0.09	<0.09	<0.05	



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2197_21081 2	0939_MW2499_21081 2	0939_MW2149_21081 2	0939_MW2193_21081 2	0939_MW2194_21081 2
Sampling date / time				12-Aug-2021 09:25	12-Aug-2021 09:38	12-Aug-2021 09:50	12-Aug-2021 10:09	12-Aug-2021 10:39
Compound	CAS Number	LOR	Unit	EM2116269-002 Result	EM2116269-003 Result	EM2116269-004 Result	EM2116269-005 Result	EM2116269-006 Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.09	<0.09	<0.09	<0.09	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.09	<0.09	<0.09	<0.09	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.04	<0.04	<0.04	<0.04	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.04	<0.04	<0.04	<0.04	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.12	<0.05	0.59	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	678	224	283	111	2.76
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	562	206	205	85.9	2.30
Sum of PFAS (WA DER List)	----	0.01	µg/L	633	219	263	103	2.62
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	64.4	69.9	91.5	86.1	114
13C8-PFOA	----	0.02	%	107	101	103	96.0	107



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2150_21081 2	0939_MW2112_21081 2 Extra vol for lab qc	0939_MW2137_21081 2	0939_MW2286_21081 2	0939_MW2281_21081 2
Sampling date / time				12-Aug-2021 10:57	12-Aug-2021 11:22	12-Aug-2021 11:38	12-Aug-2021 11:54	12-Aug-2021 12:04
Compound	CAS Number	LOR	Unit	EM2116269-007 Result	EM2116269-008 Result	EM2116269-009 Result	EM2116269-010 Result	EM2116269-011 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.19	0.04	0.86	0.02	0.14
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.34	0.04	1.44	0.03	0.07
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	4.29	0.60	13.4	0.32	0.68
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.22	0.05	0.53	0.02	0.05
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	9.96	3.72	9.98	0.44	1.80
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.04	<0.04	<0.04	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.2	<0.2	<0.2	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.09	<0.04	0.20	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.54	0.09	1.34	0.03	0.09
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.05	<0.04	0.14	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.12	0.05	0.36	<0.01	0.03
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.04	<0.04	<0.04	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.04	<0.04	<0.04	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.04	<0.04	<0.04	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.04	<0.04	<0.04	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.04	<0.04	<0.04	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.10	<0.09	<0.09	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.04	<0.04	<0.04	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.10	<0.09	<0.09	<0.05	<0.05



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2150_21081 2	0939_MW2112_21081 2 Extra vol for lab qc	0939_MW2137_21081 2	0939_MW2286_21081 2	0939_MW2281_21081 2
Sampling date / time				12-Aug-2021 10:57	12-Aug-2021 11:22	12-Aug-2021 11:38	12-Aug-2021 11:54	12-Aug-2021 12:04
Compound	CAS Number	LOR	Unit	EM2116269-007 Result	EM2116269-008 Result	EM2116269-009 Result	EM2116269-010 Result	EM2116269-011 Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.10	<0.09	<0.09	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.10	<0.09	<0.09	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.10	<0.09	<0.09	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.04	<0.04	<0.04	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.04	<0.04	<0.04	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	15.8	4.59	28.2	0.86	2.86
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	14.2	4.32	23.4	0.76	2.48
Sum of PFAS (WA DER List)	----	0.01	µg/L	15.2	4.50	26.3	0.81	2.74
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	77.0	89.6	89.2	97.0	105
13C8-PFOA	----	0.02	%	105	94.7	98.7	109	100



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2184_21081 2	0939_QC110_210812	0939_MW2185_21081 2	0939_MW2183_21081 2	0939_MW2285_21081 2
Sampling date / time				12-Aug-2021 12:15	12-Aug-2021 12:15	12-Aug-2021 12:25	12-Aug-2021 12:39	12-Aug-2021 12:57
Compound	CAS Number	LOR	Unit	EM2116269-012 Result	EM2116269-013 Result	EM2116269-015 Result	EM2116269-016 Result	EM2116269-017 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.32	0.16	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.37	0.23	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.02	<0.02	3.06	1.93	0.04
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.20	0.14	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.80	0.54	5.62	3.20	0.11
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.2	<0.2	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.07	0.04	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.42	0.27	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.06	<0.04	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.13	0.07	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.09	<0.09	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.09	<0.09	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.09	<0.09	<0.05



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2184_21081 2	0939_QC110_210812	0939_MW2185_21081 2	0939_MW2183_21081 2	0939_MW2285_21081 2
Sampling date / time				12-Aug-2021 12:15	12-Aug-2021 12:15	12-Aug-2021 12:25	12-Aug-2021 12:39	12-Aug-2021 12:57
Compound	CAS Number	LOR	Unit	EM2116269-012	EM2116269-013	EM2116269-015	EM2116269-016	EM2116269-017
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.09	<0.09	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.09	<0.09	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	0.82	0.54	10.2	6.04	0.15
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.82	0.54	8.68	5.13	0.15
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.82	0.54	9.68	5.67	0.15
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	102	104	91.7	112	108
13C8-PFOA	----	0.02	%	104	103	92.6	91.7	103



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2180_21081 2	0939_MW2177_21081 2	0939_QC111_210812	0939_MW2175_21081 2	0939_MW2176_21081 2
Sampling date / time				12-Aug-2021 13:16	12-Aug-2021 14:14	12-Aug-2021 14:16	12-Aug-2021 14:29	12-Aug-2021 14:30
Compound	CAS Number	LOR	Unit	EM2116269-018 Result	EM2116269-019 Result	EM2116269-020 Result	EM2116269-022 Result	EM2116269-023 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.49	0.14	0.13	0.09	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	2.07	0.21	0.17	0.05	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	60.3	3.51	3.00	0.27	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	7.86	0.29	0.28	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	59.8	4.13	4.12	0.12	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.04	<0.04	<0.04	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	0.2	<0.2	<0.2	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.98	0.07	0.05	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	6.46	0.61	0.56	0.03	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.84	0.05	0.05	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	7.05	0.15	0.15	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.04	<0.04	<0.04	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.04	<0.04	<0.04	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.04	<0.04	<0.04	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.04	<0.04	<0.04	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.04	<0.04	<0.04	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.09	<0.09	<0.09	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.04	<0.04	<0.04	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.09	<0.09	<0.09	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.09	<0.09	<0.09	<0.05	<0.05



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2180_21081 2	0939_MW2177_21081 2	0939_QC111_210812	0939_MW2175_21081 2	0939_MW2176_21081 2
Sampling date / time				12-Aug-2021 13:16	12-Aug-2021 14:14	12-Aug-2021 14:16	12-Aug-2021 14:29	12-Aug-2021 14:30
Compound	CAS Number	LOR	Unit	EM2116269-018 Result	EM2116269-019 Result	EM2116269-020 Result	EM2116269-022 Result	EM2116269-023 Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.09	<0.09	<0.09	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.09	<0.09	<0.09	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.04	<0.04	<0.04	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.04	<0.04	<0.04	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	146	9.16	8.51	0.56	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	120	7.64	7.12	0.39	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	136	8.66	8.06	0.51	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	95.3	84.6	89.7	107	95.5
13C8-PFOA	----	0.02	%	90.4	105	90.1	103	106



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2172_21081 2	0939_MW2173_21081 2	0939_MW2145_21081 2	0939_MW2129_21081 2	0939_MW2169_21081 2
Sampling date / time				12-Aug-2021 14:53	12-Aug-2021 14:54	12-Aug-2021 15:11	12-Aug-2021 15:10	12-Aug-2021 15:29
Compound	CAS Number	LOR	Unit	EM2116269-024 Result	EM2116269-025 Result	EM2116269-026 Result	EM2116269-027 Result	EM2116269-028 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.14	0.24	0.04
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.08	0.61	0.05
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.08	0.02	0.69	12.7	0.43
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.04	0.20	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.90	3.02	0.06
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.04	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.2	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.03	0.22	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.13	1.82	0.05
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	0.19	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.03	0.44	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.04	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.04	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.04	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.04	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.04	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.10	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.04	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.10	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.10	<0.05



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2172_21081 2	0939_MW2173_21081 2	0939_MW2145_21081 2	0939_MW2129_21081 2	0939_MW2169_21081 2
Sampling date / time				12-Aug-2021 14:53	12-Aug-2021 14:54	12-Aug-2021 15:11	12-Aug-2021 15:10	12-Aug-2021 15:29
Compound	CAS Number	LOR	Unit	EM2116269-024 Result	EM2116269-025 Result	EM2116269-026 Result	EM2116269-027 Result	EM2116269-028 Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.10	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.10	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.04	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.04	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	0.08	0.02	2.04	19.4	0.63
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.08	0.02	1.59	15.7	0.49
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.08	0.02	1.92	18.6	0.58
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	105	99.8	97.6	87.1	92.2
13C8-PFOA	----	0.02	%	104	102	100	102	103



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2139_21081 2 Extra vol for lab QC	0939_MW2126_21081 2	0939_MW2358_21081 2	0939_QC112_210812	0939_MW2162_21081 2
Sampling date / time				12-Aug-2021 15:40	12-Aug-2021 16:20	12-Aug-2021 16:28	12-Aug-2021 16:29	12-Aug-2021 16:40
Compound	CAS Number	LOR	Unit	EM2116269-029 Result	EM2116269-032 Result	EM2116269-033 Result	EM2116269-034 Result	EM2116269-036 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.11	9.98	9.69	0.10
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.13	9.58	9.94	0.05
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.17	0.88	81.5	85.6	0.48
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.06	4.77	4.83	0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.62	56.1	56.2	0.31
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	1.1	0.9	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.04	3.79	3.31	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.20	21.5	20.7	0.07
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.03	2.52	2.59	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.04	3.35	3.50	0.02
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.10	<0.10	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.10	<0.10	<0.05



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2139_21081 2 Extra vol for lab QC	0939_MW2126_21081 2	0939_MW2358_21081 2	0939_QC112_210812	0939_MW2162_21081 2
Sampling date / time				12-Aug-2021 15:40	12-Aug-2021 16:20	12-Aug-2021 16:28	12-Aug-2021 16:29	12-Aug-2021 16:40
Compound	CAS Number	LOR	Unit	EM2116269-029	EM2116269-032	EM2116269-033	EM2116269-034	EM2116269-036
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.10	<0.10	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.10	<0.10	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.10	<0.10	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	0.17	2.11	194	197	1.05
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.17	1.50	138	142	0.79
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.17	1.92	180	182	0.98
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	97.9	95.9	89.0	68.5	103
13C8-PFOA	----	0.02	%	103	104	97.7	76.7	102



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2411_21081 2	0939_MW2394_21081 2	0939_MW2188_21081 3	0939_MW2189_21081 3	0939_MW2202_21081 3
Sampling date / time				12-Aug-2021 16:49	12-Aug-2021 17:02	13-Aug-2021 09:18	13-Aug-2021 09:18	13-Aug-2021 10:01
Compound	CAS Number	LOR	Unit	EM2116269-037 Result	EM2116269-038 Result	EM2116269-042 Result	EM2116269-043 Result	EM2116269-044 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.13	<0.02	9.36	11.3	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.12	<0.02	11.0	12.0	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.47	0.04	108	98.3	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.02	<0.02	7.67	12.2	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.96	0.06	130	250	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	0.3	<0.1	1.3	1.2	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.05	<0.02	4.15	3.83	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.22	<0.02	20.3	22.1	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	2.23	3.09	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.02	<0.01	4.62	7.80	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.10	<0.10	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.04	0.04	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.10	<0.10	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.10	<0.10	<0.05



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2411_21081 2	0939_MW2394_21081 2	0939_MW2188_21081 3	0939_MW2189_21081 3	0939_MW2202_21081 3
Sampling date / time				12-Aug-2021 16:49	12-Aug-2021 17:02	13-Aug-2021 09:18	13-Aug-2021 09:18	13-Aug-2021 10:01
Compound	CAS Number	LOR	Unit	EM2116269-037 Result	EM2116269-038 Result	EM2116269-042 Result	EM2116269-043 Result	EM2116269-044 Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.10	<0.10	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.10	<0.10	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	2.29	0.10	299	422	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	1.43	0.10	238	348	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	2.15	0.10	280	398	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	95.0	103	94.0	86.7	102
13C8-PFOA	----	0.02	%	102	104	87.9	80.0	105



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2201_21081 3	0939_MW2270_21081 3	0939_MW2120_21081 3	0939_QC113_210813	0939_QC213_210813
Sampling date / time				13-Aug-2021 10:09	13-Aug-2021 10:22	13-Aug-2021 10:23	13-Aug-2021 10:23	13-Aug-2021 10:24
Compound	CAS Number	LOR	Unit	EM2116269-045 Result	EM2116269-046 Result	EM2116269-047 Result	EM2116269-048 Result	EM2116269-049 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	0.09	0.15	0.13	0.18
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.04	0.06	0.19	0.20	0.20
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.41	0.72	2.48	2.64	3.37
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.03	0.62	0.66	0.81
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.64	0.30	37.7	45.2	56.3
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.52	0.62	0.56
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.2	<0.2	<0.2
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.02	0.06	0.05	0.07
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.04	0.13	0.37	0.37	0.48
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.07	0.07	0.08
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.03	0.44	0.44	0.56
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.04
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.04
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.04
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.04
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.04
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.10	<0.10	<0.10
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.48	0.47	0.68
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.10	<0.10	<0.10
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.10	<0.10	<0.10



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2201_21081 3	0939_MW2270_21081 3	0939_MW2120_21081 3	0939_QC113_210813	0939_QC213_210813
Sampling date / time				13-Aug-2021 10:09	13-Aug-2021 10:22	13-Aug-2021 10:23	13-Aug-2021 10:23	13-Aug-2021 10:24
Compound	CAS Number	LOR	Unit	EM2116269-045	EM2116269-046	EM2116269-047	EM2116269-048	EM2116269-049
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.10	<0.10	<0.10
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.10	<0.10	<0.10
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.04
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.04	<0.04	<0.04
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	1.16	1.38	43.1	50.8	63.3
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	1.05	1.02	40.2	47.8	59.7
Sum of PFAS (WA DER List)	----	0.01	µg/L	1.12	1.29	41.3	48.9	61.0
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	104	89.9	86.0	93.7	107
13C8-PFOA	----	0.02	%	101	92.4	76.3	74.9	102



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2200_21081 3	0939_MW2203_21081 3	0939_QC504_210812	0939_MW2182_21081 2 Extra vol for lab QC	0939_MW2275_21081 2
Sampling date / time				13-Aug-2021 10:26	13-Aug-2021 15:30	12-Aug-2021 08:30	12-Aug-2021 12:43	12-Aug-2021 13:03
Compound	CAS Number	LOR	Unit	EM2116269-050 Result	EM2116269-055 Result	EM2116269-058 Result	EM2116269-062 Result	EM2116269-063 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	7.01	58.0	<0.02	<0.02	0.06
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	9.70	60.7	<0.02	<0.02	0.03
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	60.6	763	<0.02	0.04	1.53
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	4.05	62.8	<0.02	<0.02	0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	37.5	3010	<0.01	0.05	0.17
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.04	<0.04	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	0.5	8.8	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	2.10	30.0	<0.02	<0.02	0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	12.3	143	<0.02	<0.02	0.20
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	1.63	20.8	<0.02	<0.02	0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	3.27	49.6	<0.01	<0.01	0.13
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.04	0.23	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.04	0.05	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.04	<0.04	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.04	<0.04	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.04	<0.04	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.10	<0.10	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.04	0.11	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.10	<0.10	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2200_21081 3	0939_MW2203_21081 3	0939_QC504_210812	0939_MW2182_21081 2 Extra vol for lab QC	0939_MW2275_21081 2
Sampling date / time				13-Aug-2021 10:26	13-Aug-2021 15:30	12-Aug-2021 08:30	12-Aug-2021 12:43	12-Aug-2021 13:03
Compound	CAS Number	LOR	Unit	EM2116269-050 Result	EM2116269-055 Result	EM2116269-058 Result	EM2116269-062 Result	EM2116269-063 Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.10	<0.10	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.10	<0.10	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.10	<0.10	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.04	<0.04	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.04	<0.04	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.18	<0.05	<0.05	0.09
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	139	4210	<0.01	0.09	2.27
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	98.1	3770	<0.01	0.09	1.70
Sum of PFAS (WA DER List)	----	0.01	µg/L	125	4080	<0.01	0.09	2.22
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	76.2	60.6	87.7	93.0	96.4
13C8-PFOA	----	0.02	%	66.9	106	97.6	99.2	96.6



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

0939_MW2166_21081
 2
 Extra vol for lab QC

				0939_MW2166_21081	----	----	----	----
				2				
				Extra vol for lab QC				
				12-Aug-2021 15:56	----	----	----	----
Compound	CAS Number	LOR	Unit	EM2116269-064	-----	-----	-----	-----
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

0939_MW2166_21081
 2
 Extra vol for lab QC

				Sampling date / time	12-Aug-2021 15:56	----	----	----	----
Compound	CAS Number	LOR	Unit	EM2116269-064	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	91.6	----	----	----	----	----
13C8-PFOA	----	0.02	%	98.5	----	----	----	----	----



Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0939_SW006_210812	0939_SW003_210813	0939_QC114_210813	0939_QC214_210813	0939_SW017_210813
Sampling date / time					12-Aug-2021 08:56	13-Aug-2021 11:07	13-Aug-2021 11:08	13-Aug-2021 11:08	13-Aug-2021 11:25
Compound	CAS Number	LOR	Unit	EM2116269-001	EM2116269-051	EM2116269-052	EM2116269-053	EM2116269-054	EM2116269-054
				Result	Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	0.55	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.54	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.55	<0.01	<0.01	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	99.6	88.4	92.5	91.4	98.0	98.0
13C8-PFOA	----	0.02	%	103	93.3	88.2	96.3	96.0	96.0



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_QC310_210812	0939_QC311_210812	0939_QC312_210812	0939_QC313_210813	0939_QC413_210813
Sampling date / time				12-Aug-2021 18:32	12-Aug-2021 18:32	12-Aug-2021 18:32	13-Aug-2021 21:01	13-Aug-2021 15:42	
Compound	CAS Number	LOR	Unit	EM2116269-039	EM2116269-040	EM2116269-041	EM2116269-056	EM2116269-057	
				Result	Result	Result	Result	Result	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	0.03	<0.01	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_QC310_210812	0939_QC311_210812	0939_QC312_210812	0939_QC313_210813	0939_QC413_210813
Sampling date / time				12-Aug-2021 18:32	12-Aug-2021 18:32	12-Aug-2021 18:32	13-Aug-2021 21:01	13-Aug-2021 15:42	
Compound	CAS Number	LOR	Unit	EM2116269-039	EM2116269-040	EM2116269-041	EM2116269-056	EM2116269-057	
				Result	Result	Result	Result	Result	
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	0.03	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	0.03	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	0.03	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	95.2	102	101	94.9	98.7	
13C8-PFOA	----	0.02	%	102	103	102	98.5	95.2	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_QC410_210812	0939_QC411_210812	0939_QC412_210812	0939_QC505_210813	0939_SW050_210813
Sampling date / time					12-Aug-2021 10:00	12-Aug-2021 14:30	12-Aug-2021 17:06	13-Aug-2021 09:00	[13-Aug-2021]
Compound	CAS Number	LOR	Unit	EM2116269-059	EM2116269-060	EM2116269-061	EM2116269-065	EM2116269-066	EM2116269-066
				Result	Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	0.06
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	0.06
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	0.06
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	90.5	96.3	95.3	105	104	104
13C8-PFOA	----	0.02	%	97.4	96.0	104	106	103	103



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_SW054_210813	----	----	----	----
Sampling date / time				[13-Aug-2021]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EM2116269-067	-----	-----	-----	-----	
				Result	----	----	----	----	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	----	----	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.04	----	----	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID	0939_SW054_210813	----	----	----	----
Sampling date / time		[13-Aug-2021]	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM2116269-067	-----	-----	-----
				Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued							
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----
EP231P: PFAS Sums							
Sum of PFAS	----	0.01	µg/L	0.04	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.04	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.04	----	----	----
EP231S: PFAS Surrogate							
13C4-PFOS	----	0.02	%	103	----	----	----
13C8-PFOA	----	0.02	%	99.2	----	----	----



Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM2116269

Client : AECOM Australia Pty Ltd Laboratory : Environmental Division Melbourne
Contact : [REDACTED] Contact : [REDACTED]
Address : [REDACTED]
E-mail : [REDACTED] E-mail : [REDACTED]
Telephone : [REDACTED] Telephone : [REDACTED]
Facsimile : [REDACTED] Facsimile : [REDACTED]
Project : SA_0939_PFASOMP Page : 1 of 4
Order number : 60612561 6.1 Quote number : ES2019AECOMAU0030 (SY/139/19 V3)
C-O-C number : 26304 QC Level : NEPM 2013 B3 & ALS QC Standard
Site : SA_0939_PFASOMP
Sampler : [REDACTED]

Dates

Date Samples Received : 17-Aug-2021 13:00 Issue Date : 23-Aug-2021
Client Requested Due Date : 25-Aug-2021 Scheduled Reporting Date : 25-Aug-2021

Delivery Details

Mode of Delivery : Carrier Security Seal : Intact.
No. of coolers/boxes : 2 Temperature : 8.1°C - Ice present
Receipt Detail : No. of samples received / analysed : 62 / 62

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Additional samples were received by ALS and have been marked on the COC as samples 066 "0939_SW050" & 067 "0939_SW054".
These samples will be placed on hold until further instructions are received.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

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

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

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

EM2116269-008 : 12-Aug-2021 11:22 : 0939_MW2112_210812 - Extra vol for lab qc
 EM2116269-029 : 12-Aug-2021 15:40 : 0939_MW2139_210812 - Extra vol for lab QC
 EM2116269-062 : 12-Aug-2021 12:43 : 0939_MW2182_210812 - Extra vol for lab QC
 EM2116269-064 : 12-Aug-2021 15:56 : 0939_MW2166_210812 - Extra vol for lab QC

Summary of Sample(s) and Requested Analysis

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

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

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
EM2116269-001	12-Aug-2021 08:56	0939_SW006_210812	✓
EM2116269-002	12-Aug-2021 09:25	0939_MW2197_210812	✓
EM2116269-003	12-Aug-2021 09:38	0939_MW2499_210812	✓
EM2116269-004	12-Aug-2021 09:50	0939_MW2149_210812	✓
EM2116269-005	12-Aug-2021 10:09	0939_MW2193_210812	✓
EM2116269-006	12-Aug-2021 10:39	0939_MW2194_210812	✓
EM2116269-007	12-Aug-2021 10:57	0939_MW2150_210812	✓
EM2116269-008	12-Aug-2021 11:22	0939_MW2112_210812 ...	✓
EM2116269-009	12-Aug-2021 11:38	0939_MW2137_210812	✓
EM2116269-010	12-Aug-2021 11:54	0939_MW2286_210812	✓
EM2116269-011	12-Aug-2021 12:04	0939_MW2281_210812	✓
EM2116269-012	12-Aug-2021 12:15	0939_MW2184_210812	✓
EM2116269-013	12-Aug-2021 12:15	0939_QC110_210812	✓
EM2116269-015	12-Aug-2021 12:25	0939_MW2185_210812	✓
EM2116269-016	12-Aug-2021 12:39	0939_MW2183_210812	✓
EM2116269-017	12-Aug-2021 12:57	0939_MW2285_210812	✓
EM2116269-018	12-Aug-2021 13:16	0939_MW2180_210812	✓
EM2116269-019	12-Aug-2021 14:14	0939_MW2177_210812	✓
EM2116269-020	12-Aug-2021 14:16	0939_QC111_210812	✓
EM2116269-022	12-Aug-2021 14:29	0939_MW2175_210812	✓
EM2116269-023	12-Aug-2021 14:30	0939_MW2176_210812	✓
EM2116269-024	12-Aug-2021 14:53	0939_MW2172_210812	✓
EM2116269-025	12-Aug-2021 14:54	0939_MW2173_210812	✓
EM2116269-026	12-Aug-2021 15:11	0939_MW2145_210812	✓
EM2116269-027	12-Aug-2021 15:10	0939_MW2129_210812	✓
EM2116269-028	12-Aug-2021 15:29	0939_MW2169_210812	✓
EM2116269-029	12-Aug-2021 15:40	0939_MW2139_210812 ...	✓
EM2116269-032	12-Aug-2021 16:20	0939_MW2126_210812	✓
EM2116269-033	12-Aug-2021 16:28	0939_MW2358_210812	✓
EM2116269-034	12-Aug-2021 16:29	0939_QC112_210812	✓
EM2116269-036	12-Aug-2021 16:40	0939_MW2162_210812	✓



				WATER - EP231X PFAS - Full Suite (28 analytes)
EM2116269-037	12-Aug-2021 16:49	0939_MW2411_210812		✓
EM2116269-038	12-Aug-2021 17:02	0939_MW2394_210812		✓
EM2116269-039	12-Aug-2021 18:32	0939_QC310_210812		✓
EM2116269-040	12-Aug-2021 18:32	0939_QC311_210812		✓
EM2116269-041	12-Aug-2021 18:32	0939_QC312_210812		✓
EM2116269-042	13-Aug-2021 09:18	0939_MW2188_210813		✓
EM2116269-043	13-Aug-2021 09:18	0939_MW2189_210813		✓
EM2116269-044	13-Aug-2021 10:01	0939_MW2202_210813		✓
EM2116269-045	13-Aug-2021 10:09	0939_MW2201_210813		✓
EM2116269-046	13-Aug-2021 10:22	0939_MW2270_210813		✓
EM2116269-047	13-Aug-2021 10:23	0939_MW2120_210813		✓
EM2116269-048	13-Aug-2021 10:23	0939_QC113_210813		✓
EM2116269-049	13-Aug-2021 10:24	0939_QC213_210813		✓
EM2116269-050	13-Aug-2021 10:26	0939_MW2200_210813		✓
EM2116269-051	13-Aug-2021 11:07	0939_SW003_210813		✓
EM2116269-052	13-Aug-2021 11:08	0939_QC114_210813		✓
EM2116269-053	13-Aug-2021 11:08	0939_QC214_210813		✓
EM2116269-054	13-Aug-2021 11:25	0939_SW017_210813		✓
EM2116269-055	13-Aug-2021 15:30	0939_MW2203_210813		✓
EM2116269-056	13-Aug-2021 21:01	0939_QC313_210813		✓
EM2116269-057	13-Aug-2021 15:42	0939_QC413_210813		✓
EM2116269-058	12-Aug-2021 08:30	0939_QC504_210812		✓
EM2116269-059	12-Aug-2021 10:00	0939_QC410_210812		✓
EM2116269-060	12-Aug-2021 14:30	0939_QC411_210812		✓
EM2116269-061	12-Aug-2021 17:06	0939_QC412_210812		✓
EM2116269-062	12-Aug-2021 12:43	0939_MW2182_210812 ...		✓
EM2116269-063	12-Aug-2021 13:03	0939_MW2275_210812		✓
EM2116269-064	12-Aug-2021 15:56	0939_MW2166_210812 ...		✓
EM2116269-065	13-Aug-2021 09:00	0939_QC505_210813		✓
EM2116269-066	[13-Aug-2021]	0939_SW050		✓
EM2116269-067	[13-Aug-2021]	0939_SW054		✓

Proactive Holding Time Report

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



Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email

[REDACTED]

APCORP

- A4 - AU Tax Invoice (INV)

Email

[REDACTED]

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

Email
Email
Email
Email
Email
Email
Email

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

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

Email
Email
Email
Email
Email
Email
Email

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

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

Email
Email
Email
Email
Email
Email
Email

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

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

Email
Email
Email
Email
Email
Email
Email

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

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

Email
Email
Email
Email
Email
Email
Email
Email

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

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

Email
Email
Email
Email
Email
Email
Email

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM2115885**

Page : 1 of 14

Amendment : **1**

Client : **AECOM Australia Pty Ltd**

Laboratory : Environmental Division Melbourne

Contact : [REDACTED]

Telephone : [REDACTED]

Project : SA_0939_PFASOMP

Date Samples Received : 11-Aug-2021

Site : SA_0939_PFASOMP

Issue Date : 30-Aug-2021

Sampler : [REDACTED]

No. of samples received : 103

Order number : 60612561 6.1

No. of samples analysed : 103

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	EM2115885--094	0939_MW4068_210805	Perfluorohexane sulfonic acid (PFHxS)	355-46-4	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP231A: Perfluoroalkyl Sulfonic Acids	EM2115885--094	0939_MW4068_210805	Perfluorooctane sulfonic acid (PFOS)	1763-23-1	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP231B: Perfluoroalkyl Carboxylic Acids	EM2115885--094	0939_MW4068_210805	Perfluorobutanoic acid (PFBA)	375-22-4	48.6 %	73.0-129%	Recovery less than lower data quality objective
EP231C: Perfluoroalkyl Sulfonamides	EM2115885--094	0939_MW4068_210805	N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	57.5 %	68.0-141%	Recovery less than lower data quality objective
EP231C: Perfluoroalkyl Sulfonamides	EM2115885--094	0939_MW4068_210805	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	61.1 %	70.0-130%	Recovery less than lower data quality objective
EP231C: Perfluoroalkyl Sulfonamides	EM2115885--094	0939_MW4068_210805	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	69.4 %	70.0-130%	Recovery less than lower data quality objective

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Method					
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	8	119	6.72	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **WATER**

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

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



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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
0939_SW062_210804, 0939_SW011_210804, 0939_SW009_210804 - Extra vol for lab QC, 0939_SW032_210804, 0939_SW028_210804, 0939_SW019_210804, 0939_QC306_210804, 0939_QC406_210804, 0939_QC503_210804	0939_SW078_210804, 0939_SW059_210804, 0939_SW033_210804 - Extra vol for lab QC, 0939_SW029_210804, 0939_SW021_210804, 0939_QC106_210804, 0939_QC307_210804, 0939_QC407_210804,	04-Aug-2021	18-Aug-2021	31-Jan-2022	✓	18-Aug-2021	31-Jan-2022	✓	
HDPE (no PTFE) (EP231X) 0939_SW018_210804 - Extra volume for lab QC		04-Aug-2021	18-Aug-2021	31-Jan-2022	✓	19-Aug-2021	31-Jan-2022	✓	
HDPE (no PTFE) (EP231X) 0939_MW4079_210805		05-Aug-2021	18-Aug-2021	01-Feb-2022	✓	18-Aug-2021	01-Feb-2022	✓	
HDPE (no PTFE) (EP231X) 0939_MW4073_210805, 0939_MW4057_210805, 0939_MW4068_210805, 0939_QC107_210805, 0939_QC308_210805,	0939_MW4066_210805, 0939_MW4015_210805, 0939_MW4035_210805, 0939_MW4003_210805, 0939_QC408_210805	05-Aug-2021	18-Aug-2021	01-Feb-2022	✓	19-Aug-2021	01-Feb-2022	✓	
HDPE (no PTFE) (EP231X) 0939_MW4075_210806, 0939_MW4048_210806, 0939_SW010_210806, 0939_MW4013_210806 - Extra vol for lab qc, 0939_SW012_210806, 0939_QC309_210806,	0939_MW4069_210806, 0939_MW4001_210806, 0939_SW058_210806, 0939_QC108_210806, 0939_QC109_210806, 0939_QC409_210806	06-Aug-2021	18-Aug-2021	02-Feb-2022	✓	19-Aug-2021	02-Feb-2022	✓	



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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
0939_SW062_210804, 0939_SW011_210804, 0939_SW009_210804 - Extra vol for lab QC, 0939_SW032_210804, 0939_SW028_210804, 0939_SW019_210804, 0939_QC306_210804, 0939_QC406_210804, 0939_QC503_210804	0939_SW078_210804, 0939_SW059_210804, 0939_SW033_210804 - Extra vol for lab QC, 0939_SW029_210804, 0939_SW021_210804, 0939_QC106_210804, 0939_QC307_210804, 0939_QC407_210804,	04-Aug-2021	18-Aug-2021	31-Jan-2022	✓	18-Aug-2021	31-Jan-2022	✓	
HDPE (no PTFE) (EP231X) 0939_SW018_210804 - Extra volume for lab QC		04-Aug-2021	18-Aug-2021	31-Jan-2022	✓	19-Aug-2021	31-Jan-2022	✓	
HDPE (no PTFE) (EP231X) 0939_MW4079_210805		05-Aug-2021	18-Aug-2021	01-Feb-2022	✓	18-Aug-2021	01-Feb-2022	✓	
HDPE (no PTFE) (EP231X) 0939_MW4073_210805, 0939_MW4057_210805, 0939_MW4068_210805, 0939_QC107_210805, 0939_QC308_210805,	0939_MW4066_210805, 0939_MW4015_210805, 0939_MW4035_210805, 0939_MW4003_210805, 0939_QC408_210805	05-Aug-2021	18-Aug-2021	01-Feb-2022	✓	19-Aug-2021	01-Feb-2022	✓	
HDPE (no PTFE) (EP231X) 0939_MW4075_210806, 0939_MW4048_210806, 0939_SW010_210806, 0939_MW4013_210806 - Extra vol for lab qc, 0939_SW012_210806, 0939_QC309_210806,	0939_MW4069_210806, 0939_MW4001_210806, 0939_SW058_210806, 0939_QC108_210806, 0939_QC109_210806, 0939_QC409_210806	06-Aug-2021	18-Aug-2021	02-Feb-2022	✓	19-Aug-2021	02-Feb-2022	✓	



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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
EP231C: Perfluoroalkyl Sulfonamides - Continued									
0939_SW062_210804, 0939_SW011_210804, 0939_SW009_210804 - Extra vol for lab QC, 0939_SW032_210804, 0939_SW028_210804, 0939_SW019_210804, 0939_QC306_210804, 0939_QC406_210804, 0939_QC503_210804	0939_SW078_210804, 0939_SW059_210804, 0939_SW033_210804 - Extra vol for lab QC, 0939_SW029_210804, 0939_SW021_210804, 0939_QC106_210804, 0939_QC307_210804, 0939_QC407_210804,	04-Aug-2021	18-Aug-2021	31-Jan-2022	✓	18-Aug-2021	31-Jan-2022	✓	
HDPE (no PTFE) (EP231X) 0939_SW018_210804 - Extra volume for lab QC		04-Aug-2021	18-Aug-2021	31-Jan-2022	✓	19-Aug-2021	31-Jan-2022	✓	
HDPE (no PTFE) (EP231X) 0939_MW4079_210805		05-Aug-2021	18-Aug-2021	01-Feb-2022	✓	18-Aug-2021	01-Feb-2022	✓	
HDPE (no PTFE) (EP231X) 0939_MW4073_210805, 0939_MW4057_210805, 0939_MW4068_210805, 0939_QC107_210805, 0939_QC308_210805,	0939_MW4066_210805, 0939_MW4015_210805, 0939_MW4035_210805, 0939_MW4003_210805, 0939_QC408_210805	05-Aug-2021	18-Aug-2021	01-Feb-2022	✓	19-Aug-2021	01-Feb-2022	✓	
HDPE (no PTFE) (EP231X) 0939_MW4075_210806, 0939_MW4048_210806, 0939_SW010_210806, 0939_MW4013_210806 - Extra vol for lab qc, 0939_SW012_210806, 0939_QC309_210806,	0939_MW4069_210806, 0939_MW4001_210806, 0939_SW058_210806, 0939_QC108_210806, 0939_QC109_210806, 0939_QC409_210806	06-Aug-2021	18-Aug-2021	02-Feb-2022	✓	19-Aug-2021	02-Feb-2022	✓	



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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
0939_SW062_210804, 0939_SW011_210804, 0939_SW009_210804 - Extra vol for lab QC, 0939_SW032_210804, 0939_SW028_210804, 0939_SW019_210804, 0939_QC306_210804, 0939_QC406_210804, 0939_QC503_210804	0939_SW078_210804, 0939_SW059_210804, 0939_SW033_210804 - Extra vol for lab QC, 0939_SW029_210804, 0939_SW021_210804, 0939_QC106_210804, 0939_QC307_210804, 0939_QC407_210804,	04-Aug-2021	18-Aug-2021	31-Jan-2022	✓	18-Aug-2021	31-Jan-2022	✓
HDPE (no PTFE) (EP231X) 0939_SW018_210804 - Extra volume for lab QC		04-Aug-2021	18-Aug-2021	31-Jan-2022	✓	19-Aug-2021	31-Jan-2022	✓
HDPE (no PTFE) (EP231X) 0939_MW4079_210805		05-Aug-2021	18-Aug-2021	01-Feb-2022	✓	18-Aug-2021	01-Feb-2022	✓
HDPE (no PTFE) (EP231X) 0939_MW4073_210805, 0939_MW4057_210805, 0939_MW4068_210805, 0939_QC107_210805, 0939_QC308_210805,	0939_MW4066_210805, 0939_MW4015_210805, 0939_MW4035_210805, 0939_MW4003_210805, 0939_QC408_210805	05-Aug-2021	18-Aug-2021	01-Feb-2022	✓	19-Aug-2021	01-Feb-2022	✓
HDPE (no PTFE) (EP231X) 0939_MW4075_210806, 0939_MW4048_210806, 0939_SW010_210806, 0939_MW4013_210806 - Extra vol for lab qc, 0939_SW012_210806, 0939_QC309_210806,	0939_MW4069_210806, 0939_MW4001_210806, 0939_SW058_210806, 0939_QC108_210806, 0939_QC109_210806, 0939_QC409_210806	06-Aug-2021	18-Aug-2021	02-Feb-2022	✓	19-Aug-2021	02-Feb-2022	✓



Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
EP231P: PFAS Sums - Continued									
0939_SW062_210804, 0939_SW011_210804, 0939_SW009_210804 - Extra vol for lab QC, 0939_SW032_210804, 0939_SW028_210804, 0939_SW019_210804, 0939_QC306_210804, 0939_QC406_210804, 0939_QC503_210804	0939_SW078_210804, 0939_SW059_210804, 0939_SW033_210804 - Extra vol for lab QC, 0939_SW029_210804, 0939_SW021_210804, 0939_QC106_210804, 0939_QC307_210804, 0939_QC407_210804,	04-Aug-2021	18-Aug-2021	31-Jan-2022	✓	18-Aug-2021	31-Jan-2022	✓	
HDPE (no PTFE) (EP231X) 0939_SW018_210804 - Extra volume for lab QC		04-Aug-2021	18-Aug-2021	31-Jan-2022	✓	19-Aug-2021	31-Jan-2022	✓	
HDPE (no PTFE) (EP231X) 0939_MW4079_210805		05-Aug-2021	18-Aug-2021	01-Feb-2022	✓	18-Aug-2021	01-Feb-2022	✓	
HDPE (no PTFE) (EP231X) 0939_MW4073_210805, 0939_MW4057_210805, 0939_MW4068_210805, 0939_QC107_210805, 0939_QC308_210805,	0939_MW4066_210805, 0939_MW4015_210805, 0939_MW4035_210805, 0939_MW4003_210805, 0939_QC408_210805	05-Aug-2021	18-Aug-2021	01-Feb-2022	✓	19-Aug-2021	01-Feb-2022	✓	
HDPE (no PTFE) (EP231X) 0939_MW4075_210806, 0939_MW4048_210806, 0939_SW010_210806, 0939_MW4013_210806 - Extra vol for lab qc, 0939_SW012_210806, 0939_QC309_210806,	0939_MW4069_210806, 0939_MW4001_210806, 0939_SW058_210806, 0939_QC108_210806, 0939_QC109_210806, 0939_QC409_210806	06-Aug-2021	18-Aug-2021	02-Feb-2022	✓	19-Aug-2021	02-Feb-2022	✓	



Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	8	119	6.72	10.00	✘	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	6	119	5.04	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	6	119	5.04	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	6	119	5.04	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

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

QUALITY CONTROL REPORT

Work Order : EM2115885
Amendment : 1

Page : 1 of 25

Client : AECOM Australia Pty Ltd
 Contact : [REDACTED]
 Address : [REDACTED]

Laboratory : Environmental Division Melbourne
 Contact : [REDACTED]
 Address : [REDACTED]

Telephone : ----
 Project : SA_0939_PFASOMP
 Order number : 60612561 6.1
 C-O-C number : 25860
 Sampler : [REDACTED]
 Site : SA_0939_PFASOMP
 Quote number : SY/139/19 V3
 No. of samples received : 103
 No. of samples analysed : 103

Telephone : [REDACTED]
 Date Samples Received : 11-Aug-2021
 Date Analysis Commenced : 17-Aug-2021
 Issue Date : 30-Aug-2021



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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Accreditation Category
[REDACTED]	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3849086)									
EM2115885-007	0939_MW2501_210802 Extra volume for lab QC	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.21	0.19	9.2	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EM2115885-016	0939_MW2210_210802 Extra volume for lab QC	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	163	144	12.2	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	16.9	16.1	4.7	0% - 20%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	11.9	10.5	12.4	0% - 20%
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	87.5	83.4	4.8	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	16.1	14.9	7.6	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.04	<0.04	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3850489)									
EM2115885-038	0939_MW4071_210803 Extra volume for lab qc	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3851614)									



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3851614) - continued									
EM2115885-051	0939_MW4072_210803 Extra vol for lab QC	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3851618)									
EM2115885-072	0939_SW009_210804 Extra vol for lab QC	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.07	0.06	17.5	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3853045)									
EM2115885-081	0939_SW018_210804 Extra volume for lab QC	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.01	68.5	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EM2115885-107	0939_MW4013_210806 Extra vol for lab qc	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	3.98	3.59	10.2	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.22	0.21	7.6	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.26	0.25	5.1	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	2.35	2.26	3.6	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.09	0.10	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.04	<0.04	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3853063)									
EM2115834-002	Anonymous	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3849086)									
EM2115885-007	0939_MW2501_210802 Extra volume for lab QC	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.01	0.02	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3849086) - continued									
EM2115885-007	0939_MW2501_210802 Extra volume for lab QC	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.04	0.05	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EM2115885-016	0939_MW2210_210802 Extra volume for lab QC	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	5.83	5.64	3.4	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	4.38	4.01	8.9	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	22.7	21.2	6.5	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	3.04	2.94	3.2	0% - 20%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.09	<0.09	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	1.6	1.7	0.0	No Limit		
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3850489)									
EM2115885-038	0939_MW4071_210803 Extra volume for lab qc	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3851614)									
EM2115885-051	0939_MW4072_210803 Extra vol for lab QC	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3851614) - continued									
EM2115885-051	0939_MW4072_210803 Extra vol for lab QC	EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3851618)									
EM2115885-072	0939_SW009_210804 Extra vol for lab QC	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3853045)									
EM2115885-081	0939_SW018_210804 Extra volume for lab QC	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EM2115885-107	0939_MW4013_210806 Extra vol for lab qc	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.11	0.11	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.12	0.11	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.36	0.33	10.8	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3853045) - continued									
EM2115885-107	0939_MW4013_210806 Extra vol for lab qc	EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.09	<0.09	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.2	<0.2	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3853063)									
EM2115834-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3849086)							
EM2115885-007	0939_MW2501_210802 Extra volume for lab QC	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EM2115885-016	0939_MW2210_210802 Extra volume for lab QC	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.04	<0.04
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9			0.02	µg/L	<0.04	<0.04	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3849086) - continued									
EM2115885-016	0939_MW2210_210802 Extra volume for lab QC	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.09	<0.09	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.09	<0.09	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.09	<0.09	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.09	<0.09	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3850489)									
EM2115885-038	0939_MW4071_210803 Extra volume for lab qc	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3851614)									
EM2115885-051	0939_MW4072_210803 Extra vol for lab QC	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3851618)									



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3851618) - continued									
EM2115885-072	0939_SW009_210804 Extra vol for lab QC	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3853045)									
EM2115885-081	0939_SW018_210804 Extra volume for lab QC	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EM2115885-107	0939_MW4013_210806 Extra vol for lab qc	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.09	<0.09	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.09	<0.09	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.09	<0.09	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3853045) - continued									
EM2115885-107	0939_MW4013_210806 Extra vol for lab qc	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.09	<0.09	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3853063)									
EM2115834-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3849086)									
EM2115885-007	0939_MW2501_210802 Extra volume for lab QC	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EM2115885-016	0939_MW2210_210802 Extra volume for lab QC	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3850489)									
EM2115885-038	0939_MW4071_210803 Extra volume for lab qc	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3850489) - continued									
EM2115885-038	0939_MW4071_210803 Extra volume for lab qc	EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3851614)									
EM2115885-051	0939_MW4072_210803 Extra vol for lab QC	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3851618)									
EM2115885-072	0939_SW009_210804 Extra vol for lab QC	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3853045)									
EM2115885-081	0939_SW018_210804 Extra volume for lab QC	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EM2115885-107	0939_MW4013_210806 Extra vol for lab qc	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3853063)									
EM2115834-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3853063) - continued									
EM2115834-002	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 3849086)									
EM2115885-007	0939_MW2501_210802 Extra volume for lab QC	EP231X: Sum of PFAS	----	0.01	µg/L	0.38	0.40	5.1	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.29	0.27	7.1	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.38	0.40	5.1	0% - 20%
EM2115885-016	0939_MW2210_210802 Extra volume for lab QC	EP231X: Sum of PFAS	----	0.01	µg/L	333	304	9.0	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	250	227	9.7	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	305	279	8.9	0% - 20%
EP231P: PFAS Sums (QC Lot: 3850489)									
EM2115885-038	0939_MW4071_210803 Extra volume for lab qc	EP231X: Sum of PFAS	----	0.01	µg/L	0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.01	<0.01	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 3851614)									
EM2115885-051	0939_MW4072_210803 Extra vol for lab QC	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 3851618)									
EM2115885-072	0939_SW009_210804 Extra vol for lab QC	EP231X: Sum of PFAS	----	0.01	µg/L	0.07	0.06	15.4	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.07	0.06	15.4	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.07	0.06	15.4	No Limit
EP231P: PFAS Sums (QC Lot: 3853045)									
EM2115885-081	0939_SW018_210804 Extra volume for lab QC	EP231X: Sum of PFAS	----	0.01	µg/L	0.02	<0.01	66.7	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.02	<0.01	66.7	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231P: PFAS Sums (QC Lot: 3853045) - continued									
EM2115885-081	0939_SW018_210804 Extra volume for lab QC	EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.02	<0.01	66.7	No Limit
EM2115885-107	0939_MW4013_210806 Extra vol for lab qc	EP231X: Sum of PFAS	----	0.01	µg/L	7.49	6.96	7.3	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	6.33	5.85	7.9	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	7.14	6.61	7.7	0% - 20%
EP231P: PFAS Sums (QC Lot: 3853063)									
EM2115834-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



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

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

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3849086)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	114	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	104	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	111	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	98.3	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	124	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	102	53.0	142	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3850489)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	111	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	100	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	111	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	100	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	110	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	94.7	53.0	142	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3851614)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	106	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	100	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	104	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	94.9	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	108	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	101	53.0	142	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3851618)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	112	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	95.5	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	121	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	105	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	103	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	98.2	53.0	142	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3853045)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	98.4	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	92.7	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	98.3	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	88.2	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	94.0	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	82.8	53.0	142	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3853063)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	97.0	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	96.0	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	99.8	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	89.4	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	96.2	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	81.8	53.0	142	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3849086)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.8	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	110	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	106	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	104	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	105	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	104	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	122	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	107	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.0	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.9375 µg/L	127	71.0	132	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3850489)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	94.6	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.9	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	97.6	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	97.6	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	96.7	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	82.1	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.9375 µg/L	116	71.0	132	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3851614)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	100	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	111	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	100	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	102	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	93.9	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	92.3	71.0	129	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3851614) - continued									
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	100	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	99.5	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	107	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.9375 µg/L	112	71.0	132	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3851618)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	113	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	112	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	100	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	103	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.6	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	102	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	110	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.6	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.9375 µg/L	115	71.0	132	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3853045)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	83.3	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	98.3	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	92.6	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	90.7	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	90.0	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	90.7	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	88.6	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.7	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	93.8	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	82.2	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.9375 µg/L	97.6	71.0	132	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3853063)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	96.4	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	96.1	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.1	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	92.5	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	89.0	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	90.7	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.3	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	90.5	72.0	134	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					LCS	Low	High	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3853063) - continued								
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	84.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.9375 µg/L	96.5	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3849086)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	104	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	139	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	118	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	117	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	109	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	129	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	132	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3850489)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	97.0	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	106	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	83.2	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	111	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	98.9	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	111	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	123	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3851614)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	99.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	119	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	115	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	114	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	95.4	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	131	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	112	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3851618)								



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Acceptable Limits (%)	
					Concentration	LCS	Low	High	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3851618) - continued									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	106	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	128	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	119	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	107	70.0	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	108	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	123	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	124	61.0	135	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3853045)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	84.1	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	88.7	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	81.2	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	96.8	70.0	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	88.7	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	110	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	111	61.0	135	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3853063)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	88.9	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	102	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	81.7	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	98.3	70.0	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	87.5	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	113	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	118	61.0	135	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3849086)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	104	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	103	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	108	67.0	138	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3849086) - continued									
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	98.4	70.0	130	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3850489)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	99.8	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	108	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	111	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	92.6	70.0	130	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3851614)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	96.3	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	91.0	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	112	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	87.8	70.0	130	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3851618)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	96.6	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	102	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	107	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	85.3	70.0	130	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3853045)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	89.4	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	97.2	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	99.0	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	81.2	70.0	130	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3853063)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	88.7	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	94.3	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	104	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	87.0	70.0	130	
EP231P: PFAS Sums (QCLot: 3849086)									
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----	
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----	
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----	
EP231P: PFAS Sums (QCLot: 3850489)									
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----	
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----	
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----	
EP231P: PFAS Sums (QCLot: 3851614)									
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
EP231P: PFAS Sums (QCLot: 3851614) - continued								
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 3851618)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 3853045)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 3853063)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Acceptable Limits (%)	
					MS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3849086)							
EM2115885-008	0661_MW2325_210802 Extra volume for lab QC	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	123	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	108	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	122	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	101	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	131	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	100.0	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3850489)							
EM2115885-039	0939_MW4024_210803 Extra volume for lab qc	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	115	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	102	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	124	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	103	69.0	134



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3850489) - continued							
EM2115885-039	0939_MW4024_210803 Extra volume for lab qc	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	106	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	80.5	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3851614)							
EM2115885-062	0939_MW4055_210803 Extra vol for lab QC	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	105	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	104	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	106	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	105	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	106	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	97.5	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3851618)							
EM2115885-073	0939_SW033_210804 Extra vol for lab QC	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	115	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	73.4	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	112	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	106	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	102	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	95.8	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3853045)							
EM2115885-094	0939_MW4068_210805	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	113	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	102	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	# Not Determined	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	98.1	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	# Not Determined	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	66.8	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3853063)							
EM2115834-004	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	108	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	103	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	111	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	107	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	106	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	86.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3849086)							
EM2115885-008	0661_MW2325_210802 Extra volume for lab QC	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	102	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	110	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	129	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	112	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	104	71.0	133



Sub-Matrix: WATER

				Matrix Spike (MS) Report					
				Spike	SpikeRecovery(%)	Acceptable Limits (%)			
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High		
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3849086) - continued									
EM2115885-008	0661_MW2325_210802 Extra volume for lab QC	EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	102	69.0	130		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	109	71.0	129		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	128	69.0	133		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	118	72.0	134		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	106	65.0	144		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.9375 µg/L	130	71.0	132		
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3850489)									
EM2115885-039	0939_MW4024_210803 Extra volume for lab qc	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	105	73.0	129		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	104	72.0	129		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	105	72.0	129		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	102	72.0	130		
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	102	71.0	133		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	90.8	69.0	130		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	95.8	71.0	129		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	104	69.0	133		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	88.2	72.0	134		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	76.1	65.0	144		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.9375 µg/L	110	71.0	132		
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3851614)									
EM2115885-062	0939_MW4055_210803 Extra vol for lab QC	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	104	73.0	129		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	108	72.0	129		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	107	72.0	129		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	106	72.0	130		
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	102	71.0	133		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	102	69.0	130		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	99.7	71.0	129		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	102	69.0	133		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	95.9	72.0	134		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	106	65.0	144		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.9375 µg/L	110	71.0	132		
		EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3851618)							
		EM2115885-073	0939_SW033_210804 Extra vol for lab QC	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	108	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3			0.25 µg/L	113	72.0	129		
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4			0.25 µg/L	103	72.0	129		
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9			0.25 µg/L	104	72.0	130		
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1			0.25 µg/L	105	71.0	133		
EP231X: Perfluorononanoic acid (PFNA)	375-95-1			0.25 µg/L	108	69.0	130		
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2			0.25 µg/L	101	71.0	129		



Sub-Matrix: WATER

				Matrix Spike (MS) Report					
				Spike	SpikeRecovery(%)	Acceptable Limits (%)			
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High		
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3851618) - continued									
EM2115885-073	0939_SW033_210804 Extra vol for lab QC	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	118	69.0	133		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	106	72.0	134		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	98.1	65.0	144		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.9375 µg/L	118	71.0	132		
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3853045)									
EM2115885-094	0939_MW4068_210805	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	# 48.6	73.0	129		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	100	72.0	129		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	92.5	72.0	129		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	101	72.0	130		
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	88.0	71.0	133		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	96.3	69.0	130		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	85.5	71.0	129		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	79.5	69.0	133		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	76.8	72.0	134		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	70.4	65.0	144		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.9375 µg/L	89.9	71.0	132		
		EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3853063)							
EM2115834-004	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	98.4	73.0	129		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	109	72.0	129		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	106	72.0	129		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	107	72.0	130		
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	104	71.0	133		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	108	69.0	130		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	100	71.0	129		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	106	69.0	133		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	101	72.0	134		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	93.8	65.0	144		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.9375 µg/L	112	71.0	132		
		EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3849086)							
		EM2115885-008	0661_MW2325_210802 Extra volume for lab QC	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	110	67.0	137
				EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	138	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2			0.625 µg/L	119	70.0	130		
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7			0.625 µg/L	127	70.0	130		
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2			0.625 µg/L	118	70.0	130		
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9			0.25 µg/L	133	65.0	136		



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3849086) - continued							
EM2115885-008	0661_MW2325_210802 Extra volume for lab QC	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	133	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3850489)							
EM2115885-039	0939_MW4024_210803 Extra volume for lab qc	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	93.5	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	106	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	92.7	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	113	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	92.5	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	107	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	112	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3851614)							
EM2115885-062	0939_MW4055_210803 Extra vol for lab QC	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	96.0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	108	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	111	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	105	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	95.8	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	129	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	121	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3851618)							
EM2115885-073	0939_SW033_210804 Extra vol for lab QC	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	110	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	122	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	115	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	121	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	119	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	132	65.0	136



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
Laboratory sample ID		Sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery(%) MS	Acceptable Limits (%) Low High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3851618) - continued							
EM2115885-073	0939_SW033_210804 Extra vol for lab QC	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	128	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3853045)							
EM2115885-094	0939_MW4068_210805	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	74.2	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	# 57.5	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	# 61.1	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	84.1	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	# 69.4	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	94.3	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	89.1	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3853063)							
EM2115834-004	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	95.0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	113	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	106	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	113	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	104	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	121	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	120	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3849086)							
EM2115885-008	0661_MW2325_210802 Extra volume for lab QC	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	98.6	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	111	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	118	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	94.4	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3850489)							
EM2115885-039	0939_MW4024_210803 Extra volume for lab qc	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	99.9	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	102	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	103	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	101	70.0	130



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3851614)							
EM2115885-062	0939_MW4055_210803 Extra vol for lab QC	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	99.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	107	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	105	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	105	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3851618)							
EM2115885-073	0939_SW033_210804 Extra vol for lab QC	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	96.8	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	107	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	108	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	73.8	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3853045)							
EM2115885-094	0939_MW4068_210805	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	88.5	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	99.1	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	84.4	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	71.9	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3853063)							
EM2115834-004	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	99.0	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	108	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	116	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	86.3	70.0	130

CERTIFICATE OF ANALYSIS

Work Order : EM2115885 Amendment : 1 Client : AECOM Australia Pty Ltd Contact : ██████████ Address : ██████████ Telephone : ---- Project : SA_0939_PFASOMP Order number : 60612561 6.1 C-O-C number : 25860 Sampler : ██████████ Site : SA_0939_PFASOMP Quote number : SY/139/19 V3 No. of samples received : 103 No. of samples analysed : 103	Page : 1 of 47 Laboratory : Environmental Division Melbourne Contact : ██████████ Address : ██████████ Telephone : ██████████ Date Samples Received : 11-Aug-2021 12:35 Date Analysis Commenced : 17-Aug-2021 Issue Date : 30-Aug-2021 11:06
--	---



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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
██████████	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

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

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

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

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

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

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

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

- EP231X: Samples (EM2115885) required dilution due to matrix interferences. LOR values have been adjusted accordingly.
- EP231X: Poor matrix spike recovery for sample EM2115885-094 due to sample matrix interference.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment 30/08/2021: This report has been amended as a result of a request to change sample identification numbers (IDs) received from Georgia Matthews on 30/8/251, for samples 019, 020. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2116_21080 2	0939_MW2490_21080 2	0939_MW2284_21080 2	0939_MW2272_21080 2	0939_MW2148_21080 2
Sampling date / time				02-Aug-2021 09:03	02-Aug-2021 09:28	02-Aug-2021 09:53	02-Aug-2021 10:13	02-Aug-2021 10:22
Compound	CAS Number	LOR	Unit	EM2115885-001 Result	EM2115885-002 Result	EM2115885-003 Result	EM2115885-004 Result	EM2115885-005 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	277	146	5.91	34.2	54.7
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	263	181	3.87	21.0	54.0
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	2700	1930	35.8	182	376
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	250	161	2.90	16.2	31.3
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	6860	2980	26.5	115	303
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.37	<0.36	<0.04	0.10	<0.04
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	20.3	9.4	0.4	2.8	3.8
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	115	53.2	2.30	12.2	14.4
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	674	322	11.4	62.2	80.1
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	74.9	41.9	1.57	8.42	10.7
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	192	122	3.34	17.3	25.4
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.44	<0.36	<0.04	<0.04	<0.04
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.37	<0.36	<0.04	<0.04	<0.04
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.37	<0.36	<0.04	<0.04	<0.04
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.37	<0.36	<0.04	<0.04	<0.04
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.37	<0.36	<0.04	<0.04	<0.04
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.93	<0.90	<0.09	<0.10	<0.09
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.37	0.43	<0.04	<0.04	0.04
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.93	<0.90	<0.09	<0.10	<0.09
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.93	<0.90	<0.09	<0.10	<0.09



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2116_21080 2	0939_MW2490_21080 2	0939_MW2284_21080 2	0939_MW2272_21080 2	0939_MW2148_21080 2
Sampling date / time				02-Aug-2021 09:03	02-Aug-2021 09:28	02-Aug-2021 09:53	02-Aug-2021 10:13	02-Aug-2021 10:22
Compound	CAS Number	LOR	Unit	EM2115885-001 Result	EM2115885-002 Result	EM2115885-003 Result	EM2115885-004 Result	EM2115885-005 Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.93	<0.90	<0.09	<0.10	<0.09
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.93	<0.90	<0.09	<0.10	<0.09
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.37	<0.36	<0.04	<0.04	<0.04
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.37	<0.36	<0.04	<0.04	<0.04
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.37	<0.36	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.37	<0.36	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.37	<0.36	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.37	<0.36	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	11400	5950	94.0	471	953
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	9560	4910	62.3	297	679
Sum of PFAS (WA DER List)	----	0.01	µg/L	10900	5600	87.2	434	868
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	118	100	110	98.4	104
13C8-PFOA	----	0.02	%	100	103	104	97.9	96.5



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2158_21080 2	0939_MW2501_21080 2 Extra volume for lab QC	0661_MW2325_21080 2 Extra volume for lab QC	0939_MW2218_21080 2	0939_QC101_210802
Sampling date / time				02-Aug-2021 10:30	02-Aug-2021 10:58	02-Aug-2021 11:16	02-Aug-2021 11:37	02-Aug-2021 11:52
Compound	CAS Number	LOR	Unit	EM2115885-006 Result	EM2115885-007 Result	EM2115885-008 Result	EM2115885-009 Result	EM2115885-010 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	77.7	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	74.0	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	559	0.08	<0.02	0.19	0.05
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	60.2	<0.02	<0.02	0.03	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	1460	0.21	<0.01	1.06	0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.05	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	11.3	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	28.8	0.04	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	154	0.04	<0.02	0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	22.0	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	58.2	0.01	<0.01	0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.18	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.05	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.05	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.05	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.05	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.12	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	0.28	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.12	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2158_21080 2	0939_MW2501_21080 2 Extra volume for lab QC	0661_MW2325_21080 2 Extra volume for lab QC	0939_MW2218_21080 2	0939_QC101_210802
Sampling date / time				02-Aug-2021 10:30	02-Aug-2021 10:58	02-Aug-2021 11:16	02-Aug-2021 11:37	02-Aug-2021 11:52
Compound	CAS Number	LOR	Unit	EM2115885-006	EM2115885-007	EM2115885-008	EM2115885-009	EM2115885-010
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.12	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.12	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.12	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.05	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.05	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	2500	0.38	<0.01	1.31	0.06
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	2020	0.29	<0.01	1.25	0.06
Sum of PFAS (WA DER List)	----	0.01	µg/L	2370	0.38	<0.01	1.28	0.06
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	66.5	107	109	104	109
13C8-PFOA	----	0.02	%	100	104	107	104	107



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2134_21080 2	0939_MW2216_21080 2	0939_MW2135_21080 2	0939_MW2130_21080 2	0939_MW2210_21080 2 Extra volume for lab QC
Sampling date / time				02-Aug-2021 11:54	02-Aug-2021 12:18	02-Aug-2021 12:19	02-Aug-2021 12:49	02-Aug-2021 13:05
Compound	CAS Number	LOR	Unit	EM2115885-011 Result	EM2115885-013 Result	EM2115885-014 Result	EM2115885-015 Result	EM2115885-016 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	9.37	16.9
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	7.73	11.9
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.04	<0.02	<0.02	74.0	87.5
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	10.9	16.1
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	334	163
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	0.52	<0.04
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	3.8	1.6
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	11.5	4.38
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	64.0	22.7
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	9.18	3.04
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	17.6	5.83
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	0.58	<0.04
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	0.15	<0.04
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.04	<0.04
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.04	<0.04
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.04	<0.04
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.09	<0.09
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	0.26	<0.04
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.09	<0.09



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2134_21080 2	0939_MW2216_21080 2	0939_MW2135_21080 2	0939_MW2130_21080 2	0939_MW2210_21080 2 Extra volume for lab QC
Sampling date / time				02-Aug-2021 11:54	02-Aug-2021 12:18	02-Aug-2021 12:19	02-Aug-2021 12:49	02-Aug-2021 13:05
Compound	CAS Number	LOR	Unit	EM2115885-011 Result	EM2115885-013 Result	EM2115885-014 Result	EM2115885-015 Result	EM2115885-016 Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.09	<0.09
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.09	<0.09
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.09	<0.09
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.04	<0.04
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.04	<0.04
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	0.68	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	0.31	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	0.04	<0.01	<0.01	544	333
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.04	<0.01	<0.01	408	250
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.04	<0.01	<0.01	524	305
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	102	110	109	102	92.0
13C8-PFOA	----	0.02	%	106	106	100	95.6	99.4



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2131_21080 2	0939_MW2528_21080 2	0939_MW2209_21080 2	0939_MW2157_21080 2	0939_MW2114_21080 2
Sampling date / time				02-Aug-2021 13:10	02-Aug-2021 13:26	02-Aug-2021 13:34	02-Aug-2021 13:45	02-Aug-2021 13:55
Compound	CAS Number	LOR	Unit	EM2115885-017 Result	EM2115885-018 Result	EM2115885-019 Result	EM2115885-020 Result	EM2115885-021 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	1.58	3.72	<0.02	0.58	14.8
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	1.63	2.01	<0.02	0.72	11.2
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	19.1	16.8	<0.02	4.82	67.6
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	1.00	1.49	<0.02	0.54	8.72
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	125	58.2	0.06	10.2	108
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	0.04	0.18	<0.02	<0.02	<0.04
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	0.9	5.4	<0.1	0.1	2.2
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	4.97	8.09	<0.02	0.22	3.90
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	12.1	15.2	<0.02	1.21	21.7
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	2.86	1.05	<0.02	0.16	4.62
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	8.21	2.52	<0.01	0.38	11.3
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.10	0.31	<0.02	<0.02	<0.04
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.04	0.11	<0.02	<0.02	<0.04
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.04	<0.04	<0.02	<0.02	<0.04
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.04	<0.04	<0.02	<0.02	<0.04
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.04	<0.04	<0.02	<0.02	<0.04
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.10	<0.09	<0.05	<0.05	<0.09
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	0.66	0.07	<0.02	<0.02	<0.04
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.10	<0.09	<0.05	<0.05	<0.09
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.10	<0.09	<0.05	<0.05	<0.09



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW2131_21080 2	0939_MW2528_21080 2	0939_MW2209_21080 2	0939_MW2157_21080 2	0939_MW2114_21080 2
Sampling date / time				02-Aug-2021 13:10	02-Aug-2021 13:26	02-Aug-2021 13:34	02-Aug-2021 13:45	02-Aug-2021 13:55
Compound	CAS Number	LOR	Unit	EM2115885-017 Result	EM2115885-018 Result	EM2115885-019 Result	EM2115885-020 Result	EM2115885-021 Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.10	<0.09	<0.05	<0.05	<0.09
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.10	<0.09	<0.05	<0.05	<0.09
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.04	<0.04	<0.02	<0.02	<0.04
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.04	<0.04	<0.02	<0.02	<0.04
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	2.29	0.20	<0.05	<0.05	0.43
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	0.06	0.11	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	180	115	0.06	18.9	254
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	144	75.0	0.06	15.0	176
Sum of PFAS (WA DER List)	----	0.01	µg/L	177	111	0.06	17.7	234
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	101	108	106	110	93.1
13C8-PFOA	----	0.02	%	102	109	101	104	105



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4218_21080 2	0939_MW2159_21080 2	0939_QC102_210802	0939_MW4065_21080 2	0939_MW4022_21080 2
Sampling date / time				02-Aug-2021 15:21	02-Aug-2021 15:46	02-Aug-2021 15:55	02-Aug-2021 16:17	02-Aug-2021 16:40
Compound	CAS Number	LOR	Unit	EM2115885-022 Result	EM2115885-023 Result	EM2115885-024 Result	EM2115885-026 Result	EM2115885-027 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4218_21080 2	0939_MW2159_21080 2	0939_QC102_210802	0939_MW4065_21080 2	0939_MW4022_21080 2
Sampling date / time				02-Aug-2021 15:21	02-Aug-2021 15:46	02-Aug-2021 15:55	02-Aug-2021 16:17	02-Aug-2021 16:40
Compound	CAS Number	LOR	Unit	EM2115885-022 Result	EM2115885-023 Result	EM2115885-024 Result	EM2115885-026 Result	EM2115885-027 Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	111	107	105	104	109
13C8-PFOA	----	0.02	%	104	104	106	101	103



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4009_21080 2	0939_QC301_210802	0939_QC302_210802	0939_QC303_210802	0939_QC401_210802
Sampling date / time				02-Aug-2021 16:47	02-Aug-2021 16:56	02-Aug-2021 16:57	02-Aug-2021 16:58	02-Aug-2021 16:59
Compound	CAS Number	LOR	Unit	EM2115885-028 Result	EM2115885-029 Result	EM2115885-030 Result	EM2115885-031 Result	EM2115885-032 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4009_21080 2	0939_QC301_210802	0939_QC302_210802	0939_QC303_210802	0939_QC401_210802
Sampling date / time				02-Aug-2021 16:47	02-Aug-2021 16:56	02-Aug-2021 16:57	02-Aug-2021 16:58	02-Aug-2021 16:59
Compound	CAS Number	LOR	Unit	EM2115885-028	EM2115885-029	EM2115885-030	EM2115885-031	EM2115885-032
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	108	105	104	110	107
13C8-PFOA	----	0.02	%	101	101	102	102	100



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_QC402_210802	0939_QC403_210802	0939_QC501_210802	0939_MW4021_21080 3	0939_MW4020_21080 3
Sampling date / time				02-Aug-2021 17:00	02-Aug-2021 17:01	02-Aug-2021 17:02	03-Aug-2021 08:58	03-Aug-2021 09:19
Compound	CAS Number	LOR	Unit	EM2115885-033	EM2115885-034	EM2115885-035	EM2115885-036	EM2115885-037
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0939_QC402_210802	0939_QC403_210802	0939_QC501_210802	0939_MW4021_21080 3	0939_MW4020_21080 3
Sampling date / time					02-Aug-2021 17:00	02-Aug-2021 17:01	02-Aug-2021 17:02	03-Aug-2021 08:58	03-Aug-2021 09:19
Compound	CAS Number	LOR	Unit	EM2115885-033	EM2115885-034	EM2115885-035	EM2115885-036	EM2115885-037	
				Result	Result	Result	Result	Result	
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	109	109	110	116	108	
13C8-PFOA	----	0.02	%	99.0	102	97.6	103	100	



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4071_21080 3 Extra volume for lab qc	0939_MW4024_21080 3 Extra volume for lab qc	0939_MW4023_21080 3	0939_QC103_210803	0939_MW4060_21080 3
Sampling date / time				03-Aug-2021 09:39	03-Aug-2021 09:43	03-Aug-2021 09:44	03-Aug-2021 09:45	03-Aug-2021 10:18
Compound	CAS Number	LOR	Unit	EM2115885-038 Result	EM2115885-039 Result	EM2115885-040 Result	EM2115885-041 Result	EM2115885-043 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.05	0.05	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.05	0.08	0.08	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.58	1.00	1.03	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.05	0.08	0.08	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.01	0.45	0.92	0.45	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.02	0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.10	0.17	0.18	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.02	0.04	0.04	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4071_21080 3 Extra volume for lab qc	0939_MW4024_21080 3 Extra volume for lab qc	0939_MW4023_21080 3	0939_QC103_210803	0939_MW4060_21080 3
Sampling date / time				03-Aug-2021 09:39	03-Aug-2021 09:43	03-Aug-2021 09:44	03-Aug-2021 09:45	03-Aug-2021 10:18
Compound	CAS Number	LOR	Unit	EM2115885-038	EM2115885-039	EM2115885-040	EM2115885-041	EM2115885-043
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	0.01	1.25	2.36	1.93	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.01	1.03	1.92	1.48	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.01	1.15	2.20	1.77	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	107	98.3	117	116	112
13C8-PFOA	----	0.02	%	99.9	101	100	99.5	101



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4059_21080 3	0939_MW4077_21080 3	0939_MW4078_21080 3	0939_MW4058_21080 3	0939_MW4064_21080 3
Sampling date / time				03-Aug-2021 10:43	03-Aug-2021 10:48	03-Aug-2021 11:28	03-Aug-2021 11:33	03-Aug-2021 11:49
Compound	CAS Number	LOR	Unit	EM2115885-044 Result	EM2115885-045 Result	EM2115885-046 Result	EM2115885-047 Result	EM2115885-048 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0939_MW4059_21080 3	0939_MW4077_21080 3	0939_MW4078_21080 3	0939_MW4058_21080 3	0939_MW4064_21080 3
Sampling date / time					03-Aug-2021 10:43	03-Aug-2021 10:48	03-Aug-2021 11:28	03-Aug-2021 11:33	03-Aug-2021 11:49
Compound	CAS Number	LOR	Unit		EM2115885-044	EM2115885-045	EM2115885-046	EM2115885-047	EM2115885-048
				Result	Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	102	95.3	84.0	97.9	101	101
13C8-PFOA	----	0.02	%	102	104	104	106	104	104



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4219_21080 3	0939_MW4052_21080 3	0939_MW4072_21080 3 Extra vol for lab QC	0939_QC104_210803	0939_MW4041_21080 3
Sampling date / time				03-Aug-2021 12:03	03-Aug-2021 13:40	03-Aug-2021 13:51	03-Aug-2021 14:15	03-Aug-2021 14:07
Compound	CAS Number	LOR	Unit	EM2115885-049 Result	EM2115885-050 Result	EM2115885-051 Result	EM2115885-052 Result	EM2115885-053 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.04	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.04	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.22	<0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.28	0.02	<0.01	0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.03	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.02	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4219_21080 3	0939_MW4052_21080 3	0939_MW4072_21080 3 Extra vol for lab QC	0939_QC104_210803	0939_MW4041_21080 3
Sampling date / time				03-Aug-2021 12:03	03-Aug-2021 13:40	03-Aug-2021 13:51	03-Aug-2021 14:15	03-Aug-2021 14:07
Compound	CAS Number	LOR	Unit	EM2115885-049 Result	EM2115885-050 Result	EM2115885-051 Result	EM2115885-052 Result	EM2115885-053 Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	0.63	0.02	<0.01	0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.50	0.02	<0.01	0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.59	0.02	<0.01	0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	98.5	97.9	104	106	102
13C8-PFOA	----	0.02	%	103	99.5	100	103	110



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4074_21080 3	0939_MW4037_21080 3	0939_MW4070_21080 3	0939_MW4045_21080 3	0939_MW4053_21080 3
Sampling date / time				03-Aug-2021 14:23	03-Aug-2021 14:39	03-Aug-2021 15:40	03-Aug-2021 15:56	03-Aug-2021 16:02
Compound	CAS Number	LOR	Unit	EM2115885-055 Result	EM2115885-056 Result	EM2115885-057 Result	EM2115885-058 Result	EM2115885-059 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.03
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.03
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	<0.02	0.08	0.22
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	0.29	0.49
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	0.02
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4074_21080 3	0939_MW4037_21080 3	0939_MW4070_21080 3	0939_MW4045_21080 3	0939_MW4053_21080 3
Sampling date / time				03-Aug-2021 14:23	03-Aug-2021 14:39	03-Aug-2021 15:40	03-Aug-2021 15:56	03-Aug-2021 16:02
Compound	CAS Number	LOR	Unit	EM2115885-055 Result	EM2115885-056 Result	EM2115885-057 Result	EM2115885-058 Result	EM2115885-059 Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	0.37	0.79
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	0.37	0.71
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	0.37	0.76
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	106	90.8	106	94.2	92.6
13C8-PFOA	----	0.02	%	101	101	99.7	98.6	106



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_QC105_210803	0939_MW4055_21080 3 Extra vol for lab QC	0939_MW4079_21080 5	0939_MW4073_21080 5	0939_MW4066_21080 5
Sampling date / time				03-Aug-2021 16:02	03-Aug-2021 16:36	05-Aug-2021 08:55	05-Aug-2021 09:09	05-Aug-2021 09:17
Compound	CAS Number	LOR	Unit	EM2115885-060	EM2115885-062	EM2115885-089	EM2115885-090	EM2115885-091
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.02	<0.02	0.03	0.09	0.06
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.03	<0.02	<0.02	0.03	0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.23	<0.02	0.04	0.23	0.18
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.56	<0.01	<0.01	0.07	0.05
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.04
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.02	<0.01	<0.01	0.03	0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_QC105_210803	0939_MW4055_21080 3 Extra vol for lab QC	0939_MW4079_21080 5	0939_MW4073_21080 5	0939_MW4066_21080 5
Sampling date / time				03-Aug-2021 16:02	03-Aug-2021 16:36	05-Aug-2021 08:55	05-Aug-2021 09:09	05-Aug-2021 09:17
Compound	CAS Number	LOR	Unit	EM2115885-060	EM2115885-062	EM2115885-089	EM2115885-090	EM2115885-091
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	0.86	<0.01	0.07	0.45	0.36
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.79	<0.01	0.04	0.30	0.23
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.83	<0.01	0.07	0.42	0.34
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	97.3	104	104	99.1	100
13C8-PFOA	----	0.02	%	102	107	101	104	101



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4057_21080 5	0939_MW4015_21080 5	0939_MW4068_21080 5	0939_MW4035_21080 5	0939_QC107_210805
Sampling date / time				05-Aug-2021 09:27	05-Aug-2021 10:32	05-Aug-2021 10:52	05-Aug-2021 11:18	05-Aug-2021 11:20
Compound	CAS Number	LOR	Unit	EM2115885-092 Result	EM2115885-093 Result	EM2115885-094 Result	EM2115885-095 Result	EM2115885-097 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.04	0.32	0.25	0.78	0.74
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.48	0.32	0.62	0.69
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.12	5.83	3.21	6.40	6.85
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.26	0.21	0.49	0.52
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.07	7.67	6.87	13.7	15.2
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.04	<0.04	<0.04	<0.04
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.2	<0.2	<0.2	<0.2
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.10	0.07	0.15	0.16
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.64	0.39	0.84	0.83
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.07	0.05	0.13	0.14
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.02	0.20	0.15	0.32	0.36
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.04	<0.04	<0.04	<0.04
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.04	<0.04	<0.04	<0.04
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.04	<0.04	<0.04	<0.04
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.04	<0.04	<0.04	<0.04
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.04	<0.04	<0.04	<0.04
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.10	<0.10	<0.09	<0.09
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.04	<0.04	<0.04	<0.04
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.10	<0.10	<0.09	<0.09
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.10	<0.10	<0.09	<0.09



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4057_21080 5	0939_MW4015_21080 5	0939_MW4068_21080 5	0939_MW4035_21080 5	0939_QC107_210805
Sampling date / time				05-Aug-2021 09:27	05-Aug-2021 10:32	05-Aug-2021 10:52	05-Aug-2021 11:18	05-Aug-2021 11:20
Compound	CAS Number	LOR	Unit	EM2115885-092 Result	EM2115885-093 Result	EM2115885-094 Result	EM2115885-095 Result	EM2115885-097 Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.10	<0.10	<0.09	<0.09
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.10	<0.10	<0.09	<0.09
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.04	<0.04	<0.04	<0.04
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.04	<0.04	<0.04	<0.04
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	0.25	15.6	11.5	23.4	25.5
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.19	13.5	10.1	20.1	22.0
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.25	14.8	11.0	22.3	24.3
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	92.4	98.3	105	99.0	99.7
13C8-PFOA	----	0.02	%	93.3	98.4	97.8	96.3	99.1



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4003_21080 5	0939_MW4075_21080 6	0939_MW4069_21080 6	0939_MW4048_21080 6	0939_MW4001_21080 6
Sampling date / time				05-Aug-2021 11:25	06-Aug-2021 09:20	06-Aug-2021 09:29	06-Aug-2021 09:43	06-Aug-2021 09:54
Compound	CAS Number	LOR	Unit	EM2115885-098 Result	EM2115885-101 Result	EM2115885-102 Result	EM2115885-103 Result	EM2115885-104 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.31	<0.02	0.08	0.03	0.04
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.41	<0.02	0.10	0.04	0.03
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	3.81	<0.02	0.77	0.36	0.32
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.26	<0.02	0.04	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	8.48	<0.01	1.58	0.60	0.91
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.04	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.2	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.08	<0.02	0.05	0.03	0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.48	<0.02	0.13	0.08	0.06
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.08	<0.02	0.03	0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.23	<0.01	0.06	0.04	0.04
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.04	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.04	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.04	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.04	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.04	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.09	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.04	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.09	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.09	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4003_21080 5	0939_MW4075_21080 6	0939_MW4069_21080 6	0939_MW4048_21080 6	0939_MW4001_21080 6
Sampling date / time				05-Aug-2021 11:25	06-Aug-2021 09:20	06-Aug-2021 09:29	06-Aug-2021 09:43	06-Aug-2021 09:54
Compound	CAS Number	LOR	Unit	EM2115885-098 Result	EM2115885-101 Result	EM2115885-102 Result	EM2115885-103 Result	EM2115885-104 Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.09	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.09	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.04	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.04	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	14.1	<0.01	2.84	1.20	1.42
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	12.3	<0.01	2.35	0.96	1.23
Sum of PFAS (WA DER List)	----	0.01	µg/L	13.5	<0.01	2.70	1.16	1.39
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	98.7	94.0	105	90.5	97.1
13C8-PFOA	----	0.02	%	97.8	102	102	107	105



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4013_21080 6 Extra vol for lab qc	0939_QC108_210806	----	----	----
				06-Aug-2021 10:45	06-Aug-2021 10:46	----	----	----
Compound	CAS Number	LOR	Unit	EM2115885-107	EM2115885-108	-----	-----	-----
				Result	Result	---	---	---
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.22	0.20	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.26	0.28	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	2.35	2.36	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.09	0.10	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	3.98	3.72	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.04	<0.04	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.2	<0.2	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.12	0.12	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.36	0.32	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.04	0.05	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.11	0.12	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.04	<0.04	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.04	<0.04	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.04	<0.04	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.04	<0.04	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.04	<0.04	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.09	<0.09	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.04	<0.04	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.09	<0.09	----	----	----



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4013_21080 6 Extra vol for lab qc	0939_QC108_210806	----	----	----
				06-Aug-2021 10:45	06-Aug-2021 10:46	----	----	----
Compound	CAS Number	LOR	Unit	EM2115885-107	EM2115885-108	-----	-----	-----
				Result	Result	---	---	---
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.09	<0.09	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.09	<0.09	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.09	<0.09	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.04	<0.04	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.04	<0.04	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	7.49	7.27	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	6.33	6.08	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	7.14	6.89	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	110	95.9	----	----	----
13C8-PFOA	----	0.02	%	103	101	----	----	----



Analytical Results

Sub-Matrix: SURFACE WATER
 (Matrix: WATER)

Sample ID

				0939_SW062_210804	0939_SW078_210804	0939_SW011_210804	0939_SW059_210804	0939_SW009_210804 Extra vol for lab QC
Sampling date / time				04-Aug-2021 09:04	04-Aug-2021 09:54	04-Aug-2021 10:31	04-Aug-2021 10:30	04-Aug-2021 10:51
Compound	CAS Number	LOR	Unit	EM2115885-068 Result	EM2115885-069 Result	EM2115885-070 Result	EM2115885-071 Result	EM2115885-072 Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.04	0.06	0.06	0.02	0.07
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SURFACE WATER
 (Matrix: WATER)

Sample ID

				0939_SW062_210804	0939_SW078_210804	0939_SW011_210804	0939_SW059_210804	0939_SW009_210804 Extra vol for lab QC
Sampling date / time				04-Aug-2021 09:04	04-Aug-2021 09:54	04-Aug-2021 10:31	04-Aug-2021 10:30	04-Aug-2021 10:51
Compound	CAS Number	LOR	Unit	EM2115885-068	EM2115885-069	EM2115885-070	EM2115885-071	EM2115885-072
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	0.04	0.06	0.06	0.02	0.07
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.04	0.06	0.06	0.02	0.07
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.04	0.06	0.06	0.02	0.07
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	94.0	106	108	103	103
13C8-PFOA	----	0.02	%	104	99.2	104	101	99.8



Analytical Results

Sub-Matrix: SURFACE WATER
 (Matrix: WATER)

Sample ID

				0939_SW033_210804 Extra vol for lab QC	0939_SW032_210804	0939_SW029_210804	0939_SW028_210804	0939_SW021_210804
Sampling date / time				04-Aug-2021 11:30	04-Aug-2021 11:52	04-Aug-2021 12:15	04-Aug-2021 12:34	04-Aug-2021 13:36
Compound	CAS Number	LOR	Unit	EM2115885-073	EM2115885-074	EM2115885-075	EM2115885-076	EM2115885-079
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	0.02
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SURFACE WATER
 (Matrix: WATER)

Sample ID

				0939_SW033_210804 Extra vol for lab QC	0939_SW032_210804	0939_SW029_210804	0939_SW028_210804	0939_SW021_210804
Sampling date / time				04-Aug-2021 11:30	04-Aug-2021 11:52	04-Aug-2021 12:15	04-Aug-2021 12:34	04-Aug-2021 13:36
Compound	CAS Number	LOR	Unit	EM2115885-073	EM2115885-074	EM2115885-075	EM2115885-076	EM2115885-079
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	0.02
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	0.02
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	0.02
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	98.6	107	108	106	103
13C8-PFOA	----	0.02	%	96.4	102	98.0	103	100



Analytical Results

Sub-Matrix: SURFACE WATER
 (Matrix: WATER)

Sample ID

				0939_SW019_210804	0939_SW018_210804 Extra volume for lab QC	0939_QC106_210804	0939_SW010_210806	0939_SW058_210806
Sampling date / time				04-Aug-2021 13:47	04-Aug-2021 14:00	04-Aug-2021 14:01	06-Aug-2021 10:10	06-Aug-2021 10:11
Compound	CAS Number	LOR	Unit	EM2115885-080	EM2115885-081	EM2115885-082	EM2115885-105	EM2115885-106
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.13	<0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.36	0.02	0.02	0.12	0.04
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.05	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.02	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SURFACE WATER
 (Matrix: WATER)

Sample ID

				0939_SW019_210804	0939_SW018_210804 Extra volume for lab QC	0939_QC106_210804	0939_SW010_210806	0939_SW058_210806
Sampling date / time				04-Aug-2021 13:47	04-Aug-2021 14:00	04-Aug-2021 14:01	06-Aug-2021 10:10	06-Aug-2021 10:11
Compound	CAS Number	LOR	Unit	EM2115885-080	EM2115885-081	EM2115885-082	EM2115885-105	EM2115885-106
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	0.56	0.02	0.02	0.12	0.04
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.49	0.02	0.02	0.12	0.04
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.56	0.02	0.02	0.12	0.04
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	102	105	99.7	90.3	99.0
13C8-PFOA	----	0.02	%	98.2	108	100.0	106	104



Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)			Sample ID		0939_SW012_210806	0939_QC109_210806	----	----	----
			Sampling date / time		06-Aug-2021 10:50	06-Aug-2021 10:51	----	----	----
Compound	CAS Number	LOR	Unit	EM2115885-110	EM2115885-111	-----	-----	-----	
				Result	Result	----	----	----	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	----	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.03	0.04	----	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----	



Analytical Results

Sub-Matrix: SURFACE WATER
 (Matrix: WATER)

Sample ID

				0939_SW012_210806	0939_QC109_210806	----	----	----
				06-Aug-2021 10:50	06-Aug-2021 10:51	----	----	----
Compound	CAS Number	LOR	Unit	EM2115885-110	EM2115885-111	-----	-----	-----
				Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	0.03	0.04	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.03	0.04	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.03	0.04	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	97.6	101	----	----	----
13C8-PFOA	----	0.02	%	103	98.0	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_QC304_210803	0939_QC305_210803	0939_QC404_210803	0939_QC405_210803	0939_QC502_210803
Sampling date / time				03-Aug-2021 17:00	03-Aug-2021 17:00	03-Aug-2021 11:45	03-Aug-2021 11:45	03-Aug-2021 11:46	
Compound	CAS Number	LOR	Unit	EM2115885-063	EM2115885-064	EM2115885-065	EM2115885-066	EM2115885-067	
				Result	Result	Result	Result	Result	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_QC304_210803	0939_QC305_210803	0939_QC404_210803	0939_QC405_210803	0939_QC502_210803
Sampling date / time				03-Aug-2021 17:00	03-Aug-2021 17:00	03-Aug-2021 11:45	03-Aug-2021 11:45	03-Aug-2021 11:46	
Compound	CAS Number	LOR	Unit	EM2115885-063	EM2115885-064	EM2115885-065	EM2115885-066	EM2115885-067	
				Result	Result	Result	Result	Result	
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	102	93.4	96.2	107	105	
13C8-PFOA	----	0.02	%	97.0	98.1	103	104	102	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_QC306_210804	0939_QC307_210804	0939_QC406_210804	0939_QC407_210804	0939_QC503_210804
Sampling date / time				04-Aug-2021 15:05	04-Aug-2021 15:06	04-Aug-2021 15:07	04-Aug-2021 15:08	04-Aug-2021 15:08	
Compound	CAS Number	LOR	Unit	EM2115885-084	EM2115885-085	EM2115885-086	EM2115885-087	EM2115885-088	
				Result	Result	Result	Result	Result	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_QC306_210804	0939_QC307_210804	0939_QC406_210804	0939_QC407_210804	0939_QC503_210804
Sampling date / time				04-Aug-2021 15:05	04-Aug-2021 15:06	04-Aug-2021 15:07	04-Aug-2021 15:08	04-Aug-2021 15:08	
Compound	CAS Number	LOR	Unit	EM2115885-084	EM2115885-085	EM2115885-086	EM2115885-087	EM2115885-088	
				Result	Result	Result	Result	Result	
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	103	103	105	105	102	
13C8-PFOA	----	0.02	%	99.8	103	101	102	105	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_QC308_210805	0939_QC408_210805	0939_QC309_210806	0939_QC409_210806	----
Sampling date / time				05-Aug-2021 11:34	05-Aug-2021 11:53	06-Aug-2021 11:04	06-Aug-2021 11:04	----	
Compound	CAS Number	LOR	Unit	EM2115885-099	EM2115885-100	EM2115885-113	EM2115885-114	-----	
				Result	Result	Result	Result	----	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0939_QC308_210805	0939_QC408_210805	0939_QC309_210806	0939_QC409_210806	----
Sampling date / time				05-Aug-2021 11:34	05-Aug-2021 11:53	06-Aug-2021 11:04	06-Aug-2021 11:04	----	
Compound	CAS Number	LOR	Unit	EM2115885-099	EM2115885-100	EM2115885-113	EM2115885-114	-----	
				Result	Result	Result	Result	----	
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----	
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%	93.4	98.7	95.8	94.9	----	
13C8-PFOA	----	0.02	%	107	99.8	99.7	97.9	----	



Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM2115885

Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: [REDACTED]	Contact	: [REDACTED]
Address	: [REDACTED]	Address	: [REDACTED]
E-mail	: [REDACTED]	E-mail	: [REDACTED]
Telephone	: ----	Telephone	: [REDACTED]
Facsimile	: ----	Facsimile	: [REDACTED]
Project	: SA_0939_PFASOMP	Page	: 1 of 5
Order number	: 60612561 6.1	Quote number	: ES2019AECOMAU0030 (SY/139/19 V3)
C-O-C number	: 25860	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: SA_0939_PFASOMP		
Sampler	: [REDACTED]		

Dates

Date Samples Received	: 11-Aug-2021 12:35	Issue Date	: 16-Aug-2021
Client Requested Due Date	: 19-Aug-2021	Scheduled Reporting Date	: 23-Aug-2021

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 12.9°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 103 / 103

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **PFAS Water samples "0939_SW050_210804" & "0939_SW050_210804" were not received by ALS.**
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

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

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

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

EM2115885-007 : 02-Aug-2021 10:58 : 0939_MW2501_210802 - Extra volume for lab QC
 EM2115885-008 : 02-Aug-2021 11:16 : 0661_MW2325_210802 - Extra volume for lab QC
 EM2115885-016 : 02-Aug-2021 13:05 : 0939_MW2210_210802 - Extra volume for lab QC
 EM2115885-038 : 03-Aug-2021 09:39 : 0939_MW4071_210803 - Extra volume for lab qc
 EM2115885-039 : 03-Aug-2021 09:43 : 0939_MW4024_210803 - Extra volume for lab qc
 EM2115885-051 : 03-Aug-2021 13:51 : 0939_MW4072_210803 - Extra vol for lab QC
 EM2115885-062 : 03-Aug-2021 16:36 : 0939_MW4055_210803 - Extra vol for lab QC
 EM2115885-072 : 04-Aug-2021 10:51 : 0939_SW009_210804 - Extra vol for lab QC
 EM2115885-073 : 04-Aug-2021 11:30 : 0939_SW033_210804 - Extra vol for lab QC
 EM2115885-081 : 04-Aug-2021 14:00 : 0939_SW018_210804 - Extra volume for lab QC
 EM2115885-107 : 06-Aug-2021 10:45 : 0939_MW4013_210806 - Extra vol for lab qc

Summary of Sample(s) and Requested Analysis

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

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

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
EM2115885-001	02-Aug-2021 09:03	0939_MW2116_210802	✓
EM2115885-002	02-Aug-2021 09:28	0939_MW2490_210802	✓
EM2115885-003	02-Aug-2021 09:53	0939_MW2284_210802	✓
EM2115885-004	02-Aug-2021 10:13	0939_MW2272_210802	✓
EM2115885-005	02-Aug-2021 10:22	0939_MW2148_210802	✓
EM2115885-006	02-Aug-2021 10:30	0939_MW2158_210802	✓
EM2115885-007	02-Aug-2021 10:58	0939_MW2501_210802 ...	✓
EM2115885-008	02-Aug-2021 11:16	0661_MW2325_210802 ...	✓
EM2115885-009	02-Aug-2021 11:37	0939_MW2218_210802	✓
EM2115885-010	02-Aug-2021 11:52	0939_QC101_210802	✓
EM2115885-011	02-Aug-2021 11:54	0939_MW2134_210802	✓
EM2115885-013	02-Aug-2021 12:18	0939_MW2216_210802	✓
EM2115885-014	02-Aug-2021 12:19	0939_MW2135_210802	✓
EM2115885-015	02-Aug-2021 12:49	0939_MW2130_210802	✓
EM2115885-016	02-Aug-2021 13:05	0939_MW2210_210802 ...	✓
EM2115885-017	02-Aug-2021 13:10	0939_MW2131_210802	✓
EM2115885-018	02-Aug-2021 13:26	0939_MW2528_210802	✓
EM2115885-019	02-Aug-2021 13:34	0939_MW2157_210802	✓
EM2115885-020	02-Aug-2021 13:45	0939_MW2209_210802	✓
EM2115885-021	02-Aug-2021 13:55	0939_MW2114_210802	✓
EM2115885-022	02-Aug-2021 15:21	0939_MW4218_210802	✓
EM2115885-023	02-Aug-2021 15:46	0939_MW2159_210802	✓
EM2115885-024	02-Aug-2021 15:55	0939_QC102_210802	✓
EM2115885-026	02-Aug-2021 16:17	0939_MW4065_210802	✓
EM2115885-027	02-Aug-2021 16:40	0939_MW4022_210802	✓



				WATER - EP231X PFAS - Full Suite (28 analytes)
EM2115885-028	02-Aug-2021 16:47	0939_MW4009_210802	✓	
EM2115885-029	02-Aug-2021 16:56	0939_QC301_210802	✓	
EM2115885-030	02-Aug-2021 16:57	0939_QC302_210802	✓	
EM2115885-031	02-Aug-2021 16:58	0939_QC303_210802	✓	
EM2115885-032	02-Aug-2021 16:59	0939_QC401_210802	✓	
EM2115885-033	02-Aug-2021 17:00	0939_QC402_210802	✓	
EM2115885-034	02-Aug-2021 17:01	0939_QC403_210802	✓	
EM2115885-035	02-Aug-2021 17:02	0939_QC501_210802	✓	
EM2115885-036	03-Aug-2021 08:58	0939_MW4021_210803	✓	
EM2115885-037	03-Aug-2021 09:19	0939_MW4020_210803	✓	
EM2115885-038	03-Aug-2021 09:39	0939_MW4071_210803 ...	✓	
EM2115885-039	03-Aug-2021 09:43	0939_MW4024_210803 ...	✓	
EM2115885-040	03-Aug-2021 09:44	0939_MW4023_210803	✓	
EM2115885-041	03-Aug-2021 09:45	0939_QC103_210803	✓	
EM2115885-043	03-Aug-2021 10:18	0939_MW4060_210803	✓	
EM2115885-044	03-Aug-2021 10:43	0939_MW4059_210803	✓	
EM2115885-045	03-Aug-2021 10:48	0939_MW4077_210803	✓	
EM2115885-046	03-Aug-2021 11:28	0939_MW4078_210803	✓	
EM2115885-047	03-Aug-2021 11:33	0939_MW4058_210803	✓	
EM2115885-048	03-Aug-2021 11:49	0939_MW4064_210803	✓	
EM2115885-049	03-Aug-2021 12:03	0939_MW4219_210803	✓	
EM2115885-050	03-Aug-2021 13:40	0939_MW4052_210803	✓	
EM2115885-051	03-Aug-2021 13:51	0939_MW4072_210803 ...	✓	
EM2115885-052	03-Aug-2021 14:15	0939_QC104_210803	✓	
EM2115885-053	03-Aug-2021 14:07	0939_MW4041_210803	✓	
EM2115885-055	03-Aug-2021 14:23	0939_MW4074_210803	✓	
EM2115885-056	03-Aug-2021 14:39	0939_MW4037_210803	✓	
EM2115885-057	03-Aug-2021 15:40	0939_MW4070_210803	✓	
EM2115885-058	03-Aug-2021 15:56	0939_MW4045_210803	✓	
EM2115885-059	03-Aug-2021 16:02	0939_MW4053_210803	✓	
EM2115885-060	03-Aug-2021 16:02	0939_QC105_210803	✓	
EM2115885-062	03-Aug-2021 16:36	0939_MW4055_210803 ...	✓	
EM2115885-063	03-Aug-2021 17:00	0939_QC304_210803	✓	
EM2115885-064	03-Aug-2021 17:00	0939_QC305_210803	✓	
EM2115885-065	05-Aug-2021 11:45	0939_QC404_210803	✓	
EM2115885-066	05-Aug-2021 11:45	0939_QC405_210803	✓	
EM2115885-067	05-Aug-2021 11:46	0939_QC502_210803	✓	
EM2115885-068	04-Aug-2021 09:04	0939_SW062_210804	✓	
EM2115885-069	04-Aug-2021 09:54	0939_SW078_210804	✓	
EM2115885-070	04-Aug-2021 10:31	0939_SW011_210804	✓	
EM2115885-071	04-Aug-2021 10:30	0939_SW059_210804	✓	



				WATER - EP231X PFAS - Full Suite (28 analytes)
EM2115885-072	04-Aug-2021 10:51	0939_SW009_210804 E...	✓	
EM2115885-073	04-Aug-2021 11:30	0939_SW033_210804 E...	✓	
EM2115885-074	04-Aug-2021 11:52	0939_SW032_210804	✓	
EM2115885-075	04-Aug-2021 12:15	0939_SW029_210804	✓	
EM2115885-076	04-Aug-2021 12:34	0939_SW028_210804	✓	
EM2115885-079	04-Aug-2021 13:36	0939_SW021_210804	✓	
EM2115885-080	04-Aug-2021 13:47	0939_SW019_210804	✓	
EM2115885-081	04-Aug-2021 14:00	0939_SW018_210804 E...	✓	
EM2115885-082	04-Aug-2021 14:01	0939_QC106_210804	✓	
EM2115885-084	04-Aug-2021 15:05	0939_QC306_210804	✓	
EM2115885-085	04-Aug-2021 15:06	0939_QC307_210804	✓	
EM2115885-086	04-Aug-2021 15:07	0939_QC406_210804	✓	
EM2115885-087	04-Aug-2021 15:08	0939_QC407_210804	✓	
EM2115885-088	03-Aug-2021 15:08	0939_QC503_210804	✓	
EM2115885-089	05-Aug-2021 08:55	0939_MW4079_210805	✓	
EM2115885-090	05-Aug-2021 09:09	0939_MW4073_210805	✓	
EM2115885-091	05-Aug-2021 09:17	0939_MW4066_210805	✓	
EM2115885-092	05-Aug-2021 09:27	0939_MW4057_210805	✓	
EM2115885-093	05-Aug-2021 10:32	0939_MW4015_210805	✓	
EM2115885-094	05-Aug-2021 10:52	0939_MW4068_210805	✓	
EM2115885-095	05-Aug-2021 11:18	0939_MW4035_210805	✓	
EM2115885-097	05-Aug-2021 11:20	0939_QC107_210805	✓	
EM2115885-098	05-Aug-2021 11:25	0939_MW4003_210805	✓	
EM2115885-099	05-Aug-2021 11:34	0939_QC308_210805	✓	
EM2115885-100	05-Aug-2021 11:53	0939_QC408_210805	✓	
EM2115885-101	06-Aug-2021 09:20	0939_MW4075_210806	✓	
EM2115885-102	06-Aug-2021 09:29	0939_MW4069_210806	✓	
EM2115885-103	06-Aug-2021 09:43	0939_MW4048_210806	✓	
EM2115885-104	06-Aug-2021 09:54	0939_MW4001_210806	✓	
EM2115885-105	06-Aug-2021 10:10	0939_SW010_210806	✓	
EM2115885-106	06-Aug-2021 10:11	0939_SW058_210806	✓	
EM2115885-107	06-Aug-2021 10:45	0939_MW4013_210806 ...	✓	
EM2115885-108	06-Aug-2021 10:46	0939_QC108_210806	✓	
EM2115885-110	06-Aug-2021 10:50	0939_SW012_210806	✓	
EM2115885-111	06-Aug-2021 10:51	0939_QC109_210806	✓	
EM2115885-113	06-Aug-2021 11:04	0939_QC309_210806	✓	
EM2115885-114	06-Aug-2021 11:04	0939_QC409_210806	✓	

Proactive Holding Time Report

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



Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email

[REDACTED]

APCORP

- A4 - AU Tax Invoice (INV)

Email

[REDACTED]

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

Email
Email
Email
Email
Email
Email
Email

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

- EDI Format - ESDAT (ESDAT)

Email

[REDACTED]

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

Email
Email
Email
Email
Email
Email
Email

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

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

Email
Email
Email
Email
Email
Email
Email
Email

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

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

Email
Email
Email
Email
Email
Email
Email

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM2115882

Client : AECOM Australia Pty Ltd Laboratory : Environmental Division Melbourne
Contact : [Redacted] Contact : [Redacted]
Address : [Redacted]
Telephone : [Redacted] E-mail : [Redacted]
Facsimile : [Redacted] Telephone : [Redacted]
Facsimile : [Redacted]
Project : SA_0939_PFASOMP Page : 1 of 3
Order number : 60612561 6.1 Quote number : ES2019AECOMAU0030 (SY/139/19 V3)
C-O-C number : 26143 QC Level : NEPM 2013 B3 & ALS QC Standard
Site : SA_0939_PFASOMP
Sampler : [Redacted]

Dates

Date Samples Received : 11-Aug-2021 12:35 Issue Date : 13-Aug-2021
Client Requested Due Date : 19-Aug-2021 Scheduled Reporting Date : 19-Aug-2021

Delivery Details

Mode of Delivery : Carrier Security Seal : Intact.
No. of coolers/boxes : 3 Temperature : 12.9°C - Ice present
Receipt Detail : No. of samples received / analysed : 1 / 1

General Comments

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



Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

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

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

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
EM2115882-001	03-Aug-2021 15:03	0939_MW4220_210803	✓

Proactive Holding Time Report

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



Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email AP_CustomerService.ANZ@aecom.com

APCORP

- A4 - AU Tax Invoice (INV)

Email apcorp.anz@aecom.com

[Redacted]

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

Email [Redacted]
Email [Redacted]
Email [Redacted]
Email [Redacted]
Email [Redacted]
Email [Redacted]
Email [Redacted]

[Redacted]

- EDI Format - ESDAT (ESDAT)

Email [Redacted]

[Redacted]

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

Email [Redacted]
Email [Redacted]
Email [Redacted]
Email [Redacted]
Email [Redacted]
Email [Redacted]
Email [Redacted]

[Redacted]

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

Email [Redacted]
Email [Redacted]
Email [Redacted]
Email [Redacted]
Email [Redacted]
Email [Redacted]
Email [Redacted]
Email [Redacted]

[Redacted]

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

Email [Redacted]
Email [Redacted]
Email [Redacted]
Email [Redacted]
Email [Redacted]
Email [Redacted]
Email [Redacted]

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM2115882	Page	: 1 of 4
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: [REDACTED]	Telephone	: [REDACTED]
Project	: SA_0939_PFASOMP	Date Samples Received	: 11-Aug-2021
Site	: SA_0939_PFASOMP	Issue Date	: 18-Aug-2021
Sampler	: [REDACTED]	No. of samples received	: 1
Order number	: 60612561 6.1	No. of samples analysed	: 1

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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



Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	17	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	17	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0939_MW4220_210803	03-Aug-2021	16-Aug-2021	30-Jan-2022	✔	16-Aug-2021	30-Jan-2022	✔
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0939_MW4220_210803	03-Aug-2021	16-Aug-2021	30-Jan-2022	✔	16-Aug-2021	30-Jan-2022	✔
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0939_MW4220_210803	03-Aug-2021	16-Aug-2021	30-Jan-2022	✔	16-Aug-2021	30-Jan-2022	✔
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0939_MW4220_210803	03-Aug-2021	16-Aug-2021	30-Jan-2022	✔	16-Aug-2021	30-Jan-2022	✔
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0939_MW4220_210803	03-Aug-2021	16-Aug-2021	30-Jan-2022	✔	16-Aug-2021	30-Jan-2022	✔



Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	17	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	17	0.00	5.00	✘	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

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

QUALITY CONTROL REPORT

Work Order : EM2115882
Page : 1 of 4
Client : AECOM Australia Pty Ltd
Laboratory : Environmental Division Melbourne
Contact : [REDACTED]
Contact : [REDACTED]
Address : [REDACTED]
Telephone : ----
Telephone : [REDACTED]
Project : SA_0939_PFASOMP
Date Samples Received : 11-Aug-2021
Order number : 60612561 6.1
Date Analysis Commenced : 16-Aug-2021
C-O-C number : 26143
Issue Date : 18-Aug-2021
Sampler : [REDACTED]
Site : SA_0939_PFASOMP
Quote number : SY/139/19 V3
No. of samples received : 1
No. of samples analysed : 1


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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Accreditation Category
[REDACTED]	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

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



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

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

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3848349)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	90.7	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	92.1	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	103	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	87.3	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	95.3	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	87.3	53.0	142	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3848349)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	87.2	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	93.7	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	87.8	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	99.3	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	89.1	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	88.2	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	84.8	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	83.4	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	84.3	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	82.8	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.9375 µg/L	98.0	71.0	132	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3848349)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	82.7	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	89.0	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	72.3	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.0	70.0	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	84.4	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	101	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	101	61.0	135	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3848349)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	78.2	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	91.6	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	107	67.0	138	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3848349) - continued									
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	82.3	70.0	130	
EP231P: PFAS Sums (QCLot: 3848349)									
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----	
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----	
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----	

Matrix Spike (MS) Report

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

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

CERTIFICATE OF ANALYSIS

Work Order : EM2115882 Client : AECOM Australia Pty Ltd Contact : [REDACTED] Address : [REDACTED] Telephone : ---- Project : SA_0939_PFASOMP Order number : 60612561 6.1 C-O-C number : 26143 Sampler : [REDACTED] Site : SA_0939_PFASOMP Quote number : SY/139/19 V3 No. of samples received : 1 No. of samples analysed : 1	Page : 1 of 5 Laboratory : Environmental Division Melbourne Contact : [REDACTED] Telephone : [REDACTED] Date Samples Received : 11-Aug-2021 12:35 Date Analysis Commenced : 16-Aug-2021 Issue Date : 18-Aug-2021 11:57
--	---



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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
[REDACTED]	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

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

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

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

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

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

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

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

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



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

0939_MW4220_21080
3

Sampling date / time

03-Aug-2021 15:03

Compound CAS Number LOR Unit

EM2115882-001

Result

EP231A: Perfluoroalkyl Sulfonic Acids

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

EP231B: Perfluoroalkyl Carboxylic Acids

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

EP231C: Perfluoroalkyl Sulfonamides

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



Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0939_MW4220_21080 3	----	----	----	----
Sampling date / time			03-Aug-2021 15:03	----	----	----	----	
Compound	CAS Number	LOR	Unit	EM2115882-001	-----	-----	-----	-----
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	87.8	----	----	----	----
13C8-PFOA	----	0.02	%	96.4	----	----	----	----



Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM2115881

Client : AECOM Australia Pty Ltd Laboratory : Environmental Division Melbourne
Contact : [Redacted] Contact : [Redacted]
Address : [Redacted]
E-mail : [Redacted] E-mail : [Redacted]
Telephone : [Redacted] Telephone : [Redacted]
Facsimile : [Redacted] Facsimile : + [Redacted]
Project : SA_0939_PFASOMP Page : 1 of 3
Order number : 60612561 6.1 Quote number : ES2019AECOMAU0030 (SY/139/19 V3)
C-O-C number : 26142 QC Level : NEPM 2013 B3 & ALS QC Standard
Site : SA_0939_PFASOMP
Sampler : [Redacted]

Dates

Date Samples Received : 11-Aug-2021 12:35 Issue Date : 13-Aug-2021
Client Requested Due Date : 19-Aug-2021 Scheduled Reporting Date : 19-Aug-2021

Delivery Details

Mode of Delivery : Carrier Security Seal : Intact.
No. of coolers/boxes : 3 Temperature : 12.9°C - Ice present
Receipt Detail : No. of samples received / analysed : 2 / 2

General Comments

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



Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

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

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

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
EM2115881-001	06-Aug-2021 08:10	0939_MW4221_210806	✓
EM2115881-002	06-Aug-2021 08:30	0939_MW4222_210806	✓

Proactive Holding Time Report

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



Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com
[REDACTED]		
- A4 - AU Tax Invoice (INV)	Email	[REDACTED]
[REDACTED]		
- *AU Certificate of Analysis - NATA (COA)	Email	[REDACTED]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[REDACTED]
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[REDACTED]
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[REDACTED]
- Chain of Custody (CoC) (COC)	Email	[REDACTED]
- EDI Format - ESDAT (ESDAT)	Email	[REDACTED]
- EDI Format - XTab (XTAB)	Email	[REDACTED]
[REDACTED]		
- EDI Format - ESDAT (ESDAT)	Email	[REDACTED]
[REDACTED]		
- *AU Certificate of Analysis - NATA (COA)	Email	[REDACTED]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[REDACTED]
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[REDACTED]
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[REDACTED]
- Chain of Custody (CoC) (COC)	Email	[REDACTED]
- EDI Format - ESDAT (ESDAT)	Email	[REDACTED]
- EDI Format - XTab (XTAB)	Email	[REDACTED]
[REDACTED]		
- *AU Certificate of Analysis - NATA (COA)	Email	[REDACTED]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[REDACTED]
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[REDACTED]
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[REDACTED]
- Chain of Custody (CoC) (COC)	Email	[REDACTED]
- EDI Format - ENMRG (ENMRG)	Email	[REDACTED]
- EDI Format - ESDAT (ESDAT)	Email	[REDACTED]
- EDI Format - XTab (XTAB)	Email	[REDACTED]
[REDACTED]		
- *AU Certificate of Analysis - NATA (COA)	Email	[REDACTED]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	[REDACTED]
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	[REDACTED]
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	[REDACTED]
- Chain of Custody (CoC) (COC)	Email	[REDACTED]
- EDI Format - ESDAT (ESDAT)	Email	[REDACTED]
- EDI Format - XTab (XTAB)	Email	[REDACTED]

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM2115881	Page	: 1 of 4
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: [REDACTED]	Telephone	: [REDACTED]
Project	: SA_0939_PFASOMP	Date Samples Received	: 11-Aug-2021
Site	: SA_0939_PFASOMP	Issue Date	: 18-Aug-2021
Sampler	: [REDACTED]	No. of samples received	: 2
Order number	: 60612561 6.1	No. of samples analysed	: 2

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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



Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	17	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	17	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X) 0939_MW4221_210806,	0939_MW4222_210806	06-Aug-2021	16-Aug-2021	02-Feb-2022	✔	16-Aug-2021	02-Feb-2022	✔
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X) 0939_MW4221_210806,	0939_MW4222_210806	06-Aug-2021	16-Aug-2021	02-Feb-2022	✔	16-Aug-2021	02-Feb-2022	✔
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X) 0939_MW4221_210806,	0939_MW4222_210806	06-Aug-2021	16-Aug-2021	02-Feb-2022	✔	16-Aug-2021	02-Feb-2022	✔
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X) 0939_MW4221_210806,	0939_MW4222_210806	06-Aug-2021	16-Aug-2021	02-Feb-2022	✔	16-Aug-2021	02-Feb-2022	✔
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X) 0939_MW4221_210806,	0939_MW4222_210806	06-Aug-2021	16-Aug-2021	02-Feb-2022	✔	16-Aug-2021	02-Feb-2022	✔



Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	17	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	17	0.00	5.00	✘	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

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

QUALITY CONTROL REPORT

Work Order : EM2115881 Client : AECOM Australia Pty Ltd Contact : [REDACTED] Address : [REDACTED] Telephone : [REDACTED] Project : SA_0939_PFASOMP Order number : 60612561 6.1 C-O-C number : 26142 Sampler : [REDACTED] Site : SA_0939_PFASOMP Quote number : SY/139/19 V3 No. of samples received : 2 No. of samples analysed : 2	Page : 1 of 4 Laboratory : Environmental Division Melbourne Contact : [REDACTED] Address : [REDACTED] Telephone : [REDACTED] Date Samples Received : 11-Aug-2021 Date Analysis Commenced : 16-Aug-2021 Issue Date : 18-Aug-2021
--	--



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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Accreditation Category
[REDACTED]	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

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



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

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

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3848349)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	90.7	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	92.1	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	103	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	87.3	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	95.3	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	87.3	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3848349)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	87.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	93.7	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	87.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	99.3	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	89.1	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	88.2	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	84.8	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	83.4	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	84.3	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	82.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.9375 µg/L	98.0	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3848349)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	82.7	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	89.0	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	72.3	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.0	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	84.4	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	101	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	101	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3848349)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	78.2	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	91.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	107	67.0	138



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					LCS	Low	High	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3848349) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	82.3	70.0	130
EP231P: PFAS Sums (QCLot: 3848349)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

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

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

CERTIFICATE OF ANALYSIS

Work Order : **EM2115881**
Client : **AECOM Australia Pty Ltd**
Contact : [REDACTED]
Address : [REDACTED]

Telephone : [REDACTED]
Project : SA_0939_PFASOMP
Order number : 60612561 6.1
C-O-C number : 26142
Sampler : [REDACTED]
Site : SA_0939_PFASOMP
Quote number : SY/139/19 V3
No. of samples received : 2
No. of samples analysed : 2

Page : 1 of 5
Laboratory : Environmental Division Melbourne
Contact : [REDACTED]
Address : 4 Westall Rd Springvale VIC Australia 3171

Telephone : [REDACTED]
Date Samples Received : 11-Aug-2021 12:35
Date Analysis Commenced : 16-Aug-2021
Issue Date : 18-Aug-2021 11:56



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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
[REDACTED]	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

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

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

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

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

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

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

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

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



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4221_21080 6	0939_MW4222_21080 6	----	----	----
Sampling date / time				06-Aug-2021 08:10	06-Aug-2021 08:30	----	----	----
Compound	CAS Number	LOR	Unit	EM2115881-001 Result	EM2115881-002 Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

				0939_MW4221_21080 6	0939_MW4222_21080 6	----	----	----
Sampling date / time				06-Aug-2021 08:10	06-Aug-2021 08:30	----	----	----
Compound	CAS Number	LOR	Unit	EM2115881-001	EM2115881-002	-----	-----	-----
				Result	Result	---	---	---
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	92.7	98.1	----	----	----
13C8-PFOA	----	0.02	%	107	104	----	----	----



Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM2115880

Client : AECOM Australia Pty Ltd
Contact :
Address : LEVEL 28 91 KING STREET
ADELAIDE SA, AUSTRALIA 5000

Laboratory : Environmental Division Melbourne
Contact :
Address : 4 Westall Rd Springvale VIC Australia
3171

E-mail :
Telephone :
Facsimile :

E-mail :
Telephone :
Facsimile :

Project : SA_0939_PFASOMP
Order number : 60612561 6.1
C-O-C number : 26141
Site : SA_0939_PFASOMP
Sampler :

Page : 1 of 3
Quote number : ES2019AECOMAU0030 (SY/139/19 V3)
QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 11-Aug-2021 12:35
Client Requested Due Date : 19-Aug-2021

Issue Date : 13-Aug-2021
Scheduled Reporting Date : 19-Aug-2021

Delivery Details

Mode of Delivery : Carrier
No. of coolers/boxes : 3
Receipt Detail :

Security Seal : Not Available
Temperature : 12.9°C - Ice present
No. of samples received / analysed : 1 / 1

General Comments

- This report contains the following information:
- Sample Container(s)/Preservation Non-Compliances
- Summary of Sample(s) and Requested Analysis
- Proactive Holding Time Report
- Requested Deliverables
Please direct any queries related to sample condition / numbering / breakages to Client Services.
Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
Analytical work for this work order will be conducted at ALS Springvale.
Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.
Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis.



Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

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

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

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
EM2115880-001	30-Jul-2021 18:05	0939_MW4223_210730	✓

Proactive Holding Time Report

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



Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email

[REDACTED]

APCORP

- A4 - AU Tax Invoice (INV)

Email

[REDACTED]

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

Email

[REDACTED]

Email

[REDACTED]

Email

[REDACTED]

Email

[REDACTED]

Email

[REDACTED]

Email

[REDACTED]

Email

[REDACTED]

- EDI Format - ESDAT (ESDAT)

Email

[REDACTED]

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

Email

[REDACTED]

Email

[REDACTED]

Email

[REDACTED]

Email

[REDACTED]

Email

[REDACTED]

Email

[REDACTED]

Email

[REDACTED]

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

Email

[REDACTED]

Email

[REDACTED]

Email

[REDACTED]

Email

[REDACTED]

Email

[REDACTED]

Email

[REDACTED]

Email

[REDACTED]

Email

[REDACTED]

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

Email

[REDACTED]

Email

[REDACTED]

Email

[REDACTED]

Email

[REDACTED]

Email

[REDACTED]

Email

[REDACTED]

Email

[REDACTED]

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM2115880	Page	: 1 of 4
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: SA_0939_PFASOMP	Date Samples Received	: 11-Aug-2021
Site	: SA_0939_PFASOMP	Issue Date	: 18-Aug-2021
Sampler	: [REDACTED]	No. of samples received	: 1
Order number	: 60612561 6.1	No. of samples analysed	: 1

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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



Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	17	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	17	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0939_MW4223_210730	30-Jul-2021	16-Aug-2021	26-Jan-2022	✔	16-Aug-2021	26-Jan-2022	✔
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0939_MW4223_210730	30-Jul-2021	16-Aug-2021	26-Jan-2022	✔	16-Aug-2021	26-Jan-2022	✔
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0939_MW4223_210730	30-Jul-2021	16-Aug-2021	26-Jan-2022	✔	16-Aug-2021	26-Jan-2022	✔
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0939_MW4223_210730	30-Jul-2021	16-Aug-2021	26-Jan-2022	✔	16-Aug-2021	26-Jan-2022	✔
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0939_MW4223_210730	30-Jul-2021	16-Aug-2021	26-Jan-2022	✔	16-Aug-2021	26-Jan-2022	✔



Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	17	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	17	0.00	5.00	✘	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

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

QUALITY CONTROL REPORT

Work Order : EM2115880 Client : AECOM Australia Pty Ltd Contact : [REDACTED] Address : LEVEL 28 91 KING STREET ADELAIDE SA, AUSTRALIA 5000 Telephone : ---- Project : SA_0939_PFASOMP Order number : 60612561 6.1 C-O-C number : 26141 Sampler : [REDACTED] Site : SA_0939_PFASOMP Quote number : SY/139/19 V3 No. of samples received : 1 No. of samples analysed : 1	Page : 1 of 4 Laboratory : Environmental Division Melbourne Contact : [REDACTED] Address : 4 Westall Rd Springvale VIC Australia 3171 Telephone : [REDACTED] Date Samples Received : 11-Aug-2021 Date Analysis Commenced : 16-Aug-2021 Issue Date : 18-Aug-2021
--	--



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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Accreditation Category
[REDACTED]	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

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



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

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

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3848349)									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	90.7	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	92.1	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.228 µg/L	103	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	87.3	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	95.3	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	87.3	53.0	142	
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3848349)									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	87.2	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	93.7	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	87.8	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	99.3	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	89.1	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	88.2	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	84.8	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	83.4	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	84.3	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	82.8	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.9375 µg/L	98.0	71.0	132	
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3848349)									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	82.7	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	89.0	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	72.3	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.0	70.0	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	84.4	70.0	130	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	101	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	101	61.0	135	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3848349)									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	78.2	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.238 µg/L	91.6	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	107	67.0	138	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3848349) - continued									
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.242 µg/L	82.3	70.0	130	
EP231P: PFAS Sums (QCLot: 3848349)									
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----	
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----	
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----	

Matrix Spike (MS) Report

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

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

CERTIFICATE OF ANALYSIS

Work Order : **EM2115880**
Client : **AECOM Australia Pty Ltd**
Contact : [REDACTED]
Address : LEVEL 28 91 KING STREET
 ADELAIDE SA, AUSTRALIA 5000

Telephone : ----
Project : SA_0939_PFASOMP
Order number : 60612561 6.1
C-O-C number : 26141
Sampler : [REDACTED]
Site : SA_0939_PFASOMP
Quote number : SY/139/19 V3
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 5
Laboratory : Environmental Division Melbourne
Contact : [REDACTED]
Address : 4 Westall Rd Springvale VIC Australia 3171

Telephone : [REDACTED]
Date Samples Received : 11-Aug-2021 12:35
Date Analysis Commenced : 16-Aug-2021
Issue Date : 18-Aug-2021 11:56



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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
[REDACTED]	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

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

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

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

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

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

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

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

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



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Sample ID

0939_MW4223_21073

Compound		CAS Number	LOR	Unit	Result	----	----	----	----
					30-Jul-2021 18:05	----	----	----	----
					EM2115880-001	-----	-----	-----	-----
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----	----



Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0939_MW4223_21073	----	----	----	----
			Sampling date / time	30-Jul-2021 18:05	----	----	----	----
Compound	CAS Number	LOR	Unit	EM2115880-001	-----	-----	-----	-----
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	90.0	----	----	----	----
13C8-PFOA	----	0.02	%	98.2	----	----	----	----



Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133



SAMPLE RECEIPT NOTIFICATION

CUSTOMER DETAILS

Attention: [REDACTED]
Customer: AECOM AUSTRALIA PTY LTD
Address: LEVEL 21
SYDNEY NSW 2000
Email: [REDACTED]
Telephone:
Fax:

LABORATORY DETAILS

Lab: National Measurement Institute
Contact: [REDACTED]
Address: 105 Delhi Road, North Ryde, NSW
NSW 2113
Email: [REDACTED]
Telephone: 02 9449 0181
Fax:

SAMPLE DETAILS

NMI Job Name: AECO03/210818

Total No. of Samples: 8

LRNs	Estimated Report Date	Customer Sample ID	Lab Sample Description
N21/019685	26-AUG-2021	0939_QC201_210802	WATER 02/08/2021 12:24 PM
N21/019686	26-AUG-2021	0939_QC203_210803	WATER 03/08/2021 10:19 AM
N21/019687	26-AUG-2021	0939_QC204_210803	WATER 03/08/2021 2:46 PM
N21/019688	26-AUG-2021	0939_QC205_210803	WATER 03/08/2021 04:40 PM
N21/019689	26-AUG-2021	0939_QC206_210804	WATER 04/08/2021 02:32 PM
N21/019690	26-AUG-2021	0939_QC207_210805	WATER 05/08/2021 11:49 AM
N21/019691	26-AUG-2021	0939_QC208_210806	WATER 06/08/2021 11:16 AM
N21/019692	26-AUG-2021	0939_QC209_210806	WATER 06/08/2021 11:21 AM

SAMPLE RECEIVED CONDITION

Date samples received: 18-AUG-2021

Sample received in good order: Yes

NMI Quotation no. provided:

Client purchase order number: 60612561_6_1

Temperature of samples: Chilled

Comments: ALL OK

Mode of Delivery: Courier

Additional Terms and Conditions

Incomplete / unclear information about samples or required testing will delay the start of the analysis work

If you require your Purchase Order (PO) number to be included on our invoice, please provide the number during sample submission and before the completion of work to avoid unnecessary delays and/or additional processing/handling fees.

The lodgement of an order or receipt of samples for NMI services referenced in this Sample Receipt Notification constitutes an acceptance of the current version of NMI Terms and Conditions or other applicable Terms referenced in the NMI Quotation. NMI Terms and Conditions are available on the web at <https://www.industry.gov.au/client-services/testing-and-analysis-services/chemical-and-biological-analysis-services-terms-and-conditions>

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: SA_0939_PFSOMP
 SITE: SA_0939_PFSOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

LABORATORY USE ONLY (Circle)
 Custody Seal intact? Yes No N/A
 Free ice / frozen ice bricks present upon receipt? Yes No N/A
 Random Sample Temperature on Receipt: °C
 Other comments: AECO+3/210818 NN

PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

SAMPLE DETAILS **ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
010	0939_QC101_210802		02/08/2021 12:22 PM	Water	ALS: 2 Non ALS: 0	No	X		
011	0939_MW2134_210802		02/08/2021 12:24 PM	Water	ALS: 2 Non ALS: 0	No	X		
012	0939_QC201_210802	Please forward to NMI	02/08/2021 12:24 PM	Water	ALS: 2 Non ALS: 0	Yes	-		
013	0939_MW2216_210802		02/08/2021 12:48 PM	Water	ALS: 2 Non ALS: 0	No	X		
014	0939_MW2135_210802		02/08/2021 12:49 PM	Water	ALS: 2 Non ALS: 0	No	X		
015	0939_MW2130_210802		02/08/2021 01:19 PM	Water	ALS: 2 Non ALS: 0	No	X		
016	0939_MW2210_210802	Extra volume for lab QC	02/08/2021 01:35 PM	Water	ALS: 4 Non ALS: 0	No	X		
017	0939_MW2131_210802		02/08/2021 01:40 PM	Water	ALS: 2 Non ALS: 0	No	X		
018	0939_MW2528_210802		02/08/2021 01:56 PM	Water	ALS: 2 Non ALS: 0	No	X		

N21/019685

RECEIVED
 18 AUG 2021
 BY: [Signature] 16:50



CHAIN OF CUSTODY

COC#: 25860 - ALS Laboratory: EM Melbourne

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
0

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

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

SAMPLE DETAILS

ANALYSIS REQUIRED

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	0939_MW2157_210802		02/08/2021 02:04 PM	Water	ALS: 2 Non ALS: 0	No	X		
020	0939_MW2209_210802		02/08/2021 02:15 PM	Water	ALS: 2 Non ALS: 0	No	X		
021	0939_MW2114_210802		02/08/2021 02:25 PM	Water	ALS: 2 Non ALS: 0	No	X		
022	0939_MW4218_210802		02/08/2021 03:51 PM	Water	ALS: 2 Non ALS: 0	No	X		
023	0939_MW2159_210802		02/08/2021 04:16 PM	Water	ALS: 2 Non ALS: 0	No	X		
024	0939_QC102_210802		02/08/2021 04:25 PM	Water	ALS: 2 Non ALS: 0	No	X		
025	0939_QC202_210802	Please forward to NMI	02/08/2021 04:26 PM	Water	ALS: 2 Non ALS: 0	Yes			
026	0939_MW4065_210802		02/08/2021 04:47 PM	Water	ALS: 2 Non ALS: 0	No	X		
027	0939_MW4022_210802		02/08/2021 05:10 PM	Water	ALS: 2 Non ALS: 0	No	X		

RECEIVED
18 AUG 2021

BOTH JARR (2) WERE
REQ'D EMPTY
(LEAKED) BY:

[Signature]

CHAIN OF CUSTODY
 (ALS) COC#: 25860 ALS Laboratory: EM Melbourne

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: SA_0939_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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

PROJECT MANAGER: [REDACTED]
 PRIMARY SAMPLER: [REDACTED]
 EMAIL REPORTS TO: [REDACTED]
 EMAIL INVOICES TO: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU0030

SAMPLE DETAILS **ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
037	0939_MW4020_210803		03/08/2021 09:49 AM	Water	ALS: 2 Non ALS: 0	No	X		
038	0939_MW4071_210803	Extra volume for lab qc	03/08/2021 10:09 AM	Water	ALS: 4 Non ALS: 0	No	X		
039	0939_MW4024_210803	Extra volume for lab qc	03/08/2021 10:13 AM	Water	ALS: 4 Non ALS: 0	No	X		
040	0939_MW4023_210803		03/08/2021 10:14 AM	Water	ALS: 2 Non ALS: 0	No	X		
041	0939_QC103_210803		03/08/2021 10:15 AM	Water	ALS: 2 Non ALS: 0	No	X		
042	0939_QC203_210803	Please forward to NMI	03/08/2021 10:19 AM	Water	ALS: 2 Non ALS: 0	Yes			
043	0939_MW4060_210803		03/08/2021 10:48 AM	Water	ALS: 2 Non ALS: 0	No	X		
044	0939_MW4059_210803		03/08/2021 11:13 AM	Water	ALS: 2 Non ALS: 0	No	X		
045	0939_MW4077_210803		03/08/2021 11:18 AM	Water	ALS: 2 Non ALS: 0	No	X		

N21/019686

RECEIVED
1 8 AUG 2021

BY:



CHAIN OF CUSTODY

COC#: 25860 ALS Laboratory: EM Melbourne

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561.6.1

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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
0

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

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

SAMPLE DETAILS

ANALYSIS REQUIRED

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
046	0939_MW4078_210803		03/08/2021 11:58 AM	Water	ALS: 2 Non ALS: 0	No	X		
047	0939_MW4058_210803		03/08/2021 12:03 PM	Water	ALS: 2 Non ALS: 0	No	X		
048	0939_MW4064_210803		03/08/2021 12:19 PM	Water	ALS: 2 Non ALS: 0	No	X		
049	0939_MW4219_210803		03/08/2021 12:33 PM	Water	ALS: 2 Non ALS: 0	No	X		
050	0939_MW4052_210803		03/08/2021 02:10 PM	Water	ALS: 2 Non ALS: 0	No	X		
051	0939_MW4072_210803	Extra vol for lab QC	03/08/2021 02:21 PM	Water	ALS: 4 Non ALS: 0	No	X		
052	0939_QC104_210803		03/08/2021 02:45 PM	Water	ALS: 2 Non ALS: 0	No	X		
053	0939_MW4041_210803		03/08/2021 02:37 PM	Water	ALS: 2 Non ALS: 0	No	X		
054	0939_QC204_210803	Please forward to NMI sydney	03/08/2021 02:46 PM	Water	ALS: 2 Non ALS: 0	Yes			

RECEIVED
18 AUG 2021

BY:

N21/019687

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: SA_0939_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

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

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

RELINQUISHED BY:
DATE TIME:

RECEIVED BY:
DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

CONTACT PH: [REDACTED] SAMPLER MOBILE:
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

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

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
055	0939_MW4074_210803		03/08/2021 02:53 PM	Water	ALS: 2 Non ALS: 0	No	X		
056	0939_MW4037_210803		03/08/2021 03:09 PM	Water	ALS: 2 Non ALS: 0	No	X		
057	0939_MW4070_210803		03/08/2021 04:10 PM	Water	ALS: 2 Non ALS: 0	No	X		
058	0939_MW4045_210803		03/08/2021 04:26 PM	Water	ALS: 2 Non ALS: 0	No	X		
059	0939_MW4053_210803		03/08/2021 04:32 PM	Water	ALS: 2 Non ALS: 0	No	X		
060	0939_QC105_210803		03/08/2021 04:32 PM	Water	ALS: 2 Non ALS: 0	No	X		
061	0939_QC205_210803	Please forward to NMI sydney	03/08/2021 04:40 PM	Water	ALS: 2 Non ALS: 0	Yes	-		
062	0939_MW4055_210803	Extra vol for lab QC	03/08/2021 05:06 PM	Water	ALS: 4 Non ALS: 0	No	X		
063	0939_QC304_210803		03/08/2021 05:30 PM	Water	ALS: 2 Non ALS: 0	No	X		


N21/019688

RECEIVED
 18 AUG 2021

BY:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

RELINQUISHED BY:
 DATE TIME:

RECEIVED BY:
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd
 PROJECT: SA_0939_PFASOMP
 SITE: SA_0939_PFASOMP
 ORDER NO: 60612561 6.1

TURNAROUND REQUIREMENTS : 5 Days
 Biohazard info:

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


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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

Random Sample Temperature on Receipt: °C
 Other comments:

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
082	0939_QC106_210804		04/08/2021 02:31 PM	Water	ALS: 2 Non ALS: 0	No	X		
083	0939_QC206_210804	Please forward to NMI	04/08/2021 02:32 PM	Water	ALS: 2 Non ALS: 0	Yes			
084	0939_QC306_210804		04/08/2021 03:35 PM	Water	ALS: 2 Non ALS: 0	No	X		
085	0939_QC307_210804		04/08/2021 03:36 PM	Water	ALS: 2 Non ALS: 0	No	X		
086	0939_QC406_210804		04/08/2021 03:37 PM	Water	ALS: 2 Non ALS: 0	No	X		
087	0939_QC407_210804		04/08/2021 03:38 PM	Water	ALS: 2 Non ALS: 0	No	X		
088	0939_QC503_210804		03/08/2021 03:38 PM	Water	ALS: 2 Non ALS: 0	No	X		
089	0939_MW4079_210805		05/08/2021 09:25 AM	Water	ALS: 2 Non ALS: 0	No	X		
090	0939_MW4073_210805		05/08/2021 09:39 AM	Water	ALS: 2 Non ALS: 0	No	X		

RECEIVED
 18 AUG 2021

BY:

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
 QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
 0

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

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

SAMPLE DETAILS

ANALYSIS REQUIRED

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
091	0939_MW4066_210805		05/08/2021 09:47 AM	Water	ALS: 2 Non ALS: 0	No	X		
092	0939_MW4057_210805		05/08/2021 09:57 AM	Water	ALS: 2 Non ALS: 0	No	X		
093	0939_MW4015_210805		05/08/2021 11:02 AM	Water	ALS: 2 Non ALS: 0	No	X		
094	0939_MW4068_210805		05/08/2021 11:22 AM	Water	ALS: 2 Non ALS: 0	No	X		
095	0939_MW4035_210805		05/08/2021 11:48 AM	Water	ALS: 2 Non ALS: 0	No	X		
096	0939_QC207_210805	Please forward to NMI	05/08/2021 11:49 AM	Water	ALS: 2 Non ALS: 0	Yes	-		
097	0939_QC107_210805		05/08/2021 11:50 AM	Water	ALS: 2 Non ALS: 0	No	X		
098	0939_MW4003_210805		05/08/2021 11:55 AM	Water	ALS: 2 Non ALS: 0	No	X		
099	0939_QC308_210805		05/08/2021 12:04 PM	Water	ALS: 2 Non ALS: 0	No	X		

N21/019690

RECEIVED
 18 AUG 2021

BY:



CHAIN OF CUSTODY

COC#: 25860

ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

°C

Other comments:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

SAMPLE DETAILS

ANALYSIS REQUIRED

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
109	0939_QC208_210806	Please forward to NMI	06/08/2021 11:16 AM	Water	ALS: 2 Non ALS: 0	Yes	-	Please forward to NMI	
110	0939_SW012_210806		06/08/2021 11:20 AM	Water	ALS: 2 Non ALS: 0	No	X		
111	0939_QC109_210806		06/08/2021 11:21 AM	Water	ALS: 2 Non ALS: 0	No	X		
112	0939_QC209_210806	Please forward to NMI	06/08/2021 11:21 AM	Water	ALS: 2 Non ALS: 0	Yes	-		
113	0939_QC309_210806		06/08/2021 11:34 AM	Water	ALS: 2 Non ALS: 0	No	X		
114	0939_QC409_210806		06/08/2021 11:34 AM	Water	ALS: 2 Non ALS: 0	No	X		

RECEIVED
18 AUG 2021

BY:



CHAIN OF CUSTODY

COC#: 25860

ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

°C

Other comments:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

012	0939_QC201_210802	HDPE (no PTFE)	20 mL	00352101061500	Grey	No	
012	0939_QC201_210802	HDPE (no PTFE)	20 mL	00352101061451	Grey	No	
013	0939_MW2216_210802	HDPE (no PTFE)	20 mL	00352101061488	Grey	No	
013	0939_MW2216_210802	HDPE (no PTFE)	20 mL	00352101074357	Grey	No	
014	0939_MW2135_210802	HDPE (no PTFE)	20 mL	00352101063222	Grey	No	
014	0939_MW2135_210802	HDPE (no PTFE)	20 mL	00352101063431	Grey	No	
015	0939_MW2130_210802	HDPE (no PTFE)	20 mL	00352101061305	Grey	No	
015	0939_MW2130_210802	HDPE (no PTFE)	20 mL	00352101061372	Grey	No	
016	0939_MW2210_210802	HDPE (no PTFE)	20 mL	00352101061253	Grey	No	
016	0939_MW2210_210802	HDPE (no PTFE)	20 mL	00352101063266	Grey	No	
016	0939_MW2210_210802	HDPE (no PTFE)	20 mL	00352101061499	Grey	No	
016	0939_MW2210_210802	HDPE (no PTFE)	20 mL	00352101061282	Grey	No	
017	0939_MW2131_210802	HDPE (no PTFE)	20 mL	00352101063261	Grey	No	
017	0939_MW2131_210802	HDPE (no PTFE)	20 mL	00352101061322	Grey	No	
018	0939_MW2528_210802	HDPE (no PTFE)	20 mL	00352101061366	Grey	No	
018	0939_MW2528_210802	HDPE (no PTFE)	20 mL	00352101061257	Grey	No	
019	0939_MW2157_210802	HDPE (no PTFE)	20 mL	00352101061432	Grey	No	
019	0939_MW2157_210802	HDPE (no PTFE)	20 mL	00352101061324	Grey	No	
020	0939_MW2209_210802	HDPE (no PTFE)	20 mL	00352101061504	Grey	No	
020	0939_MW2209_210802	HDPE (no PTFE)	20 mL	00352101061359	Grey	No	
021	0939_MW2114_210802	HDPE (no PTFE)	20 mL	00352101061346	Grey	No	
021	0939_MW2114_210802	HDPE (no PTFE)	20 mL	00352101063250	Grey	No	
022	0939_MW4218_210802	HDPE (no PTFE)	20 mL	00352101061277	Grey	No	
022	0939_MW4218_210802	HDPE (no PTFE)	20 mL	00352101061314	Grey	No	
023	0939_MW2159_210802	HDPE (no PTFE)	20 mL	00352101063322	Grey	No	
023	0939_MW2159_210802	HDPE (no PTFE)	20 mL	00352010039528	Grey	No	
024	0939_QC102_210802	HDPE (no PTFE)	20 mL	00352010039329	Grey	No	

**CHAIN OF CUSTODY**

COC#: 25860

ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFA5OMP

SITE: SA_0939_PFA5OMP

ORDER NO: 60612561 6.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH: [REDACTED]

SAMPLER MOBILE:

QUOTE NO: SY/139/19 V3

/ ES2019AECOMAU003

0

024	0939_QC102_210802	HDPE (no PTFE)	20 mL	00352101061536	Grey	No
025	0939_QC202_210802	HDPE (no PTFE)	20 mL	00352101061338	Grey	No
025	0939_QC202_210802	HDPE (no PTFE)	20 mL	00352101061520	Grey	No
026	0939_MW4065_210802	HDPE (no PTFE)	20 mL	00352101063320	Grey	No
026	0939_MW4065_210802	HDPE (no PTFE)	20 mL	00352101063331	Grey	No
027	0939_MW4022_210802	HDPE (no PTFE)	20 mL	00352010039685	Grey	No
027	0939_MW4022_210802	HDPE (no PTFE)	20 mL	00352010039755	Grey	No
028	0939_MW4009_210802	HDPE (no PTFE)	20 mL	00352101061446	Grey	No
028	0939_MW4009_210802	HDPE (no PTFE)	20 mL	00352101061540	Grey	No
029	0939_QC301_210802	HDPE (no PTFE)	20 mL	00352010039684	Grey	No
029	0939_QC301_210802	HDPE (no PTFE)	20 mL	00352010039363	Grey	No
030	0939_QC302_210802	HDPE (no PTFE)	20 mL	00352010039517	Grey	No
030	0939_QC302_210802	HDPE (no PTFE)	20 mL	00352010039359	Grey	No
031	0939_QC303_210802	HDPE (no PTFE)	20 mL	00352010039646	Grey	No
031	0939_QC303_210802	HDPE (no PTFE)	20 mL	00352010039569	Grey	No
032	0939_QC401_210802	HDPE (no PTFE)	20 mL	00352010039318	Grey	No
032	0939_QC401_210802	HDPE (no PTFE)	20 mL	00352010039826	Grey	No
033	0939_QC402_210802	HDPE (no PTFE)	20 mL	00352010039753	Grey	No
033	0939_QC402_210802	HDPE (no PTFE)	20 mL	00352010039333	Grey	No
034	0939_QC403_210802	HDPE (no PTFE)	20 mL	00352010039556	Grey	No
034	0939_QC403_210802	HDPE (no PTFE)	20 mL	00352010039421	Grey	No
035	0939_QC501_210802	HDPE (no PTFE)	20 mL	00352010039417	Grey	No
035	0939_QC501_210802	HDPE (no PTFE)	20 mL	00352010039408	Grey	No
036	0939_MW4021_210803	HDPE (no PTFE)	20 mL	00352101064332	Grey	No
036	0939_MW4021_210803	HDPE (no PTFE)	20 mL	00352101064089	Grey	No
037	0939_MW4020_210803	HDPE (no PTFE)	20 mL	00352101064314	Grey	No
037	0939_MW4020_210803	HDPE (no PTFE)	20 mL	00352101064310	Grey	No



CHAIN OF CUSTODY

COC#: 25860

ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

038	0939_MW4071_210803	HDPE (no PTFE)	20 mL	00352101064051	Grey	No	
038	0939_MW4071_210803	HDPE (no PTFE)	20 mL	00352101064071	Grey	No	
038	0939_MW4071_210803	HDPE (no PTFE)	20 mL	00352101064085	Grey	No	
038	0939_MW4071_210803	HDPE (no PTFE)	20 mL	00352101064053	Grey	No	
039	0939_MW4024_210803	HDPE (no PTFE)	20 mL	00352101064270	Grey	No	
039	0939_MW4024_210803	HDPE (no PTFE)	20 mL	00352101064217	Grey	No	
039	0939_MW4024_210803	HDPE (no PTFE)	20 mL	00352101064148	Grey	No	
039	0939_MW4024_210803	HDPE (no PTFE)	20 mL	00352101064062	Grey	No	
040	0939_MW4023_210803	HDPE (no PTFE)	20 mL	00352101063185	Grey	No	
040	0939_MW4023_210803	HDPE (no PTFE)	20 mL	00352101064124	Grey	No	
041	0939_QC103_210803	HDPE (no PTFE)	20 mL	00352101064136	Grey	No	
041	0939_QC103_210803	HDPE (no PTFE)	20 mL	00352101064077	Grey	No	
042	0939_QC203_210803	HDPE (no PTFE)	20 mL	00352101064283	Grey	No	
042	0939_QC203_210803	HDPE (no PTFE)	20 mL	00352101064151	Grey	No	
043	0939_MW4060_210803	HDPE (no PTFE)	20 mL	00352101064090	Grey	No	
043	0939_MW4060_210803	HDPE (no PTFE)	20 mL	00352101064218	Grey	No	
044	0939_MW4059_210803	HDPE (no PTFE)	20 mL	00352101064278	Grey	No	
044	0939_MW4059_210803	HDPE (no PTFE)	20 mL	00352101064234	Grey	No	
045	0939_MW4077_210803	HDPE (no PTFE)	20 mL	00352101064067	Grey	No	
045	0939_MW4077_210803	HDPE (no PTFE)	20 mL	00352101064230	Grey	No	
046	0939_MW4078_210803	HDPE (no PTFE)	20 mL	00352101064199	Grey	No	
046	0939_MW4078_210803	HDPE (no PTFE)	20 mL	00352101064266	Grey	No	
047	0939_MW4058_210803	HDPE (no PTFE)	20 mL	00352101064304	Grey	No	
047	0939_MW4058_210803	HDPE (no PTFE)	20 mL	00352101064206	Grey	No	
048	0939_MW4064_210803	HDPE (no PTFE)	20 mL	00352101064101	Grey	No	
048	0939_MW4064_210803	HDPE (no PTFE)	20 mL	00352101064179	Grey	No	
049	0939_MW4219_210803	HDPE (no PTFE)	20 mL	00352101064331	Grey	No	



CHAIN OF CUSTODY

COC#: 25860

ALS Laboratory: EM Melbourne

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFA5OMP

SITE: SA_0939_PFA5OMP

ORDER NO: 60612561 6.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 V3

/ ES2019AECOMAU003
0

049	0939_MW4219_210803	HDPE (no PTFE)	20 mL	00352101064184	Grey	No	
050	0939_MW4052_210803	HDPE (no PTFE)	20 mL	00352101064268	Grey	No	
050	0939_MW4052_210803	HDPE (no PTFE)	20 mL	00352101064159	Grey	No	
051	0939_MW4072_210803	HDPE (no PTFE)	20 mL	00352101064187	Grey	No	
051	0939_MW4072_210803	HDPE (no PTFE)	20 mL	00352101064193	Grey	No	
051	0939_MW4072_210803	HDPE (no PTFE)	20 mL	00352101064317	Grey	No	
051	0939_MW4072_210803	HDPE (no PTFE)	20 mL	00352101064127	Grey	No	
052	0939_QC104_210803	HDPE (no PTFE)	20 mL	00352101064107	Grey	No	
052	0939_QC104_210803	HDPE (no PTFE)	20 mL	00352101064043	Grey	No	
053	0939_MW4041_210803	HDPE (no PTFE)	20 mL	00352101064336	Grey	No	
053	0939_MW4041_210803	HDPE (no PTFE)	20 mL	00352101064096	Grey	No	
054	0939_QC204_210803	HDPE (no PTFE)	20 mL	00352101064044	Grey	No	
054	0939_QC204_210803	HDPE (no PTFE)	20 mL	00352101064050	Grey	No	
055	0939_MW4074_210803	HDPE (no PTFE)	20 mL	00352101064075	Grey	No	
055	0939_MW4074_210803	HDPE (no PTFE)	20 mL	00352101064250	Grey	No	
056	0939_MW4037_210803	HDPE (no PTFE)	20 mL	00352101064272	Grey	No	
056	0939_MW4037_210803	HDPE (no PTFE)	20 mL	00352101064087	Grey	No	
057	0939_MW4070_210803	HDPE (no PTFE)	20 mL	00352101064115	Grey	No	
057	0939_MW4070_210803	HDPE (no PTFE)	20 mL	00352101064120	Grey	No	
058	0939_MW4045_210803	HDPE (no PTFE)	20 mL	00352101064285	Grey	No	
058	0939_MW4045_210803	HDPE (no PTFE)	20 mL	00352101064274	Grey	No	
059	0939_MW4053_210803	HDPE (no PTFE)	20 mL	00352101064262	Grey	No	
059	0939_MW4053_210803	HDPE (no PTFE)	20 mL	00352101064040	Grey	No	
060	0939_QC105_210803	HDPE (no PTFE)	20 mL	00352101064104	Grey	No	
060	0939_QC105_210803	HDPE (no PTFE)	20 mL	00352101064045	Grey	No	
061	0939_QC205_210803	HDPE (no PTFE)	20 mL	00352101064113	Grey	No	
061	0939_QC205_210803	HDPE (no PTFE)	20 mL	00352101064145	Grey	No	



CHAIN OF CUSTODY

COC#: 25860

ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFSOMP

SITE: SA_0939_PFSOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

°C

Other comments:

073	0939_SW033_210804	HDPE (no PTFE)	20 mL	00352101064239	Grey	No	
073	0939_SW033_210804	HDPE (no PTFE)	20 mL	00352101064328	Grey	No	
073	0939_SW033_210804	HDPE (no PTFE)	20 mL	00352101064253	Grey	No	
074	0939_SW032_210804	HDPE (no PTFE)	20 mL	00352101064108	Grey	No	
074	0939_SW032_210804	HDPE (no PTFE)	20 mL	00352101064277	Grey	No	
075	0939_SW029_210804	HDPE (no PTFE)	20 mL	00352101064258	Grey	No	
075	0939_SW029_210804	HDPE (no PTFE)	20 mL	00352101064264	Grey	No	
076	0939_SW028_210804	HDPE (no PTFE)	20 mL	00352101064321	Grey	No	
076	0939_SW028_210804	HDPE (no PTFE)	20 mL	00352101064171	Grey	No	
077	0939_SW050_210804	HDPE (no PTFE)	20 mL	00352101064111	Grey	No	
077	0939_SW050_210804	HDPE (no PTFE)	20 mL	00352101064116	Grey	No	
078	0939_SW054_210804	HDPE (no PTFE)	20 mL	00352101064041	Grey	No	
078	0939_SW054_210804	HDPE (no PTFE)	20 mL	00352101064058	Grey	No	
079	0939_SW021_210804	HDPE (no PTFE)	20 mL	00352101064092	Grey	No	
079	0939_SW021_210804	HDPE (no PTFE)	20 mL	00352101064083	Grey	No	
080	0939_SW019_210804	HDPE (no PTFE)	20 mL	00352101064303	Grey	No	
080	0939_SW019_210804	HDPE (no PTFE)	20 mL	00352101064079	Grey	No	
081	0939_SW018_210804	HDPE (no PTFE)	20 mL	00352101063371	Grey	No	
081	0939_SW018_210804	HDPE (no PTFE)	20 mL	00352101061413	Grey	No	
081	0939_SW018_210804	HDPE (no PTFE)	20 mL	00352101064226	Grey	No	
081	0939_SW018_210804	HDPE (no PTFE)	20 mL	00352101063186	Grey	No	
082	0939_QC106_210804	HDPE (no PTFE)	20 mL	00352101064063	Grey	No	
082	0939_QC106_210804	HDPE (no PTFE)	20 mL	00352101064091	Grey	No	
083	0939_QC206_210804	HDPE (no PTFE)	20 mL	00352101064330	Grey	No	
083	0939_QC206_210804	HDPE (no PTFE)	20 mL	00352101064291	Grey	No	
084	0939_QC306_210804	HDPE (no PTFE)	20 mL	00352101064265	Grey	No	
084	0939_QC306_210804	HDPE (no PTFE)	20 mL	0035210029060	Grey	No	



CHAIN OF CUSTODY

COC#: 25860 ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFASOMP

SITE: SA_0939_PFASOMP

ORDER NO: 60612561 6.1

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

CONTACT PH: [REDACTED]
QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:
/ ES2019AECOMAU003
0

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: C

Other comments:

085	0939_QC307_210804	HDPE (no PTFE)	20 mL	00352101064322	Grey	No
085	0939_QC307_210804	HDPE (no PTFE)	20 mL	00352101064269	Grey	No
086	0939_QC406_210804	HDPE (no PTFE)	20 mL	00352101064099	Grey	No
086	0939_QC406_210804	HDPE (no PTFE)	20 mL	00352101064139	Grey	No
087	0939_QC407_210804	HDPE (no PTFE)	20 mL	00352101064228	Grey	No
087	0939_QC407_210804	HDPE (no PTFE)	20 mL	00352101064153	Grey	No
088	0939_QC503_210804	HDPE (no PTFE)	20 mL	00352101064065	Grey	No
088	0939_QC503_210804	HDPE (no PTFE)	20 mL	00352101064084	Grey	No
089	0939_MW4079_210805	HDPE (no PTFE)	20 mL	00352101064290	Grey	No
089	0939_MW4079_210805	HDPE (no PTFE)	20 mL	00352101064170	Grey	No
090	0939_MW4073_210805	HDPE (no PTFE)	20 mL	00352101064225	Grey	No
090	0939_MW4073_210805	HDPE (no PTFE)	20 mL	00352101064114	Grey	No
091	0939_MW4066_210805	HDPE (no PTFE)	20 mL	00352101064223	Grey	No
091	0939_MW4066_210805	HDPE (no PTFE)	20 mL	00352101064135	Grey	No
092	0939_MW4057_210805	HDPE (no PTFE)	20 mL	00352101064196	Grey	No
092	0939_MW4057_210805	HDPE (no PTFE)	20 mL	00352101064242	Grey	No
093	0939_MW4015_210805	HDPE (no PTFE)	20 mL	00352101064141	Grey	No
093	0939_MW4015_210805	HDPE (no PTFE)	20 mL	00352101064282	Grey	No
094	0939_MW4068_210805	HDPE (no PTFE)	20 mL	00352101064056	Grey	No
094	0939_MW4068_210805	HDPE (no PTFE)	20 mL	00352101064293	Grey	No
095	0939_MW4035_210805	HDPE (no PTFE)	20 mL	00352101064276	Grey	No
095	0939_MW4035_210805	HDPE (no PTFE)	20 mL	00352101064325	Grey	No
096	0939_QC207_210805	HDPE (no PTFE)	20 mL	00352101064119	Grey	No
096	0939_QC207_210805	HDPE (no PTFE)	20 mL	00352101064211	Grey	No
097	0939_QC107_210805	HDPE (no PTFE)	20 mL	00352101064333	Grey	No
097	0939_QC107_210805	HDPE (no PTFE)	20 mL	00352101064294	Grey	No
098	0939_MW4003_210805	HDPE (no PTFE)	20 mL	00352101064072	Grey	No



CHAIN OF CUSTODY

COC#: 25860 ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFSOMP

SITE: SA_0939_PFSOMP

ORDER NO: 60612561 6.1

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

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]
QUOTE NO: SY/139/19 V3 / ES2019AECOMAU003
0

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

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

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

098	0939_MW4003_210805	HDPE (no PTFE)	20 mL	00352101064280	Grey	No	
099	0939_QC308_210805	HDPE (no PTFE)	20 mL	00352101064138	Grey	No	
099	0939_QC308_210805	HDPE (no PTFE)	20 mL	00352101064068	Grey	No	
100	0939_QC408_210805	HDPE (no PTFE)	20 mL	00352101063187	Grey	No	
100	0939_QC408_210805	HDPE (no PTFE)	20 mL	00352101064152	Grey	No	
101	0939_MW4075_210806	HDPE (no PTFE)	20 mL	00352101064305	Grey	No	
101	0939_MW4075_210806	HDPE (no PTFE)	20 mL	00352101064298	Grey	No	
102	0939_MW4069_210806	HDPE (no PTFE)	20 mL	00352101064316	Grey	No	
102	0939_MW4069_210806	HDPE (no PTFE)	20 mL	00352101064064	Grey	No	
103	0939_MW4048_210806	HDPE (no PTFE)	20 mL	00352101063259	Grey	No	
103	0939_MW4048_210806	HDPE (no PTFE)	20 mL	00352101063235	Grey	No	
104	0939_MW4001_210806	HDPE (no PTFE)	20 mL	00352101064174	Grey	No	
104	0939_MW4001_210806	HDPE (no PTFE)	20 mL	00352101064273	Grey	No	
105	0939_SW010_210806	HDPE (no PTFE)	20 mL	00352101064094	Grey	No	
105	0939_SW010_210806	HDPE (no PTFE)	20 mL	00352101064140	Grey	No	
106	0939_SW058_210806	HDPE (no PTFE)	20 mL	00352101064301	Grey	No	
106	0939_SW058_210806	HDPE (no PTFE)	20 mL	00352101064102	Grey	No	
107	0939_MW4013_210806	HDPE (no PTFE)	20 mL	00352101064157	Grey	No	
107	0939_MW4013_210806	HDPE (no PTFE)	20 mL	00352101064097	Grey	No	
107	0939_MW4013_210806	HDPE (no PTFE)	20 mL	00352101064232	Grey	No	
107	0939_MW4013_210806	HDPE (no PTFE)	20 mL	00352101064263	Grey	No	
108	0939_QC108_210806	HDPE (no PTFE)	20 mL	00352101064123	Grey	No	
108	0939_QC108_210806	HDPE (no PTFE)	20 mL	00352101064086	Grey	No	
109	0939_QC208_210806	HDPE (no PTFE)	20 mL	00352101064109	Grey	No	
109	0939_QC208_210806	HDPE (no PTFE)	20 mL	00352101064057	Grey	No	
110	0939_SW012_210806	HDPE (no PTFE)	20 mL	00352101064183	Grey	No	
110	0939_SW012_210806	HDPE (no PTFE)	20 mL	00352101063199	Grey	No	



CHAIN OF CUSTODY

COC#: 25860 ALS Laboratory: EM Melbourne

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: SA_0939_PFSOMP

SITE: SA_0939_PFSOMP

ORDER NO: 60612561 6.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH:

QUOTE NO: SY/139/19 V3

SAMPLER MOBILE:

/ ES2019AECOMAU003
0

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

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

Random Sample Temperature on Receipt: C

Other comments:

111	0939_QC109_210806	HDPE (no PTFE)	20 mL	00352101063242	Grey	No	
111	0939_QC109_210806	HDPE (no PTFE)	20 mL	00352101064112	Grey	No	
112	0939_QC209_210806	HDPE (no PTFE)	20 mL	00352101064129	Grey	No	
112	0939_QC209_210806	HDPE (no PTFE)	20 mL	00352101063333	Grey	No	
113	0939_QC309_210806	HDPE (no PTFE)	20 mL	00352101064243	Grey	No	
113	0939_QC309_210806	HDPE (no PTFE)	20 mL	00352101064098	Grey	No	
114	0939_QC409_210806	HDPE (no PTFE)	20 mL	00352101064297	Grey	No	
114	0939_QC409_210806	HDPE (no PTFE)	20 mL	00352101064182	Grey	No	

Total Bottle Count: ALS: 250, Non ALS: 0

COC uploaded on 12/08/2021 @ 13:09

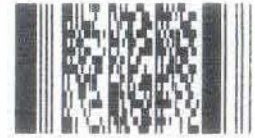


FREIGHT



Environmental Division
Melbourne

Work Order Reference
EM2115885



Telephone : + 61-3-8549 9600

Custody Document for Submissions via ALS Compass App

Project: SA-0939-PFASOMP Client: Department of Defence Project Manager: _____

Phone: _____

ALS Compass COC Reference: 25860 # Samples: 114

26141, 26142, 26143

Sampler: _____

Phone: _____

Turnaround Requirements: Standard _____ Urgent _____

Special Instructions:

please see notes for samples with additional volume for lab QC.

Custody:

Relinquished by: _____ Date / Time: <u>9/8/21</u>	Received by: _____ Date / Time: _____	Relinquished by: _____ Date / Time: <u>16/8/21</u>	Received by: <u>proven</u> <u>AW1</u> Date / Time: <u>11/8, 12-30</u>
--	--	---	--



REPORT OF ANALYSIS

Client : AECOM AUSTRALIA PTY LTD LEVEL 21 420 GEORGE STREET	Job No. : AECO03/210820
Attention : [REDACTED]	Quote No. : QT-02018
Project Name : SA_0939_PFASOMP	Order No. : 60612561_6_1
Your Client Services Manager : Danny Slee	Date Received : 20-AUG-2021
	Sampled By : CLIENT
	Phone : 02 9449 0169

Lab Reg No.	Sample Ref	Sample Description
N21/019788	0939_QC210_210812	WATER 12/08/2021 12.46 PM
N21/019789	0939_QC211_210812	WATER 12/08/2021 02.46 PM
N21/019790	0939_QC212_210812	WATER 12/08/2021 04.59 PM

Lab Reg No.		N21/019788	N21/019789	N21/019790		
Date Sampled		12-AUG-2021	12-AUG-2021	12-AUG-2021		
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	ug/L	<0.05	<0.05	2.1		NR70
PFPeA (2706-90-3)	ug/L	<0.02	<0.02	3.5		NR70
PFHxA (307-24-4)	ug/L	<0.01	<0.01	16		NR70
PFHpA (375-85-9)	ug/L	<0.01	<0.01	2.2		NR70
PFOA (335-67-1)	ug/L	<0.01	<0.01	2.4		NR70
PFNA (375-95-1)	ug/L	<0.01	<0.01	<0.01		NR70
PFDA (335-76-2)	ug/L	<0.01	<0.01	<0.01		NR70
PFUdA (2058-94-8)	ug/L	<0.01	<0.01	<0.01		NR70
PFDoA (307-55-1)	ug/L	<0.01	<0.01	<0.01		NR70
PFTrDA (72629-94-8)	ug/L	<0.02	<0.02	<0.02		NR70
PFTeDA (376-06-7)	ug/L	<0.02	<0.02	<0.02		NR70
PFHxDA (67905-19-5)	ug/L	<0.02	<0.02	<0.02		NR70
PFODA (16517-11-6)	ug/L	<0.05	<0.05	<0.05		NR70
FOUEA (70887-84-2)	ug/L	<0.01	<0.01	<0.01		NR70
PFDS (335-77-3)	ug/L	<0.01	<0.01	<0.01		NR70
PFPeS (2706-91-4)	ug/L	<0.01	<0.01	7.6		NR70
PFHxS (355-46-4)	ug/L	0.033	0.031	80		NR70
PFHpS (375-92-8)	ug/L	<0.01	<0.01	3.0		NR70
PFOS (1763-23-1)	ug/L	1.0	0.85	33		NR70
PFNS (68259-12-1)	ug/L	<0.01	<0.01	<0.01		NR70
PFBS (375-73-5)	ug/L	<0.01	<0.01	8.4		NR70
PFOSA (754-91-6)	ug/L	<0.01	<0.01	<0.01		NR70
N-MeFOSA (31506-32-8)	ug/L	<0.02	<0.02	<0.02		NR70
N-EtFOSA (4151-50-2)	ug/L	<0.02	<0.02	<0.02		NR70
N-MeFOSAA (2355-31-9)	ug/L	<0.01	<0.01	<0.01		NR70
N-EtFOSAA(2991-50-6)	ug/L	<0.01	<0.01	<0.01		NR70
N-MeFOSE (24448-09-7)	ug/L	<0.05	<0.05	<0.05		NR70
N-EtFOSE (1691-99-2)	ug/L	<0.05	<0.05	<0.05		NR70

REPORT OF ANALYSIS

Page: 2 of 3
Report No. RN1327475

Lab Reg No.		N21/019788	N21/019789	N21/019790		
Date Sampled		12-AUG-2021	12-AUG-2021	12-AUG-2021		
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
4:2 FTS (757124-72-4)	ug/L	<0.01	<0.01	<0.01		NR70
6:2 FTS (27619-97-2)	ug/L	<0.01	<0.01	<0.01		NR70
8:2 FTS (39108-34-4)	ug/L	<0.01	<0.01	<0.01		NR70
10:2 FTS (120226-60-0)	ug/L	<0.01	<0.01	<0.01		NR70
8:2 diPAP (678-41-1)	ug/L	<0.02	<0.02	<0.02		NR70
PFBA (Surrogate Recovery)	%	89	102	116		NR70
PFPeA (Surrogate Recovery)	%	94	95	98		NR70
PFHxA (Surrogate Recovery)	%	98	94	71		NR70
PFHpA (Surrogate Recovery)	%	93	107	123		NR70
PFOA (Surrogate Recovery)	%	103	112	125		NR70
PFNA (Surrogate Recovery)	%	73	78	82		NR70
PFDA (Surrogate Recovery)	%	73	70	96		NR70
PFUdA (Surrogate Recovery)	%	69	76	119		NR70
PFDoA (Surrogate Recovery)	%	59	74	97		NR70
PFTeDA (Surrogate Recovery)	%	54	65	112		NR70
PFHxDA (Surrogate Recovery)	%	79	85	145		NR70
FOUEA (Surrogate Recovery)	%	67	79	125		NR70
PFBS (Surrogate Recovery)	%	88	90	84		NR70
PFHxS (Surrogate Recovery)	%	79	82	46		NR70
PFOS (Surrogate Recovery)	%	105	113	84		NR70
PFOSA (Surrogate Recovery)	%	46	49	83		NR70
N-MeFOSA (Surrogate Recovery)	%	25	69	94		NR70
N-EtFOSA (Surrogate Recovery)	%	50	45	92		NR70
N-MeFOSAA (Surrogate Recovery)	%	37	48	74		NR70
N-EtFOSAA (Surrogate Recovery)	%	53	58	83		NR70
N-MeFOSE (Surrogate Recovery)	%	57	51	145		NR70
N-EtFOSE (Surrogate Recovery)	%	50	47	117		NR70
4:2 FTS (Surrogate Recovery)	%	55	55	105		NR70
6:2 FTS (Surrogate Recovery)	%	54	73	82		NR70
8:2 FTS (Surrogate Recovery)	%	45	60	50		NR70
8:2 diPAP (Surrogate Recovery)	%	65	73	127		NR70
Dates						
Date extracted		3-SEP-2021	3-SEP-2021	3-SEP-2021		
Date analysed		3-SEP-2021	3-SEP-2021	3-SEP-2021		

N21/019788
to
N21/019790

REPORT OF ANALYSIS

Page: 3 of 3
Report No. RN1327475

PFOS and PFHxS are quantified using a combined branched and linear standard, linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.

Selected PFAS surrogate recoveries are biased due to matrix effects.^δ
Surrogate recoveries low for selected analytes - PFAS LORs not raised since S/N > 10.

██
██
Organics - NSW
Accreditation No. 198

07-SEP-2021



Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

This Report supersedes reports: *RN1327461*

Measurement Uncertainty is available upon request.
Chemical Accreditation 198: 105 Delhi Road, North Ryde, NSW, 2113



REPORT OF ANALYSIS

Client : AECOM AUSTRALIA PTY LTD LEVEL 21 420 GEORGE STREET	Job No. : AECO03/210818
Attention : ██████████	Quote No. : QT-02018
Project Name : SA_0939_PFASOMP	Order No. : 60612561_6_1
Your Client Services Manager : Danny Slee	Date Received : 18-AUG-2021
	Sampled By : CLIENT
	Phone : 02 9449 0169

Lab Reg No.	Sample Ref	Sample Description
N21/019685	0939_QC201_210802	WATER 02/08/2021 12:24 PM
N21/019686	0939_QC203_210803	WATER 03/08/2021 10:19 AM
N21/019687	0939_QC204_210803	WATER 03/08/2021 2:46 PM
N21/019688	0939_QC205_210803	WATER 03/08/2021 04:40 PM

Lab Reg No.		N21/019685	N21/019686	N21/019687	N21/019688	
Date Sampled		02-AUG-2021	03-AUG-2021	03-AUG-2021	03-AUG-2021	
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	ug/L	<0.05	<0.05	<0.05	0.052	NR70
PFPeA (2706-90-3)	ug/L	<0.02	0.023	<0.02	<0.02	NR70
PFHxA (307-24-4)	ug/L	<0.01	0.16	<0.01	0.015	NR70
PFHpA (375-85-9)	ug/L	<0.01	0.018	<0.01	<0.01	NR70
PFOA (335-67-1)	ug/L	<0.01	0.032	<0.01	0.017	NR70
PFNA (375-95-1)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFDA (335-76-2)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFUdA (2058-94-8)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFDaA (307-55-1)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFTrDA (72629-94-8)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFTeDA (376-06-7)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFHxDA (67905-19-5)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFODA (16517-11-6)	ug/L	<0.05	<0.05	<0.05	<0.05	NR70
FOUEA (70887-84-2)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFDS (335-77-3)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFPeS (2706-91-4)	ug/L	<0.01	0.071	<0.01	0.025	NR70
PFHxS (355-46-4)	ug/L	0.050	1.1	<0.01	0.23	NR70
PFHpS (375-92-8)	ug/L	<0.01	0.054	<0.01	<0.01	NR70
PFOS (1763-23-1)	ug/L	<0.02	0.58	<0.02	0.48	NR70
PFNS (68259-12-1)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFBS (375-73-5)	ug/L	0.013	0.049	<0.01	0.027	NR70
PFOSA (754-91-6)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
N-MeFOSA (31506-32-8)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
N-EtFOSA (4151-50-2)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
N-MeFOSAA (2355-31-9)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
N-EtFOSAA(2991-50-6)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
N-MeFOSE (24448-09-7)	ug/L	<0.05	<0.05	<0.05	<0.05	NR70

REPORT OF ANALYSIS

Page: 2 of 6

Report No. RN1327474

Lab Reg No.		N21/019685	N21/019686	N21/019687	N21/019688	
Date Sampled		02-AUG-2021	03-AUG-2021	03-AUG-2021	03-AUG-2021	
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
N-EtFOSE (1691-99-2)	ug/L	<0.05	<0.05	<0.05	<0.05	NR70
4:2 FTS (757124-72-4)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
6:2 FTS (27619-97-2)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
8:2 FTS (39108-34-4)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
10:2 FTS (120226-60-0)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
8:2 diPAP (678-41-1)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFBA (Surrogate Recovery)	%	98	109	110	95	NR70
PFPeA (Surrogate Recovery)	%	102	111	104	95	NR70
PFHxA (Surrogate Recovery)	%	100	107	104	94	NR70
PFHpA (Surrogate Recovery)	%	100	110	98	101	NR70
PFOA (Surrogate Recovery)	%	107	111	115	106	NR70
PFNA (Surrogate Recovery)	%	94	86	107	90	NR70
PFDA (Surrogate Recovery)	%	91	92	100	97	NR70
PFUdA (Surrogate Recovery)	%	104	100	89	108	NR70
PFDoA (Surrogate Recovery)	%	84	83	94	84	NR70
PFTeDA (Surrogate Recovery)	%	105	90	99	87	NR70
PFHxDA (Surrogate Recovery)	%	97	90	100	89	NR70
FOUEA (Surrogate Recovery)	%	83	79	85	82	NR70
PFBS (Surrogate Recovery)	%	100	102	96	95	NR70
PFHxS (Surrogate Recovery)	%	95	87	89	83	NR70
PFOS (Surrogate Recovery)	%	109	95	91	77	NR70
PFOSA (Surrogate Recovery)	%	78	69	75	74	NR70
N-MeFOSA (Surrogate Recovery)	%	61	68	44	88	NR70
N-EtFOSA (Surrogate Recovery)	%	69	59	64	56	NR70
N-MeFOSAA (Surrogate Recovery)	%	59	66	66	67	NR70
N-EtFOSAA (Surrogate Recovery)	%	89	76	82	78	NR70
N-MeFOSE (Surrogate Recovery)	%	76	77	85	89	NR70
N-EtFOSE (Surrogate Recovery)	%	77	87	84	78	NR70
4:2 FTS (Surrogate Recovery)	%	61	74	48	49	NR70
6:2 FTS (Surrogate Recovery)	%	73	70	52	65	NR70
8:2 FTS (Surrogate Recovery)	%	68	50	47	57	NR70
8:2 diPAP (Surrogate Recovery)	%	88	67	78	73	NR70
Dates						
Date extracted		3-SEP-2021	3-SEP-2021	3-SEP-2021	3-SEP-2021	
Date analysed		6-SEP-2021	6-SEP-2021	6-SEP-2021	6-SEP-2021	

N21/019685
to
N21/019692

REPORT OF ANALYSIS

Page: 3 of 6
Report No. RN1327474

PFOS and PFHxS are quantified using a combined branched and linear standard, linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.

Selected PFAS surrogate recoveries are biased due to matrix effects.^δ
Surrogate recoveries low for selected analytes - PFAS LORs not raised since S/N > 10.



Organics - NSW
Accreditation No. 198

07-SEP-2021

REPORT OF ANALYSIS

Page: 4 of 6

Report No. RN1327474

Client : AECOM AUSTRALIA PTY LTD LEVEL 21 420 GEORGE STREET Attention : XXXXXXXXXX Project Name : SA_0939_PFASOMP Your Client Services Manager : Danny Slee	Job No. : AECO03/210818 Quote No. : QT-02018 Order No. : 60612561_6_1 Date Received : 18-AUG-2021 Sampled By : CLIENT Phone : 02 9449 0169
--	---

Lab Reg No.	Sample Ref	Sample Description
N21/019689	0939_QC206_210804	WATER 04/08/2021 02:32 PM
N21/019690	0939_QC207_210805	WATER 05/08/2021 11:49 AM
N21/019691	0939_QC208_210806	WATER 06/08/2021 11:16 AM
N21/019692	0939_QC209_210806	WATER 06/08/2021 11:21 AM

Lab Reg No.		N21/019689	N21/019690	N21/019691	N21/019692	
Date Sampled		04-AUG-2021	05-AUG-2021	06-AUG-2021	06-AUG-2021	
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	ug/L	<0.05	0.13	0.13	<0.05	NR70
PFPeA (2706-90-3)	ug/L	<0.02	0.13	0.12	<0.02	NR70
PFHxA (307-24-4)	ug/L	<0.01	0.69	0.32	<0.01	NR70
PFHpA (375-85-9)	ug/L	<0.01	0.12	0.047	<0.01	NR70
PFOA (335-67-1)	ug/L	<0.01	0.28	0.099	<0.01	NR70
PFNA (375-95-1)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFDA (335-76-2)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFUdA (2058-94-8)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFDaA (307-55-1)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFTrDA (72629-94-8)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFTeDA (376-06-7)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFHxDA (67905-19-5)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFODA (16517-11-6)	ug/L	<0.05	<0.05	<0.05	<0.05	NR70
FOUEA (70887-84-2)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFDS (335-77-3)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFPeS (2706-91-4)	ug/L	<0.01	0.50	0.23	<0.01	NR70
PFHxS (355-46-4)	ug/L	<0.01	5.8	2.1	0.011	NR70
PFHpS (375-92-8)	ug/L	<0.01	0.39	0.091	<0.01	NR70
PFOS (1763-23-1)	ug/L	<0.02	10	2.9	0.036	NR70
PFNS (68259-12-1)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFBS (375-73-5)	ug/L	<0.01	0.45	0.21	<0.01	NR70
PFOSA (754-91-6)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
N-MeFOSA (31506-32-8)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
N-EtFOSA (4151-50-2)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
N-MeFOSAA (2355-31-9)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
N-EtFOSAA(2991-50-6)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
N-MeFOSE (24448-09-7)	ug/L	<0.05	<0.05	<0.05	<0.05	NR70

REPORT OF ANALYSIS

Page: 5 of 6

Report No. RN1327474

Lab Reg No.		N21/019689	N21/019690	N21/019691	N21/019692	
Date Sampled		04-AUG-2021	05-AUG-2021	06-AUG-2021	06-AUG-2021	
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
N-EtFOSE (1691-99-2)	ug/L	<0.05	<0.05	<0.05	<0.05	NR70
4:2 FTS (757124-72-4)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
6:2 FTS (27619-97-2)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
8:2 FTS (39108-34-4)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
10:2 FTS (120226-60-0)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
8:2 diPAP (678-41-1)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFBA (Surrogate Recovery)	%	100	98	104	102	NR70
PFPeA (Surrogate Recovery)	%	96	91	100	87	NR70
PFHxA (Surrogate Recovery)	%	105	92	103	96	NR70
PFHpA (Surrogate Recovery)	%	96	95	111	92	NR70
PFOA (Surrogate Recovery)	%	107	96	116	96	NR70
PFNA (Surrogate Recovery)	%	91	75	97	99	NR70
PFDA (Surrogate Recovery)	%	83	94	94	96	NR70
PFUDa (Surrogate Recovery)	%	82	103	116	93	NR70
PFDoA (Surrogate Recovery)	%	61	76	91	64	NR70
PFTeDA (Surrogate Recovery)	%	57	88	81	56	NR70
PFHxDA (Surrogate Recovery)	%	81	90	84	61	NR70
FOUEA (Surrogate Recovery)	%	81	80	103	71	NR70
PFBS (Surrogate Recovery)	%	93	92	102	81	NR70
PFHxS (Surrogate Recovery)	%	82	65	78	79	NR70
PFOS (Surrogate Recovery)	%	107	73	77	92	NR70
PFOSA (Surrogate Recovery)	%	53	61	77	49	NR70
N-MeFOSA (Surrogate Recovery)	%	48	69	74	25	NR70
N-EtFOSA (Surrogate Recovery)	%	49	55	76	47	NR70
N-MeFOSAA (Surrogate Recovery)	%	57	60	75	42	NR70
N-EtFOSAA (Surrogate Recovery)	%	52	73	83	52	NR70
N-MeFOSE (Surrogate Recovery)	%	57	68	84	51	NR70
N-EtFOSE (Surrogate Recovery)	%	59	72	84	35	NR70
4:2 FTS (Surrogate Recovery)	%	75	58	86	72	NR70
6:2 FTS (Surrogate Recovery)	%	70	67	68	59	NR70
8:2 FTS (Surrogate Recovery)	%	66	57	59	50	NR70
8:2 diPAP (Surrogate Recovery)	%	76	77	76	56	NR70
Dates						
Date extracted		3-SEP-2021	3-SEP-2021	3-SEP-2021	3-SEP-2021	
Date analysed		6-SEP-2021	6-SEP-2021	6-SEP-2021	6-SEP-2021	

REPORT OF ANALYSIS

Page: 6 of 6

Report No. RN1327474

Lab Reg No.		N21/019689	N21/019690	N21/019691	N21/019692	
Date Sampled		04-AUG-2021	05-AUG-2021	06-AUG-2021	06-AUG-2021	
	Units					Method



Organics - NSW
Accreditation No. 198

07-SEP-2021



ACCREDITED FOR
**TECHNICAL
COMPETENCE**

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

This Report supersedes reports: *RN1327459*

Measurement Uncertainty is available upon request.
Chemical Accreditation 198: 105 Delhi Road, North Ryde, NSW, 2113

Appendix F

Calibration Certificates

Appendix F Calibration Certificates

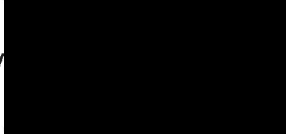
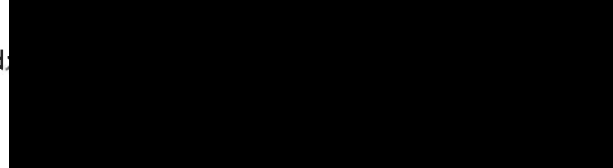
EQUIPMENT CERTIFICATION REPORT

PGN9003842-9003846 - INTERFACE METER

Plant Number: 235251 Serial Number: 251388

Probe Length: 60m

ITEM	TEST	PASS	COMMENTS
Battery	Compartment / Capacity	<input checked="" type="checkbox"/>	9v 8.4v
Probe	Clean / Operation	<input checked="" type="checkbox"/>	
Earth Lead	Check if equipped	<input checked="" type="checkbox"/>	
Tape Check	Cleaned / Checked for cuts	<input checked="" type="checkbox"/>	
Function test	At surface level	<input checked="" type="checkbox"/>	

Checked By:  Date: 29/07/21 Signed: 

Accessories List:

Interface Meter	Tape Guide	Decon 90 Solution
Brush	Spare 9v Battery	Transport Box



Make your job *EASY!*

135 135 | kennards.com.au

EQUIPMENT CERTIFICATION REPORT



PGN9003871 WATER QUALITY METER – MULTIFUNCTION (SMART TROLL)

Plant Number: 235641 Serial Number: 358777

SENSOR	CONCENTRATION	SPAN 1	SPAN 2	TRACEABILITY	PASS
pH	pH 6.88 / pH 4.00	6.88 pH	4.00 pH	325169 344027	<input checked="" type="checkbox"/>
Conductivity	12.88 mS/cm	12.88 mS/cm	—	343265	<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0.0% in Sodium Sulphite	% Saturation 100 in Air	10465	<input checked="" type="checkbox"/>
ORP	240mV @ 25°C	240mV	—	5235	<input checked="" type="checkbox"/>

Battery Status <u>100 %</u>	Temperature <u>16.5 °C</u>
Electrical Test & Tag (AS/NZS 3760)	Electrodes Cleaned and Checked

Note: Calibration solution traceability information is available upon request.

Checked By:  Date: 26/7/21 Signed: 

Accessories List:

User's Manual	pH Sensor	Conductivity Sensor
Dissolved Oxygen Sensor	Redox (ORP) Sensor	Flow Cell
iPod Charger	Stainless Steel Restrictor	iPod & Transit Case
Calibration Cup	Bluetooth Battery Pack	Calibration Test Tube
External Battery Pack for iPod	Cable	



Make your job EASY!

135 135 | kennards.com.au



EQUIPMENT CERTIFICATION REPORT

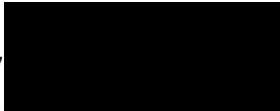

PGN9003871 WATER QUALITY METER – MULTIFUNCTION (SMART TROLL)

Plant Number: 235637 Serial Number: 341733

SENSOR	CONCENTRATION	SPAN 1	SPAN 2	TRACEABILITY	PASS
pH	pH 6.88 / pH 4.00	6.88 pH	4.00 pH	325167 347027	<input checked="" type="checkbox"/>
Conductivity	12.88 mS/cm	12.88 mS/cm	—	343265	<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0.0% in Sodium Sulphite	% Saturation 100 in Air	10465	<input checked="" type="checkbox"/>
ORP	240mV @ 25°C	240mV	—	5235	<input checked="" type="checkbox"/>

Battery Status <u>100</u> %	Temperature <u>18.7</u> °C
Electrical Test & Tag (AS/NZS 3760)	Electrodes Cleaned and Checked

Note: Calibration solution traceability information is available upon request.

Checked By  Date: 9/8/21 Signed: 

Accessories List:

User's Manual	pH Sensor	Conductivity Sensor
Dissolved Oxygen Sensor	Redox (ORP) Sensor	Flow Cell
iPod Charger	Stainless Steel Restrictor	iPod & Transit Case
Calibration Cup	Bluetooth Battery Pack	Calibration Test Tube
External Battery Pack for iPod	Cable	



Make your job *EASY!*

135 135 | kennards.com.au



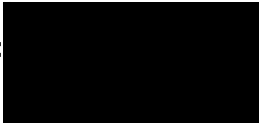
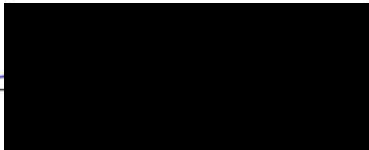
EQUIPMENT CERTIFICATION REPORT

PGN9003842-9003846 - INTERFACE METER

Plant Number: 235211 Serial Number: 268020

Probe Length: 600m

ITEM	TEST	PASS	COMMENTS
Battery	Compartment / Capacity	<input checked="" type="checkbox"/> 9.2v	9v
Probe	Clean / Operation	<input checked="" type="checkbox"/>	
Earth Lead	Check if equipped	<input checked="" type="checkbox"/>	
Tape Check	Cleaned / Checked for cuts	<input checked="" type="checkbox"/>	
Function test	At surface level	<input checked="" type="checkbox"/>	

Checked By:  Date: 09/08/21 Signed: 

Accessories List:

Interface Meter	Tape Guide	Decon 90 Solution
Brush	Spare 9v Battery	Transport Box



Make your job EASY!

135 135 | kennards.com.au

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	EDN OMP	Project Number:	60612561
Project Location:	RAAF EDN	Client:	DoD
PM Name:	[REDACTED]	Fieldwork Staff Name:	AM IC

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

INSTRUMENT DETAILS

Supplier:	Venoco ds
Make and Model:	Smart TROLL
Serial Number:	356777

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	2/8/21 8:30				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm mV	ppm
Calibration Standard Concentration:	7	4	12880	240	
Calibration Reading:	7.02	4.08	10771	239.9	
Calibration Temperature:	11.7	11.7	11.8	11.8	

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	2/8/21 14:00				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	7				
Bump Test Reading:	6.99				
Bump Test Temperature:	12.5				

COMMENTS

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

Approval and Distribution

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

	2/8/21
Fieldwork Staff Signature	Date

Distribution: Project Central File

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	PFAS OMP		Project Number:	60612561	
Project Location:	RAAF EDN		Client:	DOD	
PM Name:	[REDACTED]		Fieldwork Staff Name:	AM/EC	
This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.					
INSTRUMENT DETAILS					
Supplier:	Kennards				
Make and Model:	Smart Troll				
Serial Number:	356777				
CALIBRATION					
CALIBRATE WITH CALIBRATION SOLUTIONS					
Date and Time:	3/8/21		8:35		
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm MV	ppm
Calibration Standard Concentration:	7	4	12830	240	
Calibration Reading:	7.06	4.09	12867	229	
Calibration Temperature:	10.1	10.1	10.3	10.4	
ONGOING CHECKS					
BUMP TEST WITH CALIBRATION SOLUTION					
Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					
COMMENTS					
Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.					
Approval and Distribution					
<input type="checkbox"/> Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.					
_____ Fieldwork Staff Signature			_____ 3/8/21 Date		
Distribution: Project Central File					

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	EDN OMP		Project Number:	60612561	
Project Location:	RAAF EDN		Client:	DoD	
PM Name:	[REDACTED]		Fieldwork Staff Name:	CM IC	
This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.					
INSTRUMENT DETAILS					
Supplier:	Kennards				
Make and Model:	Smart Trod				
Serial Number:	356777				
CALIBRATION					
CALIBRATE WITH CALIBRATION SOLUTIONS					
Date and Time:	5/8/21		8:30		
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm mV	ppm
Calibration Standard Concentration:	7	4	12880	240	
Calibration Reading:	7.1	4.05	10753	241.5	
Calibration Temperature:	12.0	12.0	12.1	12.0	
ONGOING CHECKS					
BUMP TEST WITH CALIBRATION SOLUTION					
Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					
COMMENTS					
Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.					
Approval and Distribution					
<input type="checkbox"/> Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.					
_____ Fieldwork Staff Signature			_____ Date		
Distribution: Project Central File					

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	EDN OMP		Project Number:	60612561	
Project Location:	DAMP EDN		Client:	Defence	
PM Name:	[REDACTED]		Fieldwork Staff Name:	GM IC	
This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.					
INSTRUMENT DETAILS					
Supplier:	Kennards				
Make and Model:	Smart Troll				
Serial Number:	356 777				
CALIBRATION					
CALIBRATE WITH CALIBRATION SOLUTIONS					
Date and Time:	6/8/21 7:45				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm mL	ppm
Calibration Standard Concentration:	7	4	12880	240	
Calibration Reading:	7.06	4.03	11359	241.7	
Calibration Temperature:	13.1	13.2	13.2	13.2	
ONGOING CHECKS					
BUMP TEST WITH CALIBRATION SOLUTION					
Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					
COMMENTS					
Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.					
Approval and Distribution					
<input type="checkbox"/> Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.					
[REDACTED] _____ Fieldwork Staff Signature			6/8/21 _____ Date		
Distribution: Project Central File					

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	PFAS amp	Project Number:	60612S61
Project Location:	Edinburgh	Client:	DoD
PM Name:	[Redacted]	Fieldwork Staff Name:	GM

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

INSTRUMENT DETAILS

Supplier:	Kennards
Make and Model:	SmayTrall
Serial Number:	341733

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS					
Date and Time:	13/8/21				
Parameter	Acidity		Conductivity	ORP	Dissolved Oxygen
Units	pH	pH	µS/cm	mV-ppm	ppm-%
Calibration Standard Concentration:	4	7	12880	240	10.0
Calibration Reading:	3.24	6.63	10979	252.1	94.1
Calibration Temperature:	7.3	8.0	8.0	10	9.8

ONGOING CHECKS

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

COMMENTS

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

[Empty space for comments]

Approval and Distribution

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

Fieldwork Staff Signature

13/8/21

Date

Distribution: Project Central File

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	SA_0939_FFASOMP	Project Number:	60612561
Project Location:	Edinburgh.	Client:	Department of Defense
PM Name:	[Redacted]	Fieldwork Staff Name:	GM

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

INSTRUMENT DETAILS

Supplier:	Kennards
Make and Model:	SmartToll.
Serial Number:	856777

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	4/8/21				
Parameter	Acidity		Conductivity	ORP	Dissolved Oxygen
Units	pH	pH	µS/cm	-ppm mv	-ppm/l.
Calibration Standard Concentration:	4	7	12880	240	100
Calibration Reading:	3.67	6.49	11789	251.8	94.2
Calibration Temperature:	12.3	12.4	12.6	12.4	12.2

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

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

COMMENTS

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

Approval and Distribution

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

Fieldwork Staff Signature

4/8/21

Date

Distribution: Project Central File

Appendix D

SAQP

Sampling Analysis and Quality Plan

Sampling Analysis and Quality Plan

Client: Department of Defence

ABN: 68 706 814 312

Prepared by

AECOM Australia Pty Ltd

Level 3, 9 Cavenagh Street, Darwin NT 0800, GPO Box 3175, Darwin NT 0801, Australia
T +61 8 8942 6200 F +61 8 8942 6299 www.aecom.com

ABN 20 093 846 925

25-Jun-2021

Job No.: 60612561

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 and ISO45001.

Quality Information

Document Sampling Analysis and Quality Plan

Ref 60612562_RAAF Edinburgh_OMP_SAQP_Rev B_20210531_Final.docx

Date 25-Jun-2021

Prepared by [REDACTED]

Reviewed by [REDACTED]

Revision History

Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
A	25-Feb-2020	Draft for review	[REDACTED]	
B	31-May 2020	Final	Environmental Scientist	
1	25-Jun-2021	Final	[REDACTED] Environmental Scientist	

Table of Contents

1.0	Introduction	1
1.1	Preamble	1
1.2	SAQP Objectives	1
1.3	Scope of Works	1
1.4	Guidelines and Legislation	2
2.0	Site Identification and Conceptual Site Model	1
2.1	The Base and Management Area	1
2.2	Conceptual Site Model	1
3.0	Data Quality Assessment	1
3.1	Data Quality Objectives	1
4.0	Sampling Location Rationale and Methodology	2
4.1	Proposed Schedule	2
4.2	Access Requirements for Sampling	2
4.3	Groundwater Sampling Locations Rationale	3
4.4	Groundwater Sampling Locations	4
4.5	Groundwater Gauging Locations	5
4.6	Surface Water Sampling Location Rationale	6
4.7	Surface Water Sampling Locations	6
4.8	Sample Collection and Handling	7
4.8.1	Groundwater Sampling	7
4.8.2	Surface Water Sampling	8
4.8.3	Field Quality Control Samples	8
4.8.4	Additional Volumes for Laboratory QAQC Samples	9
4.8.5	Sample Handling and Transport to Laboratory	9
4.9	Calibration	10
4.10	Logistics	10
4.11	Analytical Suite and Laboratory Analysis Methods	10
4.11.1	Laboratory NATA Accreditation Details	10
	The primary and secondary laboratories selected for this program are ALS (NATA Accreditation Number 825) and NMI (NATA Accreditation Number 198), respectively. Analytical Schedule	10
4.11.2	Analytical schedule	10
4.12	Sample Nomenclature	12
4.13	Defence ESdat Requirements	13
4.14	Adopted Screening Criteria	13
4.15	Waste Management	14
4.16	Fieldwork Documentation	14
4.16.1	Field Observations and Results	14
4.16.2	Sample Labels	14
4.16.3	Chain of Custody Forms	14
4.16.4	Sampling Documentation	15
5.0	References	16
	Appendix A	
	Figures	A
	Appendix B	
	Monitoring Location Details	B

1.0 Introduction

1.1 Preamble

AECOM Australia Pty Ltd (AECOM) has prepared this Sampling and Analysis Quality Plan (SAQP) for the per- and poly-fluoroalkyl substances (PFAS) Ongoing Monitoring Program at RAAF Base Edinburgh (the Site) in the South Australia and Northern Territory Region as defined in the *PFAS Management Area Plan (PMAP)*, (Department of Defence, 2019a).

The SAQP supports the *PFAS Ongoing Monitoring Plan (OMP)* (Department of Defence, 2019a) which was included in the *RAAF Base Edinburgh PFAS Management Area Plan (PMAP)* (Department of Defence, 2019a) herein referred to as the OMP.

The overall aim of the OMP is to provide information on changes in PFAS contamination originating from RAAF Base Edinburgh to inform risk management decisions by Defence and South Australia agencies to protect human health and the environment.

The specific objectives of this OMP are:

- To monitor PFAS concentrations in groundwater and surface water and assess the data for any changes over time.
- To provide data to monitor the success of any remediation and management undertaken as set out in the PMAP.
- To monitor long-term surface water quality within streams surrounding the base to inform risk management measures and to provide updates of any recommendations to South Australia Agencies regarding species protection within these water bodies.

This version of the SAQP includes updates based on specific requests from Defence and recommendations from previous Interpretive Reports and will be utilized for sampling activities beginning April 2021.

1.2 SAQP Objectives

The objectives of this SAQP are to:

- Define the proposed scope of works in detail;
- Outline the proposed sampling methodology and procedures to be adopted;
- Outline the proposed quality assurance and quality control (QAQC) measures to be adopted; and
- Define the data collection and management requirements for the project.

1.3 Scope of Works

To meet the OMP objectives, the following scope of works is proposed for the three-year monitoring period (2019 to 2022) as detailed in the Site OMP.

- Biannual sampling events in summer and winter January/February 2020, June/July 2020, January/February 2021, June/July 2021, January/February 2022 and June/July 2022 including:
 - Groundwater sampling of 105 monitoring wells within the Management Area; and
 - Gauging of 18 groundwater wells within the Management Area
 - Surface water sampling at 21 locations (provided water is present) following a significant rainfall event (greater than 10 mm rain) within the Management Area.
- Preparation of reports including a sampling event factual report (following each biannual sampling event) and annual interpretative reports following the completion of each 12-month sampling period.
- The sampling locations are presented in **Figure 2** and **Figure 3, Appendix A**.

1.4 Guidelines and Legislation

The SAQP has been developed with reference to the following guidelines and legislation:

- PFAS National Environmental Management Plan (NEMP), Heads of Environmental Protection Agencies Australia and New Zealand (HEPA, 2020).
- National Environment Protection (Assessment of Site Contamination) Measure 1999
- Contamination Management Manual, Commonwealth of Australia Department of Defence, 2018 (Department of Defence, 2019b).
- Routine Environment Water Quality Monitoring Manual, Commonwealth of Australia Department of Defence (Department of Defence, 2019c)
- Health Based Guidance Values for PFAS for use in site investigations in Australia, Department of Health (DoH), 2019 (Department of Health, 2019)
- Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water, National Health and Medical Research Council (NHMRC), 2019 (NHMRC, 2019)
- Water Quality – Sampling – Guidance on the Design of Sampling Programs, Sampling Techniques, and the Preservation and Handling of Samples, AS/NZ 5667:1998 (Standards Australia/Standards New Zealand, 1998)
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Australian and New Zealand Guidelines, 2018. (ANZECC, 2018)
- Environmental Protection Act, 1993

2.0 Site Identification and Conceptual Site Model

2.1 The Base and Management Area

From an operational perspective, the Base forms part of the broader Edinburgh Defence Precinct (EDP), including the Defence Science and Technology Group (DSTG) site located immediately east/southeast. Outside of other Defence operations, the general land use surrounding the Base comprises a mix of industrial, commercial, residential, and agricultural (primary production) land use.

The Management Area covers all of the Base and discrete areas outside of the Base including the Helps Road Drain and Kurna Park Wetland, as well as groundwater beneath parts of the suburbs of Penfield, Direk, Burton, Salisbury North, Paralowie, Waterloo Corner, St Kilda and Bolivar where PFAS contamination has been identified in the Quaternary Aquifer system. The general layout of the Base and the Management Area is presented in **Figure 1, Appendix A**.

The Base encompasses an area of approximately 1,000 hectares (ha) and contains the following major features:

- An airfield;
- Airfield navigational aids;
- Explosive Ordnance (EO) areas;
- Fuel farm;
- Maintenance buildings;
- Hangars and aprons;
- Recreational, minor retail and training facilities;
- Working accommodation (e.g. temporary), Living-In Accommodation (LIA), and messing facilities;
- North East Defence Community Centre;
- Open space used as an airfield buffer.

2.2 Conceptual Site Model

The Conceptual Site Model (CSM) is presented in the Detailed Site Investigation (DSI) (JBS&G Australia Pty Ltd [JBS&G], 2018), the DSI Addendum Report (JBS&G, 2019b) and reference in the PMAP, which summarises the linkages between sources, exposure pathways and receptors.

The historic release of PFAS containing chemicals into the environment at RAAF Base Edinburgh has led to the contamination of soils, groundwater and surface water, resulting in concentrations of PFAS within groundwater off-base and in Helps Road Drain, which drains into Barker Inlet. Migration of PFAS off-base has the potential to pose an unacceptable risk to the health of human receptors or the environment. Consequently, it is important that ongoing monitoring of the nature and extent of PFAS within the environment at and surrounding RAAF Base Edinburgh is undertaken to assess potential changes in risk levels.

3.0 Data Quality Assessment

3.1 Data Quality Objectives

The data quality objectives (DQO) process as documented in Table 1 below has been completed to ensure that the work scope and methodology will meet the objectives of the OMP.

Table 1 Data Quality Objectives

Data Quality Objectives
<p>1. State the Problem</p> <p>Concentrations of PFAS exceeding relevant human health and ecological screening criteria have been identified in multiple media including soil, surface water and groundwater at multiple locations on-Base with migration of surface water and groundwater impacts off-Base. Potentially unacceptable risks may be posed to unlicensed users of shallow Quaternary aquifer groundwater within the Management Area. Temporal concentration trends in groundwater and surface water are not well understood based on the monitoring data collected to date.</p>
<p>2. Identify the goal of the study</p> <p>The goal of the study is to monitor the nature and extent of PFAS impacts within the Management Area, to identify trends and variations in PFAS concentrations, and to consider the potential impact that changing PFAS concentrations could have on the identified risks posed to human health or the environment as identified in the HHRA. In addition, the study aims to measure the effects of any implemented management measures to evaluate their efficacy and determine whether any additional measures are required.</p>
<p>3. Identify information inputs</p> <ul style="list-style-type: none"> • PFAS concentrations in measured media, including groundwater and surface water; • Changes to identified uses and/or users of Quaternary Aquifer groundwater within the Management Area; • Field observations, recording of critical field measured data including groundwater quality readings, adherence of quality control procedures and quality assurance/quality control (QA/QC) data from the primary and secondary laboratories; and • Groundwater standing levels.
<p>4. Define the boundary of the study</p> <p>Based on the understood extent of contaminated surface water or groundwater at the Base the study area includes land and waterways on RAAF Base Edinburgh, off-Base areas around the Base, and following groundwater and surface flow direction towards marine waters to the southwest. The RAAF Base Edinburgh PFAS Management Area is presented in Figure 1.</p>
<p>5. Develop a decision rule</p> <p>Primary environmental samples are to be collected and analysed for the 28 PFAS compounds described in Defence Technical Memorandum on Laboratory Analysis Suite (reference number 1652034-060-M-Rev2 dated 30 March 2017).</p> <p>PFOS, PFHxS and PFOA concentrations will be compared against screening levels relevant to the potential beneficial uses of water to identify changes to risk profile.</p> <p>The relative concentrations of all (analysed) PFAS compounds over time in groundwater, surface water and aquatic biota samples will be used to assess changes in the extent or magnitude of contamination.</p>
<p>6. Specify performance of acceptance criteria</p> <p>The ongoing monitoring program must reliably characterise the changes in PFAS contamination within surface water, groundwater and biota compared with the baseline conditions and describe the</p>

risk that the contamination poses to human or ecological receptors. Analytical data quality indicators are described below in Quality control procedures section.

7. Develop a plan for obtaining the data

The methodology and rationale for obtaining relevant data for the OMP is described in **Section 4**.

4.0 Sampling Location Rationale and Methodology

4.1 Proposed Schedule

The proposed schedule of fieldworks across the initial three-year period is presented in **Table 2** below, consistent with that outlined in Section 1.3.

Table 2 Proposed Fieldwork Schedule

Sampling Round No.	Description of works	Proposed Schedule
1	Summer groundwater and surface water sampling	March/April 2020
2	Winter groundwater and surface water sampling	July/August 2020
3	Summer groundwater and surface water sampling	January/February 2021
4	Winter groundwater and surface water sampling	July/August 2021
5	Summer groundwater and surface water sampling	January/February 2022
6	Winter groundwater and surface water sampling	July/August 2022

4.2 Access Requirements for Sampling

A range of access requirements exist to collect the required groundwater and surface water samples, including:

- Initiating contact with RAAF Base Edinburgh no less than two weeks prior to sampling is necessary to ensure all access requirements are satisfied.
- To conduct works on the base, E&IG the contracted Base Manager, must be contacted to alert them of the intended works. E&IG will alert field team to any conflicting works on base. Photo permits must be obtained from E&IG upon arrival at the base, no photos are to be taken before this is done.
- Field team members must hold and display a Defence Common Access Card (DCAC), which allows unescorted entry to the base. Field team members or subcontractors without baseline clearance and DCAC's will need to be escorted by a field team member that has escort authority associated with their DCAC or have arranged an escort prior to sampling.
- If sample locations occur in construction areas, the field team will need to get permission from the project manager to access the site. Any internal inductions for the site will also need to be completed by the team upon the project manager's request.
- A Work Safety Officer (WSO) will need to be contracted and present for the duration of airside activities. Field team members entering airside locations will need to ensure they complete airside awareness training.
- Permission to access council, government and private bores must be obtained two weeks prior to sampling. Permission to sample council and government bores will be obtained directly to the stakeholder by AECOM. Permission to access and sample a private bore will be obtained by the Department of Defence on behalf of AECOM.
- A Safety, Health and Environment Management Plan (SHEMP) needs to be developed and approved prior to conducting works.

4.3 Groundwater Sampling Locations Rationale

There are 105 monitoring wells identified for ongoing monitoring (groundwater level gauging and sampling), including on-Base and off-Base locations (comprising of public and private land access). The OMP will monitor groundwater source area concentration changes and changes that may occur at Base boundary or off-Base locations, including wells located at the current lateral delineated extent of the PFAS plume.

Table 3 Groundwater Monitoring Location Rationale

Location Description	Rationale
Background north and northeast of Base (on and off-Base locations)	<ul style="list-style-type: none"> Monitoring wells located in background and/or upgradient of source locations. Includes deeper groundwater monitoring wells due to the identified vertical migration between Quaternary Aquifers. Monitoring will identify the presence of PFAS in groundwater concentrations either entering the Base and or localised changes to groundwater flow directions.
Source Area P4 (on Base locations)	<ul style="list-style-type: none"> Monitoring wells located within source areas where PFAS concentrations have been identified above health-based guidelines within the Q1 and Q2 aquifer units.
Source Areas P9 and P15, P11, P16 and P21. (on Base locations)	<ul style="list-style-type: none"> Monitoring wells located within source areas where PFAS concentrations have been reported above health-based guidelines in the Q1, Q2, Q3 and Q4 aquifer units. Monitoring will identify seasonal fluctuations in PFAS concentrations and track migration of the PFAS plume over time.
Source Areas P1, P3A, P3B and P27 (on Base locations)	<ul style="list-style-type: none"> Monitoring wells located within and down gradient of source areas where PFAS concentrations have been reported above health-based guidelines within the Q1 and Q2 aquifer units.
Southern, western and northern boundary (on and off-Base locations)	<ul style="list-style-type: none"> Boundary locations down gradient of and inclusive of identified source areas where PFAS concentrations have been reported above health-based guidelines within the Q1, Q2, Q3 and Q4 aquifer units. These targeted locations will monitor potential PFAS migration concentrations at the boundary upgradient of potential and identified sensitive groundwater receptors to the west. Monitoring wells are considered critical for monitoring potential seasonal variations in PFAS concentrations and any potential impact on the existing risk profile for adjacent or down gradient receptors.
Helps Road Drain (off-Base locations)	<ul style="list-style-type: none"> Helps Road Drain is the primary surface water channel that directs stormwater from the Base to the Kaurna Park Wetland and after that to the Barker Inlet. The Helps Road Drain has influenced the migration of PFAS from the property which has led to elevated concentrations within the shallow Quaternary Aquifers directly associated with this pathway. A number of the targeted groundwater wells have reported the highest concentrations of PFAS off-Base. Monitoring wells will target groundwater impacts influenced by historical migration of PFAS impacted surface water migrating along both the former and current Helps Road Drain through the Southern Detention Basin, off-Base to the Kaurna Park Wetland extending down to the Barker Inlet. Deeper aquifer units targeted as PFAS concentrations reported within the Q1, Q2, and Q3 aquifer units.
Lateral extent of PFAS impacts (off-Base locations)	<ul style="list-style-type: none"> Groundwater well locations represent the lateral extent boundary of identified PFAS impacts within the Q1, Q2 aquifers and in selected Q3 aquifer locations. Monitoring will provide data on migration concentrations within the PFAS plume over time and identify changes in groundwater flow direction.

Location Description	Rationale
Proximity to identified licensed groundwater users (off-Base locations)	<ul style="list-style-type: none"> Monitoring wells targeting adjacent identified licensed extractive groundwater users in the Q2, Q3 and Q4 aquifer systems, and are required to monitor any potential changes in PFAS concentrations in the adjacent relevant aquifers.
Tertiary Aquifer Bores (off-Base locations)	<ul style="list-style-type: none"> Sampling of available Salisbury Council and Department of Environment and Water (DEW) Tertiary Aquifer irrigation and observation bores to confirm absence of PFAS.
Private Property Bore (off-Base locations)	<ul style="list-style-type: none"> Private Q2 Aquifer water supply bore.

4.4 Groundwater Sampling Locations

The groundwater sample locations to be monitored are presented in **Table 6** below, on **Figure 2a** and **2b** in **Appendix A** and **Table 1** in **Appendix B**.

Table 4 Groundwater Monitoring Locations

Source Area	Aquifer	On-base wells	Off-base wells	Number of wells
Background North and Northeast of Base	Q1	MW2325, MW2134, MW2135, MW2159	MW2218	On-Base (6 locations) Off-Base (1 location)
	Q2	MW2216, MW4218 [^]	-	
Source Area P4	Q1	MW2358, MW2411, MW2394	-	On-Base (5 locations)
	Q2	MW2126, MW2162	-	
Source Areas P9 and P15, P11, P16 and P21	Q1	MW2499, MW2112, MW2116, MW2120, MW2148, MW2149, MW2150, MW2188, MW2194, MW2197, MW2201, MW2202, MW2203		On-Base (19 locations)
	Q2	MW2158, MW2189, MW2200		
	Q3	MW2270, MW2272		
	Q4	MW2284		
Source Areas P1, P3A, P3B and P27	Q1	MW2528, MW2490, MW2114, MW2130, MW2131, MW2193		On-Base (9 locations)
	Q2	MW2157, MW2209, MW2210		
Southern, western and northern boundary	Q1	MW2501, MW2129, MW2137, MW2139, MW2166, MW2169, MW2172, MW2175, MW2177, MW2180, MW2182, MW2184	MW4013	On-Base (21 locations) Off-Base (1 location)
	Q2	MW2145, MW2173, MW2176, MW2183, MW2185		
	Q3	MW2275, MW2281		
	Q4	MW2285, MW2286		

Source Area	Aquifer	On-base wells	Off-base wells	Number of wells
Helps Road Drain	Q1		MW4001, MW4003, MW4015, MW4053	Off-Base (12 locations)
	Q2		MW4035, MW4045, MW4048	
	Q3		MW4068, MW4069*, MW4070	
	Q4		MW4075, MW4079	
Lateral extent of PFAS impacts	Q1		MW4009, MW4020, MW4023, MW4027, MW4037, MW4041, MW4052, MW4055, MW4059, MW4060, MW4061, MW4219^, MW4064, MW4072	Off-Base (20 locations)
	Q2		MW4021, MW4022, MW4024, MW4076, MW4077	
	Q3		MW4071	
Proximity to identified licensed groundwater users	Q1		MW4057, MW4058	Off-Base (8 locations)
	Q2		MW4065, MW4066	
	Q3		MW4069*, MW4073, MW4074,	
	Q4		MW4078	
Tertiary Aquifer Bores	T1		MW4221, MW4220 and MW4222 (DEW)	Off-Base (3 locations)
Private Property Bore	Q2		MW4223	Off-Base (1 location)
*Targeted wells have multiple data applications				
^Monitoring wells MW4218 and MW4219 are replacement wells for MW4011 and MW4063, respectively, which have been destroyed.				

4.5 Groundwater Gauging Locations

Eighteen (18) additional groundwater wells have been identified for ongoing groundwater level gauging, including on-Base and off-Base locations (comprising of public land access) to supplement the well network targeted for sampling. The groundwater gauging locations to be monitored are presented in **Table 7** below, on **Figure 2a** and **2b** in **Appendix A** and **Table 2** in **Appendix B**.

Table 5 Groundwater Monitoring Locations

Aquifer	On-base wells	Off-base wells	Number of wells
Q1	MW2118, MW2156, MW2163, MW2171	MW4006, MW4028, MW4029, MW4030, MW4043, MW4046, MW4047, MW4049	On-Base (4 locations) Off-Base (8 locations)
Q2	MW2160, MW2164, MW2199, MW2195	MW4031, MW4032	On-Base (4 locations) Off-Base (2 locations)

4.6 Surface Water Sampling Location Rationale

There are 21 surface water locations identified for ongoing monitoring, including on-Base and off-Base locations (comprising of public land access). The OMP surface water quality locations monitor previous critical data points to extend the temporal data set and understanding of seasonal fluctuations in PFAS concentrations in surface water both on and off-Base. Locations targeted include those adjacent to source areas, upstream of source areas, and locations that have reported the highest PFAS concentrations to date.

The on-Base locations assess major stormwater drainage features including Helps Road Drain, Taranaki Drain, and the Southern Detention Basin. The off-Base locations are positioned downstream in the Helps Rd Drain, the inlet and outlet of the Kaurna Park Wetland and further downstream to Port Wakefield Road. In addition, a small number of locations upstream of the Base have been targeted to assess any potential for the introduction of upstream PFAS sources.

Table 6 Surface Water Sample Rationale

Location Description	Rationale
Upgradient locations	Designated upgradient on-Base and off-Base locations targeting potential off-Base source of PFAS entering the Base
On-Base surface water drain network	Targeted sampling locations on-Base along the surface water network including Helps Road Drain and the Taranaki Drain, includes locations within the Southern Detention Basin.
On-Base surface water exiting the Base	Targeted sampling location at the exit point of the Western Swale along the southern boundary.
Helps Road Drain south of the Base boundary	Includes proposed sampling locations along the Helps Road Drain, entrance and exit to Kaurna Park Wetland and south along Helps Road Drain adjacent to Pt Wakefield Rd.
Kaurna Park Wetland	Targeted locations within Kaurna Park targeting season variations in PFAS concentrations.

4.7 Surface Water Sampling Locations

The surface water monitoring locations have been selected to maintain consistency with the monitoring completed during the investigation phases and are provided below in **Table 9**, on **Figure 3** in **Appendix A** and **Table 3, Appendix B**.

The surface water network is generally ephemeral, surface water sampling during the summer sampling event will target opportunistic post “summer” rainfall events where possible. Locations where surface water is permanently present will be sampled to identify any discernible trends in concentrations between relatively “wet” (e.g. winter) and “dry” (e.g. summer) periods.

Table 7 Surface Water Sampling Locations

Location Description	On-Base of locations	Off-Base of locations	Number of locations
Upgradient locations	SW003, SW028	SW029, SW032 SW033	On-Base (2 locations) Off-Base (3 locations)
On-Base surface water drain network	SW006, SW017, SW018, SW019, SW021, SW050, SW054		On-Base (7 locations)
On-Base surface water exiting the Base	SW037		On-Base (1 location)
Helps Road Drain south of the Base boundary		SW009, SW010, SW011, SW012, SW062	Off-Base (5 locations)
Kaurna Park Wetland		SW058, SW059,	Off-Base (3 locations)

Location Description	On-Base of locations	Off-Base of locations	Number of locations
		SW078	

4.8 Sample Collection and Handling

4.8.1 Groundwater Sampling

The Groundwater sampling methodology and schedule are presented in **Table 8**.

Table 8 Groundwater Sampling Methodology and Schedule

Item	Details
Groundwater Gauging	The depth to groundwater will be measured in each monitoring well prior to collection of groundwater samples. A gauging round of all locations prior to sampling is not deemed as required based on the lithology beneath the Property and due to the size of the investigation area, small fluctuations between groundwater wells within each aquifer are not likely to affect the overall interpretation of the groundwater flow direction and gradients for the purpose of the reports.
Sample Collection Methodology	<p>Groundwater Monitoring Wells</p> <p>Groundwater samples will be collected from monitoring wells using no purge methodology with HydraSleeves™ which will be installed within the screened interval of the wells for a minimum of 24 hours prior to sampling for the initial sampling round. Once sampling is completed, new HydraSleeves™ will be deployed within the screened interval in preparation for the next sampling round. Well construction details are presented in Appendix B.</p> <p>AECOM personnel will attempt to reduce heterogeneity in the sample media matrix by dividing the sample collected between primary and inter/intra-laboratory jars or bottles during sampling.</p> <p>Following sample collection, field parameters will be collected using remaining water in the HydraSleeve™.</p> <p>Residential Extraction Bores</p> <p>Extraction bore water samples will be collected from existing sample ports or taps on the headworks of the extraction bore. Prior to sampling, the water will be run for 1 – 2 minutes to flush out the line/extraction pump. The flow of the water will be turned down to provide a steady flow and minimise aeration of the water sample.</p> <p>Following sample collection, field parameters will be recorded ex-situ.</p> <p>Bore construction details will be obtained for the private extraction bore, where available, from the stakeholder. Additionally, permission will be requested from the stakeholder to access the bore to measure bore depth and standing water level.</p>
QA/QC Samples to be Collected	Field QA/QC samples are to include intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits) and rinsate samples. Duplicate samples are to be collected at a minimum frequency of 1 in 10 PFAS primary samples. Rinsate samples are to be collected at a rate of one sample per day of sampling when non-dedicated equipment is used by pouring laboratory supplied PFAS free deionised water over the decontaminated sampling equipment. Additional sample volume is required to be collected to enable the appropriate laboratory QA/QC. For 1-10 primary samples an additional set of samples for a duplicate and set of samples for a matrix spike analysis should be taken at two separate locations. For 11-20 primary samples an additional set of samples must be taken at a separate site for another duplicate.

Item	Details	
Field Parameters	Temperature, electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (ORP), pH and observations of water quality will be recorded for all samples.	
Sample Analysis	All primary samples will be submitted for PFAS extended suite using the standard levels of detection.	
Minimum Sampling Volumes	Bottle PFAS Bottle (Grey)	(40mL 2X20 mL)

4.8.2 Surface Water Sampling

The surface water sampling methodology and schedule are presented in **Table 9**

Table 9 Surface Water Sampling Methodology and Schedule

Item	Details
Sample Collection Methodology	Samples are to be collected, using a telescoping sampling pole with laboratory supplied bottle on the end, from either mid-way through the water column or approximately 0.5 m below the surface (if possible), with care to minimise collection of sediment or floating materials in the samples. At each location, a new, laboratory supplied container should be lowered into the water using a sampling pole, with the cap immediately applied once the container is full. AECOM personnel will attempt to reduce heterogeneity in the sample media matrix by dividing the sample collected between primary and inter/intra-laboratory jars or bottles during sampling. Following sample collection, field parameters will be recorded in-situ by placing the water-meter probe in the surface water collection location.
QA/QC Samples to be Collected	Field QA/QC samples are to include intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits) and rinsate samples. Duplicate samples are to be collected utilizing the same water collected at the same time in the laboratory supplied bottle at a minimum frequency of 1 in 10 primary PFAS samples. Rinsate samples are to be collected at a rate of one sample per day of sampling when non-dedicated equipment is used by pouring laboratory supplied PFAS free deionised water over the decontaminated sampling equipment. Additional sample volume is required to be collected to enable the appropriate laboratory QAQC.
Field Parameters	Temperature, EC, DO, ORP, pH and observations of water quality will be recorded for all samples.
Location Characteristics Observations	A description of each surface water sampling location is to be recorded, including type of collection site (stream, ditch, drain), estimated width and height of water feature, and flow characteristics (still, slow moving, fast moving).
Sample Analysis	All primary samples will be submitted for PFAS extended suite using the standard levels of detection.

4.8.3 Field Quality Control Samples

Table 10 Field Quality Control Samples

Sample Type	Comments
Intra-laboratory duplicates	Intra-laboratory field duplicates will be collected at a frequency of one sample per ten samples collected (10%). The analytical results of the two duplicate samples will be compared to assess the precision of

	<p>the sampling protocol and to provide an indication of variation in the sample source.</p> <p>Repeatability will be assessed by calculating the relative percentage difference (RPD) between the primary and duplicate results. Where the RPD is greater than 30%, the potential causes of variability will be reviewed.</p>
Inter-laboratory duplicates	<p>Inter-laboratory field duplicates will be collected of surface water and sediment samples at a frequency of one sample per ten samples collected (10%). The analytical results of the two duplicate samples will be compared to assess the precision of the sampling protocol, provide an indication of variation in the sample source and to assess the accuracy of analysis.</p> <p>Reproducibility will be assessed by calculating the relative percentage difference (RPD) between the primary and duplicate sample results. Where the RPD is greater than 30%, the potential causes of variability will be reviewed.</p>
Rinsate blanks	<p>Rinsate samples will be prepared in the field using laboratory prepared bottles and PFAS free deionised water used for the cleaning of reusable sampling equipment (if used). These samples will be a check of field decontamination procedures. A rinsate sample will be collected and analysed for each day of field work carried out or for each 10 primary samples where more than ten samples are collected in a day, where reusable sampling equipment has been used.</p> <p>Detectable concentrations of PFAS in a rinsate blank sample will trigger review of decontamination procedures, equipment materials, sample container types and UHP water quality. The concentration and compound detected will be considered in reviewing the potential impact of transport related cross-contamination of the assessment data quality.</p>
Trip blanks	<p>Trip blanks are a check on sample contamination originating from containers, sample transport, shipping and site conditions. The blank will be prepared in a clean environment (office or warehouse) and remain with the sample containers during sampling and during the return trip to the lab. At no time during these procedures will the blanks be opened. Upon return to the lab the blank will be analysed, if needed, as any other field sample. As PFAS is not volatile, a reduced blank frequency is considered appropriate and a single trip blank will be transported and analysed for each day.</p> <p>Detectable concentrations of PFAS in a trip blank sample will trigger review of sample container types, transport procedures and UHP water quality. The concentration and compound detected will be considered in reviewing the potential impact of transport related cross-contamination of the assessment data quality.</p>

4.8.4 Additional Volumes for Laboratory QA/QC Samples

Additional sample volumes will be obtained to enable laboratory QA/QC (duplicates and matrix spikes) for PFAS analysis. The frequency of additional samples are 2:10 and 3:20, where two additional sets (2x20mL) are required per 10 primary samples, or three sets per 20 primary samples.

4.8.5 Sample Handling and Transport to Laboratory

Groundwater and surface water samples will be placed directly into laboratory-supplied bottles upon collection whilst wearing fresh disposable nitrile gloves. Where field and inter-lab duplicates are to be

collected, AECOM field staff will attempt to reduce potential heterogeneity by dividing the sample collected between primary and duplicate bottles during sampling.

Once collected, all samples will be immediately placed on ice in eskies. All samples will be kept, if possible, at approximately 4°C during transit to the laboratory.

Samples will be transported directly to the laboratory for analytical testing under standard Chain of Custody (CoC) procedures. Primary and field QA/QC samples will be analysed by Australian Laboratory Services (ALS), a National Association of Testing Authorities (NATA) accredited laboratory. The inter-laboratory duplicate samples will be analysed by National Measurement Institute (NMI) Sydney, also a NATA accredited laboratory.

4.9 Calibration

The water quality meter will be calibrated prior to field mobilisation for field activities with relevant solutions, including pH, EC and ORP. The calibration will be in accordance with manufacturers' instructions or NATA publication "General Requirements for Registration: Supplementary Requirement: Chemical Testing (NATA 1993) and Technical Note No. 19 (NATA 1994)". Where satisfactory calibration cannot be achieved, the water quality data will not be used for interpretive purposes.

Calibration details will be recorded on a calibration record sheet and included in the Sampling Events Factual Reports.

4.10 Logistics

The laboratory sample containers will be shipped from the laboratory to the AECOM office in Adelaide prior to the commencement of fieldwork. All primary samples will be delivered to ALS Adelaide at the completion of fieldworks and transported by an ALS supplied courier to ALS Melbourne or Sydney for analysis.

All inter-laboratory duplicate samples will be couriered directly to the secondary laboratory under a separate CoC for analysis.

4.11 Analytical Suite and Laboratory Analysis Methods

4.11.1 Laboratory NATA Accreditation Details

The laboratory is required to use NATA accredited methods based on NEPM, US EPA, Table B 15 of the US Department of Defence/Department of Energy (US DOD/DoE) and American Society for Testing and Materials (ASTM) methods as appropriate.

The primary and secondary laboratories selected for this program are ALS (NATA Accreditation Number 825) and NMI (NATA Accreditation Number 198), respectively. Analytical Schedule

4.11.2 Analytical schedule

All media sampled shall be analysed for the extended PFAS suite with standard LOR as outlined in **Table 11** below.

Table 11 Sample Analytical Suite for PFAS

PFAS Group	Compound	CAS No.
Perfluoroalkyl Sulfonic Acids	Perfluorobutane sulfonic acid (PFBS)	375-73-5
	Perfluoropentane sulfonic acid (PFPeS)	2706-91-4
	Perfluorohexane sulfonic acid (PFHxS)	355-46-4
	Perfluoroheptane sulfonic acid (PFHpS)	375-92-8
	Perfluorooctane sulfonic acid (PFOS)	1763-23-1
	Perfluorodecane sulfonic acid (PFDS)	335-77-3

PFAS Group	Compound	CAS No.
Perfluoroalkyl Carboxylic Acids	Perfluorobutanoic acid (PFBA)	375-22-4
	Perfluoropentanoic acid (PFPeA)	2706-90-3
	Perfluorohexanoic acid (PFHxA)	307-24-4
	Perfluoroheptanoic acid (PFHpA)	375-85-9
	Perfluorooctanoic acid (PFOA)	335-67-1
	Perfluorononanoic acid (PFNA)	375-95-1
	Perfluorodecanoic acid (PFDA)	335-76-2
	Perfluoroundecanoic acid (PFUnDA)	2058-94-8
	Perfluorododecanoic acid (PFDoDA)	307-55-1
	Perfluorotridecanoic acid (PFTrDA)	72629-94-8
	Perfluorotetradecanoic acid (PFTeDA)	376-06-7
Perfluoroalkyl Sulfonamides	Perfluorooctane sulphonamide (FOSA)	754-91-6
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6
(n:2) Fluorotelomer Sulfonic Acids	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0

The current standard laboratory limits of reporting (LOR) are described in **Table 12** below.

Table 12 Laboratory Limits of Reporting

Sample Media	Parameter	Technique/Method Reference	LOR*
Groundwater and Surface Water	Extended PFAS Suite	LC/MS-MS	0.01 – 1.0 µg/L

LC/MS-MS = Liquid chromatography–mass spectrometry

*LOR for Australian Laboratory Services (ALS)

Table 13 Laboratory Quality Control Procedures

Sample Type	Comments
Sample analysis	All sample analyses to be conducted using NATA certified laboratories which will implement a quality control plan in accordance with NEPM (1999).

Holding times	Groundwater/surface water: 14 days prior to extraction or 28 days following extraction for PFAS (NMI 2017)
Laboratory detection limits	All laboratory detection limits to be less than the site investigation criteria.
Laboratory blanks	Laboratory blanks to be analysed at a rate of 1 in 20, with a minimum of one analysed per batch. Concentration of analytes to be less than the laboratory detection limits.
Laboratory duplicates	Laboratory duplicates to be analysed at a rate of 1 in 20, with a minimum of one analysed per batch. RPDs to be less than 30%.
Laboratory Control Samples (LCS)	LCSs to be analysed at a rate of 1 in 20, with a minimum of one analysed per analytical batch.
Control limits:	50 to 150 % Acceptable Recovery
Surrogate	Labelled surrogates of target analytes are added in known amounts to each sample during analysis and recovery of the surrogate is quantified to assess equipment and process response. The recovery is then used to adjust the calculation of the target analyte in that sample.
Surrogate control limits:	50–150 % Acceptable recovery.
Matrix spike duplicate	Matrix spike duplicate prepared by dividing a field sample into two aliquots, then spiking each with identical concentrations of the analytes at a rate of 1 in 20.
Matrix spike duplicates:	RPDs <50%

4.12 Sample Nomenclature

In order to meet Defence data management requirements, a consistent sample nomenclature has been adopted for the Program. All primary samples will be labelled using the following Defence Contamination Management Manual (DCMM) naming convention:

PPPP_XX000_YYMMDD

[property ID]_[type of sample][THREE DIGIT sample number]_[yearmonthday]

e.g. 0939_MW001_200401

Location types and codes are prescribed by Defence and the investigation history.

Primary Sample Types/Location Codes relevant to this OMP include:

- MW = monitoring well
- SW = surface water - no depth required

QAQC Samples will be labelled in accordance with the following convention:

- Duplicate: PPPP_QC1XX_YYMMDD
- Triplicate: PPPP_QC2XX_YYMMDD
- Rinsate: PPPP_QC3XX_YYMMDD

Current sample IDs for some locations are not in compliance with DCMM Annex L (Department of Defence, 2018, amended August 2019). These have been identified in **Section 4.3** and will be finalised prior to collection of samples.

4.13 Defence ESdat Requirements

Defence has contracted Earth Science Information Systems (ESdIS), to provide contamination data management services through a cloud instance of its ESdat product.

All OMP field and laboratory data collected by AECOM will be uploaded, stored and managed in Defence's ESdat database in accordance with Section 6 of Annex L to the Defence Contamination Management Manual. AECOM will refer to historical investigation data to ensure consistent location codes are used to enable analysis of data trends. Where required under Annex L, non-compliant location codes will be resolved under direction from Defence.

AECOM will upload the data from each monitoring event into ESdat prior to submitting the Sampling Event Factual Report.

4.14 Adopted Screening Criteria

PFAS screening values have been adopted for groundwater and surface water from the Defence OMP and are derived from the following documents:

- Heads of Environmental Protection Authority (HEPA) 2020. *PFAS National Environmental Management Plan (NEMP)*. (HEPA, 2020)
- Department of Health (DoH), 2019. Health Based Guidance Values for PFAS for use in site investigations in Australia. September 2019 (DoH 2019). (Department of Health, 2019)
- National Health and Medical Research Council (NHMRC), 2019. Guidance on PFAS in Recreational Water. August 2019 (NHMRC, 2019)

Following the release of the OMP (Department of Defence, 2019a) in July 2019, the National Health and Medical Research Council (NHMRC), published guidance on PFAS in Recreational Water which were adopted in the revised NEMP (HEPA, 2020).

The adopted screening criteria for PFOS+PFHxS and PFOA in surface water have therefore been revised to 2 µg/L and 10 µg/L, respectively.

Adopted PFAS screening values are provided in the **Table 14**.

Table 14 Adopted Groundwater and surface water screening values (µg/L)

Pathway	Compound	Criteria	Comment / Reference
Drinking water - Groundwater	PFOS + PFHxS	0.07 µg/L	The values are from the PFAS NEMP (HEPA, 2020) <i>All groundwater results will be compared to these criteria.</i>
	PFOA	0.56 µg/L	
Recreational use – surface water	PFOS + PFHxS	2 µg/L	The values are from the PFAS NEMP, 2020 (HEPA, 2020) <i>All surface water results will be compared to these criteria.</i>
	PFOA	10 µg/L	

Pathway	Compound	Criteria	Comment / Reference
Ecological Receptors			
Freshwater (95% species protection values)	PFOS	0.13 µg/L	The values are from the PFAS NEMP (HEPA, 2020)
	PFOA	220 µg/L	<i>All surface water and groundwater results will be compared to these criteria.</i>

4.15 Waste Management

Due to the proposed “no purge” sampling methodology, it is not anticipated that significant volumes of liquid waste would be generated that would require management or disposal.

Single use sampling equipment and any waste generated during works (including generation of wastewater or soil) will be managed and/or disposed of appropriately in accordance with State waste disposal requirements.

4.16 Fieldwork Documentation

4.16.1 Field Observations and Results

Field notes will be maintained to record all field sampling events and include observations made at each sample location. Field notes will include information specific to the sample media as follows:

- Groundwater Samples – comments on the observed characteristics of the sample (e.g. colour, turbidity, odour, sheen) and reported field water quality parameters (pH, EC, DO, ORP, temperature) will be recorded at regular intervals;
- Surface Water Samples – comments on the observed characteristics of the sample (e.g. colour, turbidity, odour, sheen), flow velocity and field water quality parameters (pH, EC, DO, ORP, temperature) will be recorded; and

The coordinates for each sample location will be noted. The location of quality control (e.g. duplicate and inter-laboratory duplicate) sample collection points will also be noted.

AECOM’s tablet-based data capture (‘EDCA’) system will be utilised by field staff to minimise potential data recording errors and allow on-the-spot identification of potentially erroneous data in comparison to historical data.

4.16.2 Sample Labels

AECOM will utilise the tablet-based ALS ‘Compass’ sample management application to streamline sample labelling and chain of custody (CoC) creation to ensure compliant sample IDs are used in the field.

Sample containers will also be labelled with the sample ID as a failsafe method.

A ball point pen will be used for labelling, to ensure PFAS is not introduced to the samples from permanent markers.

4.16.3 Chain of Custody Forms

A CoC form will be completed, documenting the sample identification number and analytes. The CoC documents the chain of events from sample collection to delivery at the laboratory and provides a traceable account of sample handling. The CoC form will be signed by both the sample collector and the receiving laboratory. The CoC will be generated electronically using the ALS Compass application to reduce potential transcription errors.

The CoC form will include the following information:

- Job number (Note: the name of the site is not identified for confidentiality purposes);
- Date and time of sample collection;
- Sample ID;

- Type of containers;
- Name of sampler;
- Laboratory to be used;
- Analyses required;
- Any comments; and
- Signatures of the sampler and laboratory receiver.

In the event that additional samples are collected during the field investigations due to observations made by the field team, (i.e. samples not proposed in this SAQP), Defence will be provided the rationale for collection of those samples and proposed laboratory analyses. Defence approval will be sought to include these samples on the CoC and to dispatch these samples to the laboratory.

Upon receipt of the original documents accompanying the samples at the laboratory, the laboratory will provide a sample receipt document (noting the temperature of samples upon receipt, analyses required and any non-conformances) and return the signed CoC form to confirm analyses to be performed and the due date for the analytical results.

4.16.4 Sampling Documentation

Field sampling sheets will be completed for each location, and will include the following information (as appropriate for the media being sampled):

- Name of sampler;
- Sample location;
- Date /time of monitoring/ sampling;
- Sampling method;
- Observations of the sampled media; and
- Calibration records.

Records of all equipment calibration will be included in the Sampling Event Factual Reports.

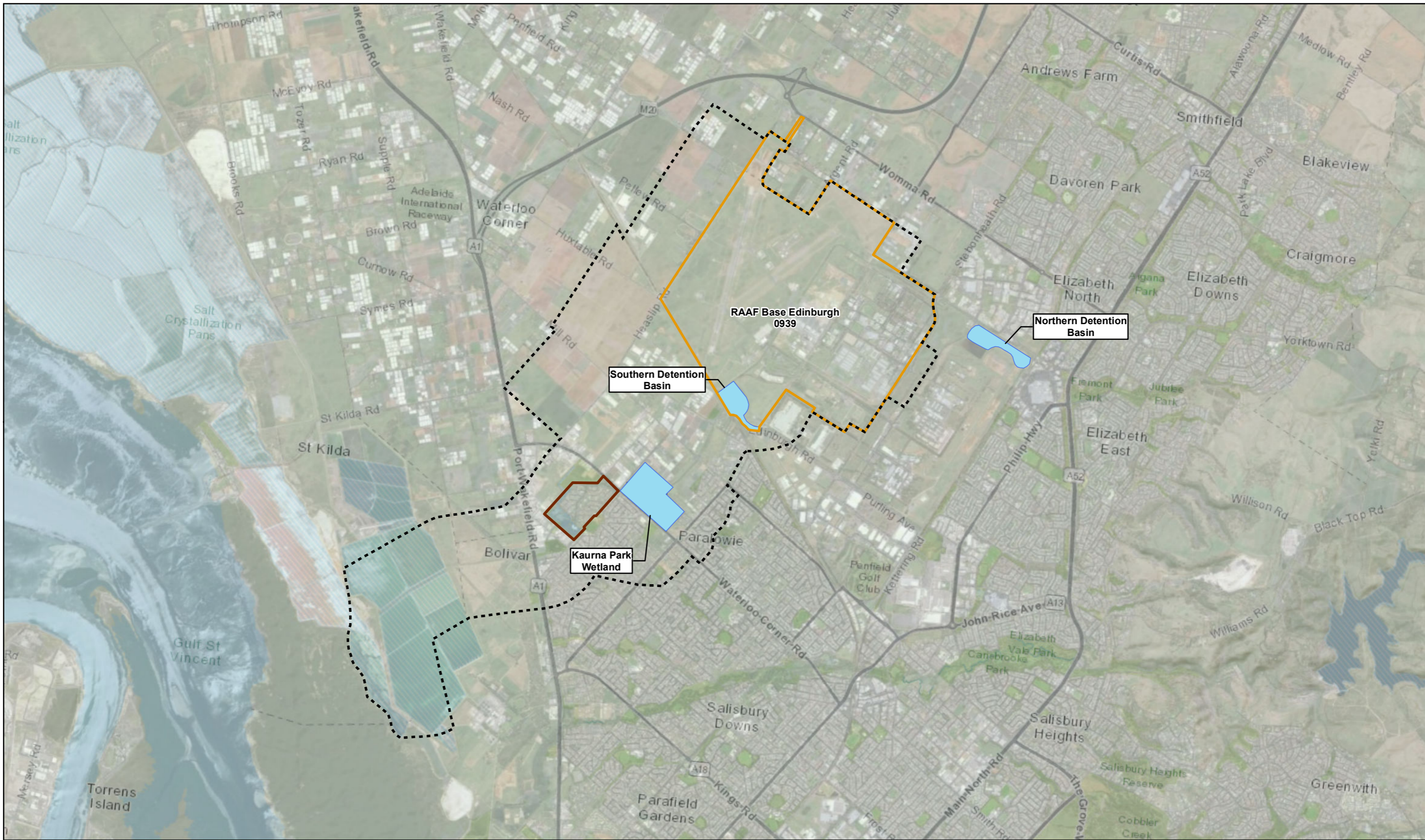
5.0 References

- ANZECC. (2018). *Australian and New Zealand guidelines for fresh and marine water quality 2000 (amended 2018)*.
- Department of Defence. (2018, amended August 2019). *Defence Contamination Management Manual*.
- Department of Defence. (2019a). *PFAS Management Area Plan - RAAF Base Edinburgh*.
- Department of Defence. (2019b). *Defence Contamination Management Manual 2018 (as amended 2019)*.
- Department of Defence. (2019c). *Pollution Prevention Guideline: Routine Water Quality Monitoring Manual*.
- Department of Health. (2019). *Health based guidance values for PFAS for use in site investigations in Australia 2017 (as amended 2019)*.
- HEPA. (2020). *PFAS National Environmental Management Plan*.
- NHMRC. (2019). *Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water*. National Health and Medical Research Council.
- Standards Australia/Standards New Zealand. (1998). *AS/NZ 5667.1 Water Quality Sampling - Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples*.

Appendix A

Figures

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54
0 0.5 1 2
Kilometers
1:55,000 (when printed at A3)

Legend

- Detention Basin
- Springbank Waters Estate
- RAAF Base Edinburgh Boundary
- Management Area

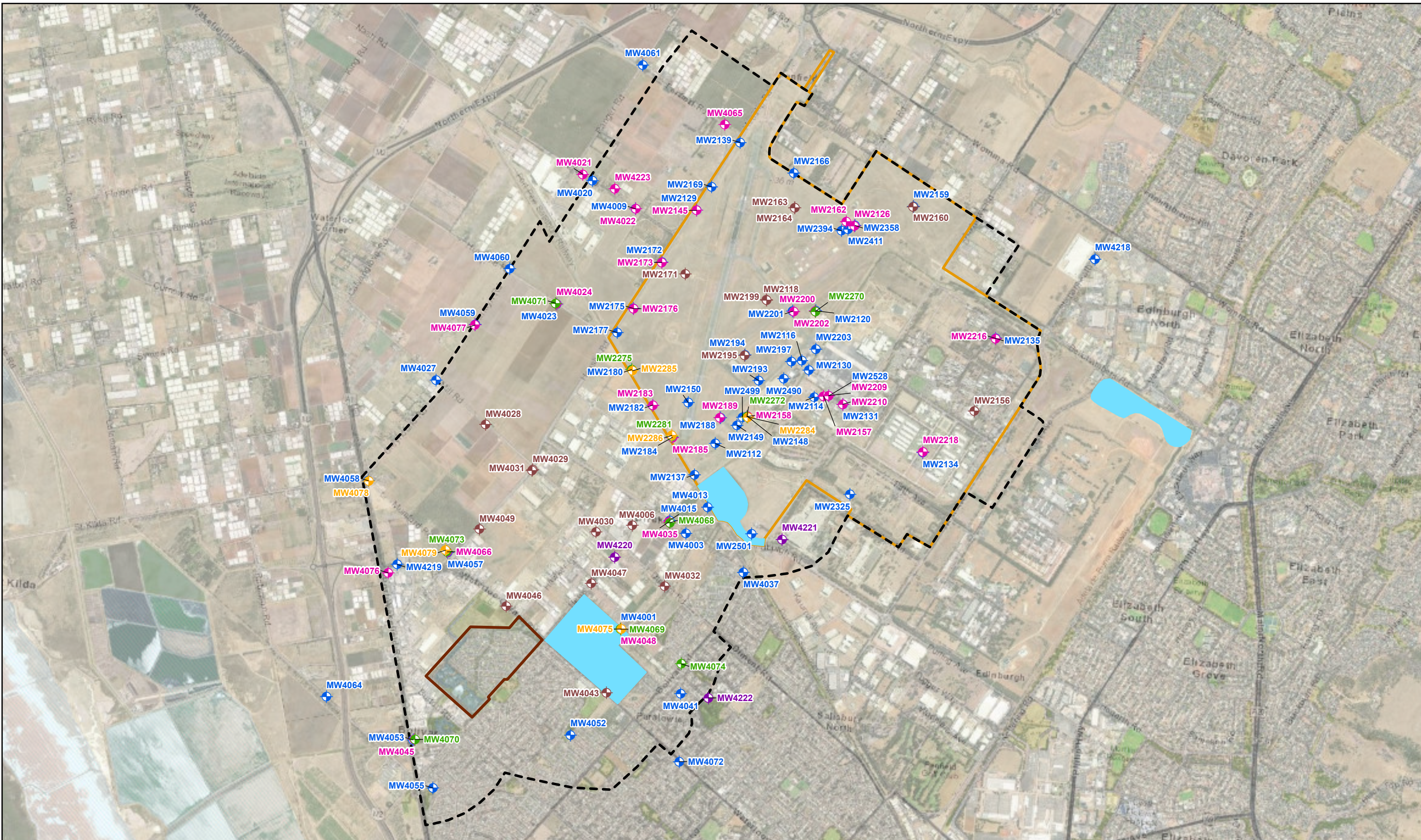
**Department of Defence
RAAF BASE EDINBURGH
SAMPLING ANALYSIS QUALITY PLAN**

SITE LOCATION

PROJECT ID: 60549059	Figure
CREATED BY: JD	1
LAST MODIFIED: Bathurst19 Feb 2020	
VERSION: 1	

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 0.425 0.85 1.7
Kilometers

1:35,000 (when printed at A3)

Legend

- ◆ Gauging Locations Only
- Sample Locations**
- ◆ Q1 Aquifer
- ◆ Q2 Aquifer
- ◆ Q3 Aquifer
- ◆ Q4 Aquifer
- ◆ T1 Aquifer
- Management Area
- RAAF Base Edinburgh Boundary
- Springbank Waters Estate
- Detention Basin

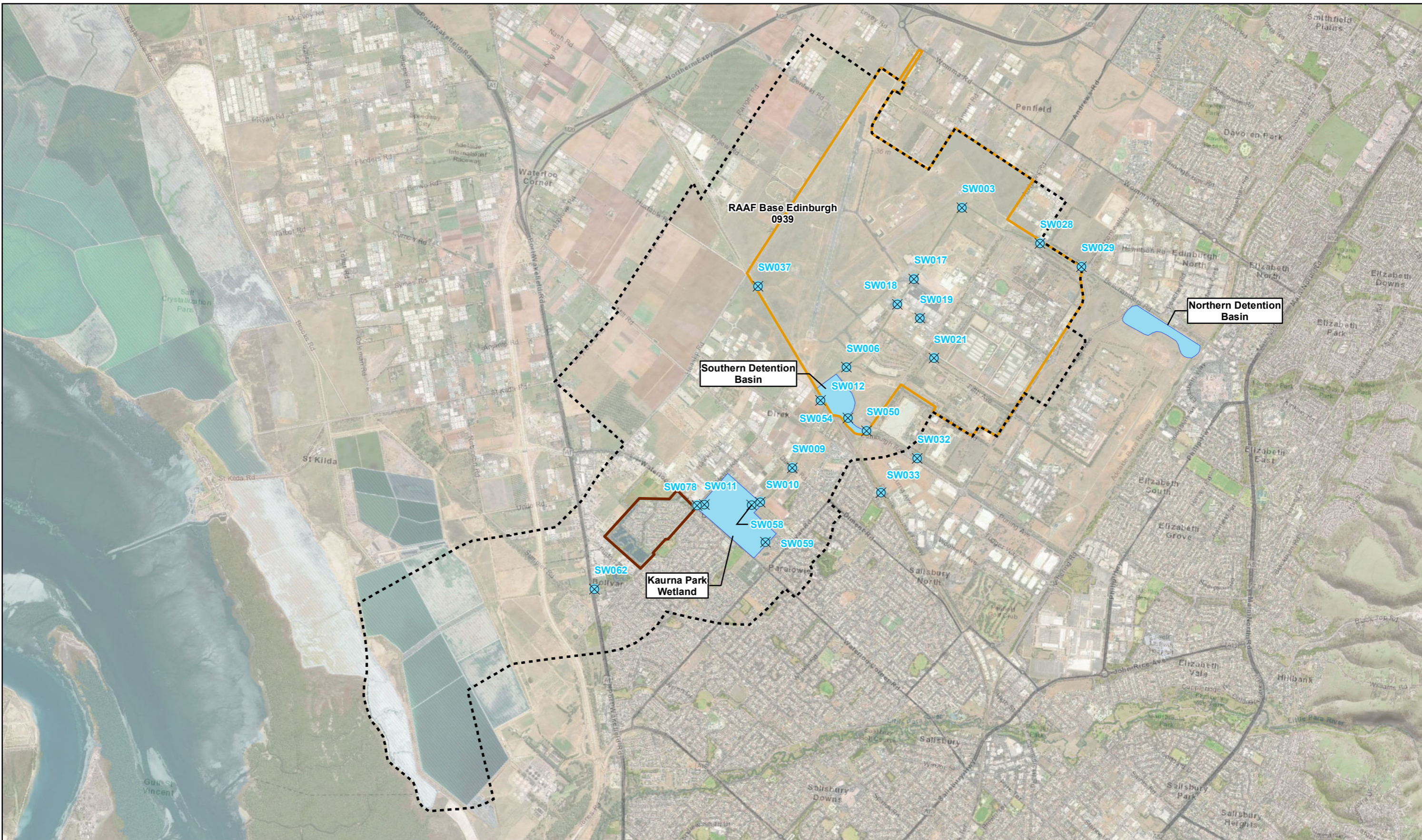
**Department of Defence
RAAF BASE EDINBURGH
PFAS ONGOING MONITORING
PROGRAM**

GROUNDWATER SAMPLE LOCATIONS

PROJECT ID	60612561	Figure
CREATED BY	KAL.DU	2
LAST MODIFIED	KAL.DU 09 JUN 2021	
VERSION:	1	

Data sources:
Base Data: Imagery (c) 2017 ESRI

AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.



AECOM
www.aecom.com

DATUM GDA 1994, PROJECTION MGA ZONE 54

0 0.5 1 2
Kilometers

1:45,000 (when printed at A3)

Legend

- ✕ Surface Water Sample Locations
- Type**
- Detention Basin
- Springbank Waters Estate
- RAAF Base Edinburgh Boundary
- Management Area

**Department of Defence
RAAF BASE EDINBURGH
SAMPLING ANALYSIS QUALITY PLAN**

SURFACE WATER SAMPLE LOCATIONS

PROJECT ID: 60549059	Figure
CREATED BY: JD	3
LAST MODIFIED: Bathurst19 Feb 2020	
VERSION: 1	

Data sources:
Base Data: Imagery (c) 2017 ESRI

Appendix B

Monitoring Location Details

Table C-1 RAAF Edinburgh groundwater sampling locations

Location Code	Legacy Name	On/Off-Base	Easting	Northing	Latitude	Longitude	Elevation	Target Aquifer
MW2528	EDGW04	On-Base	282771.879	6156117.22	-34.71394272	138.6279274	17.181	Q1
MW2358	GW0008	On-Base	282826.507	6157777.781	-34.69899246	138.6289507	20.062	Q1
MW2325	GW0015	On-Base	283088.844	6155196.652	-34.72230448	138.6311493	19.127	Q1
MW2394	GW0303	On-Base	282703.846	6157711.271	-34.69956566	138.6275954	18.788	Q1
MW2411	GW0321	On-Base	282765.25	6157734.774	-34.69936695	138.6282713	18.718	Q1
MW2490	GW0416	On-Base	282322.218	6156228.298	-34.71284622	138.6230497	17.58	Q1
MW2499	GW0428	On-Base	281970.784	6155813.554	-34.71650818	138.6191079	15.769	Q1
MW2501	GW0431	On-Base	282192.393	6154706.588	-34.72652927	138.6212403	15.673	Q1
MW4001	GW2101	Off-Base	281051.12	6153645.1	-34.73584926	138.6085099	12.909	Q1
MW4003	GW2103	Off-Base	281563.05	6154636.05	-34.72703044	138.614354	13.46	Q1
MW2112	GW2112	On-Base	281741.031	6155529.325	-34.71902005	138.6165274	15.877	Q1
MW2114	GW2114	On-Base	282634.947	6156088.193	-34.71417514	138.6264258	17.697	Q1
MW2116	GW2116	On-Base	282474.473	6156425.192	-34.71110461	138.6247617	16.978	Q1
MW2120	GW2120	On-Base	282550.211	6156915.876	-34.70669961	138.6257145	18.18	Q1
MW4009	GW2123	Off-Base	280706.519	6157684.146	-34.69938367	138.6057986	14.368	Q1
MW2126	GW2126	On-Base	282821.694	6157773.259	-34.69903218	138.628897	20.151	Q2
MW2129	GW2129	On-Base	281293.3	6157743.13	-34.69897789	138.6122153	15.881	Q1
MW2130	GW2130	On-Base	282552.47	6156339.583	-34.71189255	138.6255907	17.483	Q1
MW2131	GW2131	On-Base	282917.551	6156051.529	-34.71456556	138.6295	18.058	Q1
MW2134	GW2134	On-Base	283736.786	6155685.931	-34.71803335	138.6383455	19.716	Q1
MW2135	GW2135	On-Base	284303.65	6156860.304	-34.7075718	138.6448313	20.504	Q1
MW2137	GW2137	On-Base	281577.14	6155206.08	-34.72189747	138.6146553	15.791	Q1

Location Code	Legacy Name	On/Off-Base	Easting	Northing	Latitude	Longitude	Elevation	Target Aquifer
MW2139	GW2139	On-Base	281632.57	6158438.41	-34.69278588	138.6160963	18.653	Q1
MW4013	GW2141	Off-Base	281740.99	6154912.4	-34.72457855	138.6163673	13.123	Q1
MW4015	GW2143	Off-Base	281393.67	6154742.55	-34.72603464	138.6125331	13.627	Q1
MW2145	GW2145	On-Base	281292.201	6157738.97	-34.69901514	138.6122023	15.838	Q2
MW2148	GW2148	On-Base	282016.563	6155826.88	-34.71639788	138.6196109	16.49	Q1
MW2149	GW2149	On-Base	281927.977	6155729.841	-34.71725331	138.6186192	16.626	Q1
MW2150	GW2150	On-Base	281434.777	6155891.215	-34.71569396	138.6132793	14.873	Q1
MW2157	GW2157	On-Base	282722.366	6156108.631	-34.71400958	138.627385	17.777	Q2
MW2158	GW2158	On-Base	282018.71	6155826.137	-34.71640503	138.6196341	16.498	Q2
MW2159	GW2159	On-Base	283365.069	6158028.597	-34.6968468	138.6348905	20.478	Q1
MW2162	GW2162	On-Base	282739.13	6157806.205	-34.69871779	138.6280048	19.721	Q2
MW2166	GW2166	On-Base	282180.908	6158209.564	-34.69496473	138.6220189	19.063	Q1
MW2169	GW2169	On-Base	281409.894	6157982.257	-34.69684828	138.6135492	16.608	Q1
MW2172	GW2172	On-Base	281021.721	6157205.643	-34.70376254	138.6091132	15.828	Q1
MW2173	GW2173	On-Base	281019.446	6157202.096	-34.70379401	138.6090875	15.882	Q2
MW2175	GW2175	On-Base	280799.695	6156727.962	-34.70801886	138.6065669	14.438	Q1
MW2176	GW2176	On-Base	280802.339	6156726.432	-34.70803321	138.6065953	14.282	Q2
MW2177	GW2177	On-Base	280673.63	6156478.397	-34.71024039	138.6051266	13.902	Q1
MW2180	GW2180	On-Base	280854.437	6156141.191	-34.71331739	138.6070118	14.195	Q1
MW2182	GW2182	On-Base	281097.704	6155825.423	-34.71621459	138.6095842	13.821	Q1
MW2183	GW2183	On-Base	281099.453	6155822.869	-34.71623798	138.6096027	14.831	Q2
MW2184	GW2184	On-Base	281322.651	6155539.506	-34.71883887	138.6119647	14.438	Q1
MW2185	GW2185	On-Base	281324.521	6155537.376	-34.71885846	138.6119845	15.286	Q2

Location Code	Legacy Name	On/Off-Base	Easting	Northing	Latitude	Longitude	Elevation	Target Aquifer
MW2188	GW2188	On-Base	281762.006	6155782.891	-34.71673989	138.6168219	15.46	Q1
MW2189	GW2189	On-Base	281755.198	6155782.364	-34.71674319	138.6167474	15.201	Q2
MW2193	GW2193	On-Base	282083.972	6156180.783	-34.71322357	138.6204378	15.918	Q1
MW2194	GW2194	On-Base	281923.771	6156413.57	-34.71109197	138.61875	15.31	Q1
MW2197	GW2197	On-Base	282374.703	6156402.056	-34.71129183	138.6236671	17.642	Q1
MW2200	GW2200	On-Base	282543.677	6156912.168	-34.70673163	138.6256422	17.903	Q2
MW2201	GW2201	On-Base	282328.28	6156884.26	-34.70693724	138.623285	16.395	Q1
MW2202	GW2202	On-Base	282339.379	6156884.804	-34.7069347	138.6234062	16.473	Q1
MW2203	GW2203	On-Base	282594.053	6156550.269	-34.71000309	138.6260987	16.772	Q1
MW2209	GW2209	On-Base	282771.057	6156119.013	-34.71392639	138.6279189	17.075	Q2
MW2210	GW2210	On-Base	282915.644	6156052.52	-34.71455622	138.6294795	18.087	Q2
MW2216	GW2216	On-Base	284302.256	6156858.146	-34.70759095	138.6448156	20.468	Q2
MW2218	GW2218	On-Base	283737.881	6155688.014	-34.71801482	138.638358	19.774	Q2
MW4020	GW2222	Off-Base	280262.039	6157902.771	-34.69731845	138.6010065	13.97	Q1
MW4021	GW2223	Off-Base	280162.081	6157953.67	-34.69683837	138.5999293	13.697	Q2
MW4022	GW2224	Off-Base	280708.645	6157682.827	-34.69939601	138.6058215	14.423	Q2
MW4023	GW2225	Off-Base	280062.128	6156682.135	-34.70827333	138.5985078	11.855	Q1
MW4024	GW2226	Off-Base	280058.859	6156683.906	-34.70825667	138.5984726	11.895	Q2
MW4027	GW2229	Off-Base	278995.078	6155816.206	-34.71584508	138.5866391	9.532	Q1
MW4035	GW2237	Off-Base	281385.49	6154724.714	-34.72619359	138.6124392	13.735	Q2
MW4037	GW2239	Off-Base	282158.469	6154330.943	-34.72990662	138.620773	15.193	Q1
MW4041	GW2243	Off-Base	281698.489	6153093.969	-34.74095355	138.6154327	14.606	Q1
MW4045	GW2247	Off-Base	279199.241	6152349.625	-34.74712252	138.587959	7.328	Q2

Location Code	Legacy Name	On/Off-Base	Easting	Northing	Latitude	Longitude	Elevation	Target Aquifer
MW4048	GW2250	Off-Base	281049.868	6153646.689	-34.73583468	138.6084967	12.975	Q2
MW4052	GW2254	Off-Base	280690.601	6152573.495	-34.74542698	138.6042963	12.057	Q1
MW4053	GW2255	Off-Base	279188.909	6152343.871	-34.74717213	138.5878447	7.45	Q1
MW4055	GW2257	Off-Base	279435.394	6151906.92	-34.75116227	138.5904208	7.883	Q1
MW4057	GW2259	Off-Base	279304.791	6154180.176	-34.7306524	138.5895904	9.429	Q1
MW4058	GW2260	Off-Base	278462.155	6154773.696	-34.7251225	138.5805504	9.407	Q1
MW4059	GW2261	Off-Base	279305.562	6156391.634	-34.71072765	138.5901773	10.204	Q1
MW4060	GW2262	Off-Base	279571.842	6156963.69	-34.70563095	138.593232	11.386	Q1
MW4061	GW2263	Off-Base	280610.08	6159070.033	-34.68687615	138.6051065	16.538	Q1
MW4064	GW2266	Off-Base	278310.213	6152656.76	-34.74416262	138.5783357	5.885	Q1
MW4065	GW2267	Off-Base	281463.537	6158592.151	-34.69136457	138.6142922	17.754	Q2
MW4066	GW2268	Off-Base	279299.733	6154184.38	-34.73061343	138.5895363	9.478	Q2
MW2270	GW2270	On-Base	282547.804	6156909.705	-34.7067547	138.6256866	18.1	Q3
MW2272	GW2272	On-Base	282013.185	6155820.708	-34.71645277	138.6195724	16.499	Q3
MW2275	GW2275	On-Base	280856.688	6156139.367	-34.71333431	138.6070359	14.121	Q3
MW4068	GW2276	Off-Base	281397.098	6154718.989	-34.72624766	138.6125644	13.749	Q3
MW4069	GW2277	Off-Base	281047.303	6153643.642	-34.73586158	138.6084679	12.92	Q3
MW4070	GW2278	Off-Base	279207.701	6152352.027	-34.74710271	138.588052	7.311	Q3
MW4071	GW2279	Off-Base	280049.801	6156687.674	-34.70822078	138.5983747	12.009	Q3
MW4072	GW2280	Off-Base	281762.567	6152443.874	-34.7468246	138.6159638	17.147	Q1
MW2281	GW2281	On-Base	281315.913	6155548.054	-34.71876041	138.6118934	15.229	Q3
MW4073	GW2282	Off-Base	279293.739	6154188.651	-34.73057366	138.589472	9.458	Q3
MW4074	GW2283	Off-Base	281669.974	6153381.792	-34.73835417	138.615196	14.06	Q3

Location Code	Legacy Name	On/Off-Base	Easting	Northing	Latitude	Longitude	Elevation	Target Aquifer
MW2284	GW2284	On-Base	282023.019	6155820.604	-34.7164558	138.6196797	16.509	Q4
MW2285	GW2285	On-Base	280863.979	6156130.184	-34.71341861	138.6071131	14.287	Q4
MW2286	GW2286	On-Base	281314.915	6155556.531	-34.71868382	138.6118847	15.323	Q4
MW4075	GW2287	Off-Base	281056.027	6153645.937	-34.73584278	138.6085637	13.059	Q4
MW4076	GW2288	Off-Base	278758.499	6153913.616	-34.73293587	138.5835586	7.942	Q2
MW4077	GW2289	Off-Base	279303.525	6156386.059	-34.71077744	138.5901537	10.232	Q2
MW4078	GW2290	Off-Base	278466.575	6154772.265	-34.72513635	138.5805983	9.537	Q4
MW4079	GW2291	Off-Base	279280.86	6154197.582	-34.73049041	138.5893338	9.505	Q4
MW4218		Off-Base	278835.791	6154005.372	-34.69989048	138.6544269	9.09	Q1
MW4219		Off-Base	285162.761	6157732.886	-34.732125905	138.58442623	22.01	Q1
MW4221	MW21322	Off-Base	280486.76	6157850.52	-34.6978375	138.6034444	-	T1
MW4220	MW20327	Off-Base	280909.77	6154326.51	-34.7296795	138.6071443	-	T1
MW4222	MW22767	Off-Base	282490.91	6154688.32	-34.7267575	138.6244933	-	T1
MW4223	MW15586	Off-Base	281969.77	6153088.54	-34.7410605	138.6183923	-	Q2

Table C-2 RAAF Edinburgh groundwater gauging locations

Location Code	Legacy Name	On/Off-Base	Easting	Northing	Latitude	Longitude	Elevation	Target Aquifer
MW4006	GW2106	Off-Base	281041.1	6154650	-34.7268	138.6087	13.283	Q1
MW2118	GW2118	On-Base	282064.2	6156966	-34.7061	138.6204	17.329	Q1
MW2156	GW2156	On-Base	284182.7	6156138	-34.7141	138.6433	19.773	Q1
MW2160	GW2160	On-Base	283362.1	6158022	-34.6969	138.6349	20.433	Q2
MW2163	GW2163	On-Base	282228.1	6157877	-34.698	138.6224	18.161	Q1
MW2164	GW2164	On-Base	282231.4	6157875	-34.698	138.6225	18.172	Q2
MW2171	GW2171	On-Base	281258.1	6157117	-34.7046	138.6117	16.471	Q1
MW2195	GW2195	On-Base	281919.3	6156409	-34.7111	138.6187	16.05	Q2
MW2199	GW2199	On-Base	282067.5	6156962	-34.7062	138.6205	17.177	Q2
MW4028	GW2230	Off-Base	279518.8	6155448	-34.7193	138.5923	10.396	Q1
MW4029	GW2231	Off-Base	280022.4	6155069	-34.7228	138.5977	11.916	Q1
MW4030	GW2232	Off-Base	280701.1	6154545	-34.7277	138.6049	11.755	Q1
MW4031	GW2233	Off-Base	280017.9	6155061	-34.7229	138.5976	11.831	Q2
MW4032	GW2234	Off-Base	281420.7	6154105	-34.7318	138.6127	12.948	Q2
MW4043	GW2245	Off-Base	280987.1	6153017	-34.7415	138.6076	12.125	Q1
MW4046	GW2248	Off-Base	279926.1	6153731	-34.7348	138.5963	9.19	Q1
MW4047	GW2249	Off-Base	280715.2	6154048	-34.7322	138.6049	11.657	Q1
MW4049	GW2251	Off-Base	279581.7	6154438	-34.7284	138.5927	10.643	Q1

Table C-3 RAAF Edinburgh surface water sampling locations

Location Code	On/Off-Base	Easting	Northing	Latitude	Longitude
SW003	On-Base	283148	6157551	-34.7011	138.6324
SW006	On-Base	281961.4	6155415	-34.7201	138.6189
SW009	Off-Base	281443	6154098	-34.7319	138.6129
SW010	Off-Base	281102	6153625	-34.736	138.6091
SW011	Off-Base	280418.6	6153512	-34.7369	138.6016
SW012	Off-Base	281694.9	6154967	-34.7241	138.6159
SW017	On-Base	282662	6156600	-34.7096	138.6269
SW018	On-Base	282495.8	6156265	-34.7126	138.625
SW019	On-Base	282793.3	6156126	-34.7139	138.6282
SW021	On-Base	283025.1	6155654	-34.7182	138.6306
SW028	On-Base	284158.6	6157225	-34.7043	138.6433
SW029	Off-Base	284701.9	6157000	-34.7064	138.6492
SW032	Off-Base	282965.8	6154400	-34.7295	138.6296
SW033	Off-Base	282572.2	6153923	-34.7337	138.6252
SW037	On-Base	280753.6	6156279	-34.7121	138.6059
SW050	On-Base	282305.2	6154665	-34.7269	138.6225
SW054	On-Base	282056.9	6154791	-34.7257	138.6198
SW058	Off-Base	281001.8	6153579	-34.7364	138.608
SW059	Off-Base	281224.4	6153143.463	-34.7404	138.6102
SW062	Off-Base	279192.8	6152310.49	-34.7474	138.5878
SW078	Off-Base	280330.2	6153491.8	-34.7370	138.6006

Appendix E

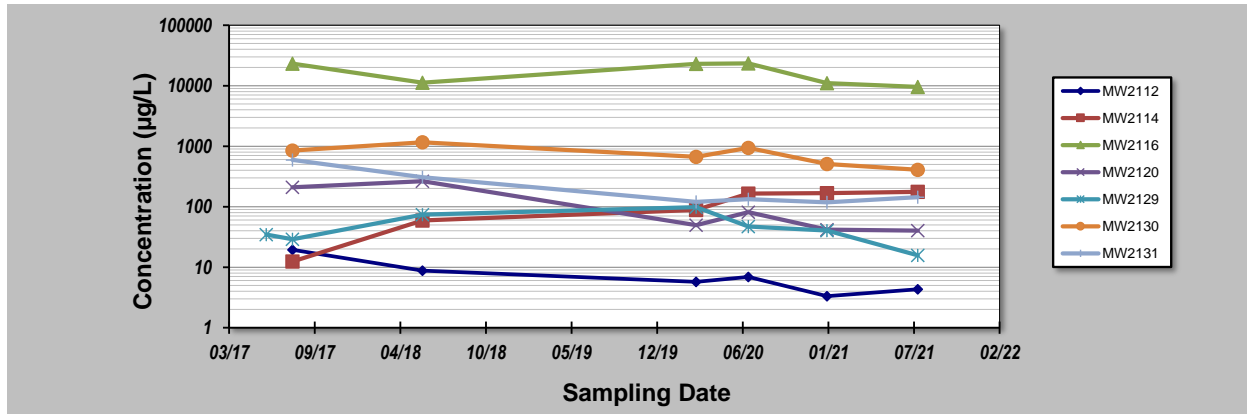
Mann-Kendall Analysis

GSI MANN-KENDALL TOOLKIT for Constituent Trend Analysis

Evaluation Date: 8-Dec-21	Job ID: 60612561
Facility Name: RAAF Base Edinburgh	Constituent: PFOS+PFHxS (Q1)
Conducted By: [REDACTED]	Concentration Units: µg/L

Sampling Point ID:	MW2112	MW2114	MW2116	MW2120	MW2129	MW2130	MW2131
--------------------	---------------	---------------	---------------	---------------	---------------	---------------	---------------

Sampling Event	Sampling Date	PFOS+PFHXS (Q1) CONCENTRATION (µg/L)						
1	Jun-17							
2	Aug-17	19.4	12.4	23100	210	28.93	850	594
3	Jun-18	8.8	59	11200	264	74	1160	306
4	Mar-20	5.72	88.2	23000	49.7	98.3	670	120
5	Jul-20	6.9	165	23400	81.3	47.2	935	133
6	Jan-21	3.32	168	11000	41.9	40.4	510	118
7	Aug-21	4.32	176	9560	40.2	15.7	408	144
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.73	0.61	0.41	0.85	0.59	0.37	0.80
Mann-Kendall Statistic (S):		-11	15	-7	-11	-3	-9	-7
Confidence Factor:		97.2%	99.9%	86.4%	97.2%	61.4%	93.2%	86.4%
Concentration Trend:		Decreasing	Increasing	Stable	Decreasing	Stable	Prob. Decreasing	Stable



Notes:

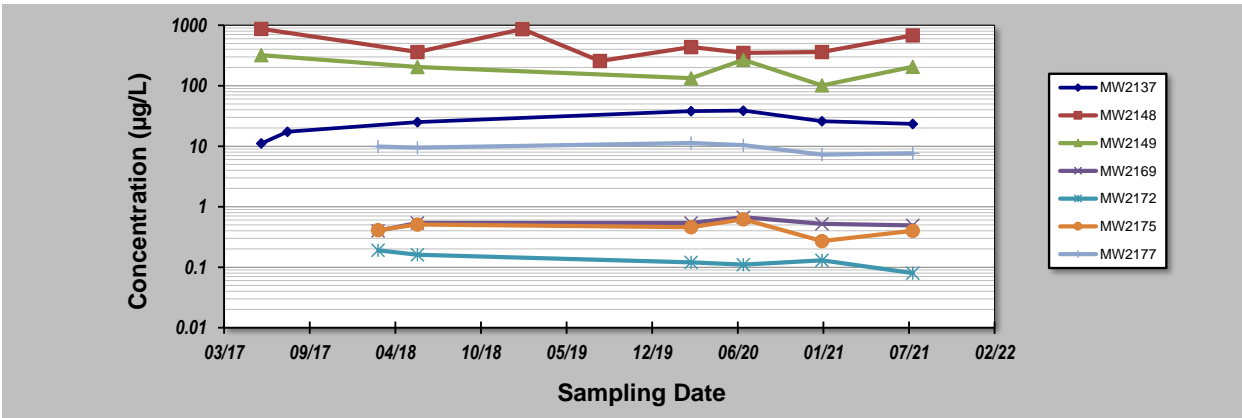
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.
GSI Environmental Inc., www.gsi-net.com

GSI MANN-KENDALL TOOLKIT for Constituent Trend Analysis

Evaluation Date: 8-Dec-21	Job ID: 60612561
Facility Name: RAAF Base Edinburgh	Constituent: PFOS+PFHxS (Q1)
Conducted By: [REDACTED]	Concentration Units: µg/L

Sampling Point ID:		MW2137	MW2148	MW2149	MW2169	MW2172	MW2175	MW2177
Sampling Event	Sampling Date	PFOS+PFHXS (Q1) CONCENTRATION (µg/L)						
1	Jun-17	11.1	870	320				
2	Aug-17	17.3						
3	Mar-18							
4	Jun-18	25	360	204	0.54	0.16	0.51	9.9
5	Feb-19		860					
6	Aug-19		256					
7	Nov-19							
8	Feb-20							
9	Mar-20	38.1	435	133	0.54	0.12	0.46	11.3
10	Jul-20	38.8	350	267	0.67	0.11	0.62	10.4
11	Jan-21	26	361	101	0.52	0.13	0.27	7.26
12	Aug-21	23.4	679	205	0.49	0.08	0.4	7.64
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.39	0.47	0.40	0.17	0.29	0.26	0.17
Mann-Kendall Statistic (S):		9	-4	-5	0	-11	-3	-5
Confidence Factor:		88.1%	64.0%	76.5%	39.3%	97.2%	64.0%	76.5%
Concentration Trend:		No Trend	Stable	Stable	Stable	Decreasing	Stable	Stable



Notes:

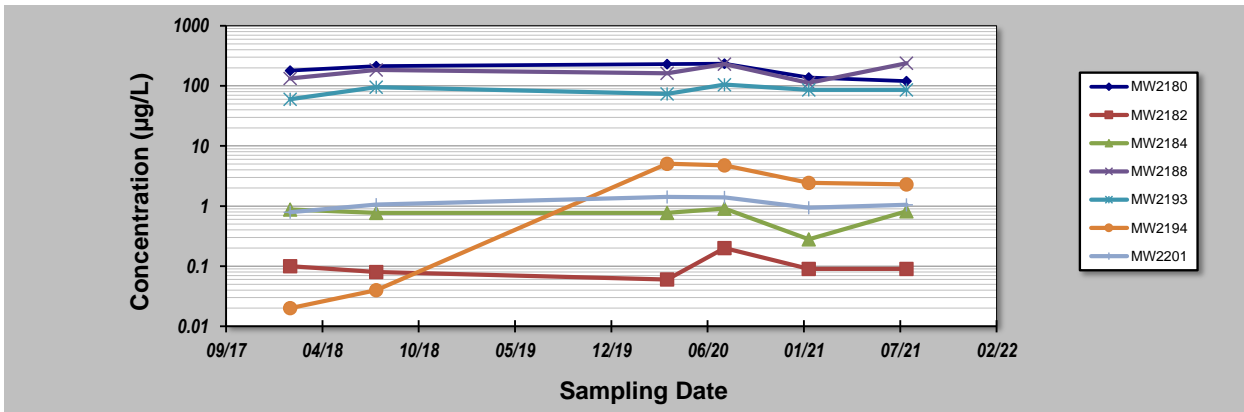
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.
GSI Environmental Inc., www.gsi-net.com

GSI MANN-KENDALL TOOLKIT for Constituent Trend Analysis

Evaluation Date: 8-Dec-21	Job ID: 60612561
Facility Name: RAAF Base Edinburgh	Constituent: PFOS+PFHxS (Q1)
Conducted By: [REDACTED]	Concentration Units: µg/L

Sampling Point ID:		MW2180	MW2182	MW2184	MW2188	MW2193	MW2194	MW2201
Sampling Event	Sampling Date	PFOS+PFHXS (Q1) CONCENTRATION (µg/L)						
1	Feb-18	180	0.1	0.88	133	60	0.02	0.79
2	Jul-18	214	0.08	0.77	184	95	0.04	1.06
3	Feb-19							
4	Mar-20	231	0.06	0.77	162	73.5	5.07	1.42
5	Jul-20	234	0.2	0.91	231	105	4.77	1.39
6	Jan-21	138	0.09	0.28	112	85.7	2.44	0.94
7	Aug-21	120	0.09	0.82	238	85.9	2.3	1.05
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.29	0.48	0.31	0.29	0.19	0.90	0.23
Mann-Kendall Statistic (S):		-4	0	-2	5	5	3	1
Confidence Factor:		75.8%	39.3%	57.0%	76.5%	76.5%	64.0%	50.0%
Concentration Trend:		Stable	Stable	Stable	No Trend	No Trend	No Trend	No Trend



Notes:

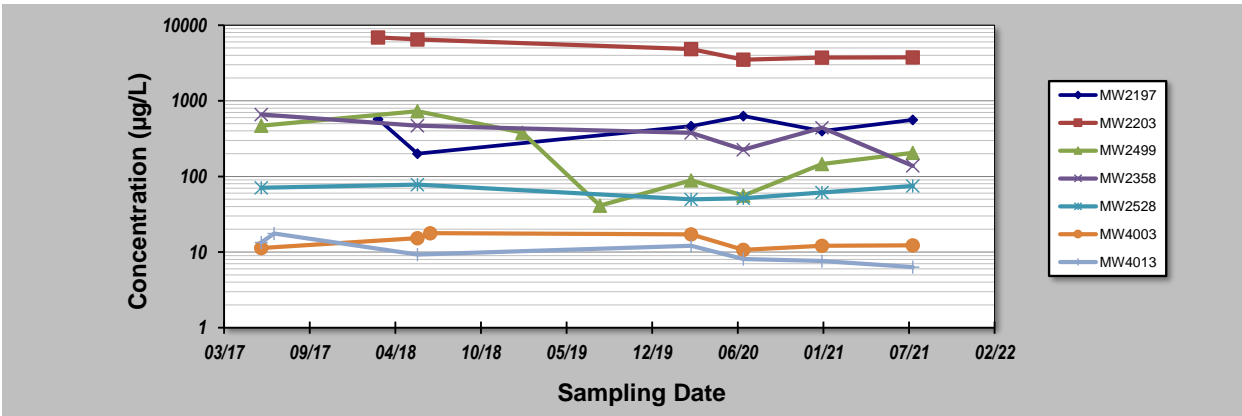
- At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
- Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
- Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.
GSI Environmental Inc., www.gsi-net.com

GSI MANN-KENDALL TOOLKIT for Constituent Trend Analysis

Evaluation Date: 8-Dec-21	Job ID: 60612561
Facility Name: RAAF Base Edinburgh	Constituent: PFOS+PFHxS (Q1)
Conducted By: [REDACTED]	Concentration Units: µg/L

Sampling Point ID:	MW2197	MW2203	MW2499	MW2358	MW2528	MW4003	MW4013
Sampling Event	Sampling Date						
	PFOS+PFHXS (Q1) CONCENTRATION (µg/L)						
1	Jun-17		469	660	71	11.3	13.4
2	Jul-17						17.6
3	Mar-18	570	6900				
4	Jun-18	200	6500	729	470	78	15.3
5	Jul-18					17.8	9.3
6	Nov-18						
7	Dec-18						
8	Feb-19			380			
9	Aug-19			41.2			
10	Nov-19						
11	Feb-20						
12	Mar-20	463	4840	88.6	376	49.8	17.2
13	Jul-20	630	3500	56	226	51.5	10.7
14	Jan-21	397	3730	146	442	61.4	12.1
15	Aug-21	562	3770	206	138	75	12.3
16							
17							
18							
19							
20							
Coefficient of Variation:	0.33	0.31	0.92	0.48	0.19	0.21	0.37
Mann-Kendall Statistic (S):	1	-9	-8	-11	1	-1	-17
Confidence Factor:	50.0%	93.2%	80.1%	97.2%	50.0%	50.0%	99.5%
Concentration Trend:	No Trend	Prob. Decreasing	Stable	Decreasing	No Trend	Stable	Decreasing



Notes:

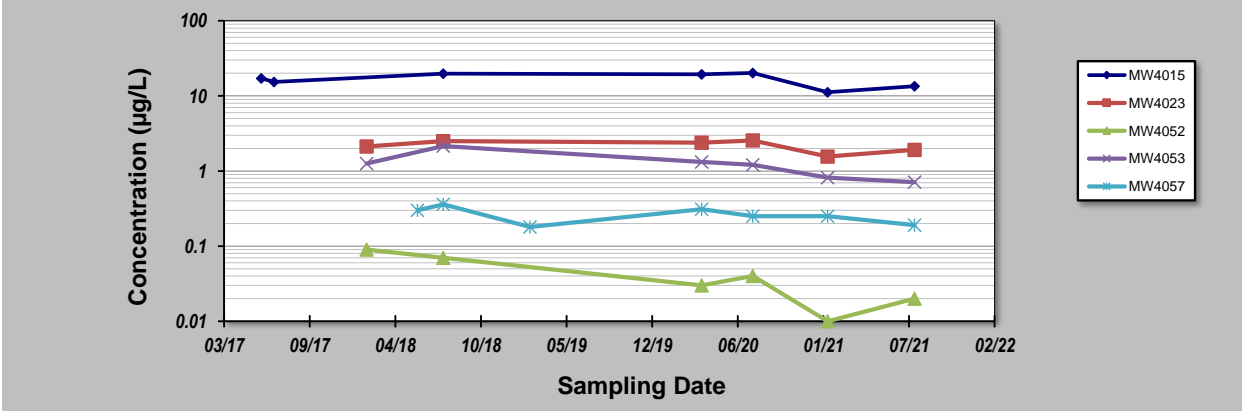
- At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
- Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
- Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.
GSI Environmental Inc., www.gsi-net.com

GSI MANN-KENDALL TOOLKIT for Constituent Trend Analysis

Evaluation Date: 8-Dec-21	Job ID: 60612561
Facility Name: RAAF Base Edinburgh	Constituent: PFOS+PFHxS (Q1)
Conducted By: [REDACTED]	Concentration Units: µg/L

Sampling Point ID:	MW4015	MW4023	MW4052	MW4053	MW4057		
Sampling Event	Sampling Date	PFOS+PFHXS (Q1) CONCENTRATION (µg/L)					
1	Jun-17	17.1					
2	Jul-17	15.3					
3	Feb-18		2.12	0.09	1.26		
4	Jun-18					0.3	
5	Jul-18	19.8	2.5	0.07	2.15	0.36	
6	Feb-19					0.18	
7	Mar-20	19.4	2.38	0.03	1.32	0.31	
8	Jul-20	20.2	2.55	0.04	1.21	0.25	
9	Jan-21	11.2	1.56	0.01	0.82	0.25	
10	Aug-21	13.5	1.92	0.02	0.71	0.19	
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
Coefficient of Variation:	0.23	0.18	0.71	0.41	0.25		
Mann-Kendall Statistic (S):	-3	-3	-11	-11	-8		
Confidence Factor:	64.0%	64.0%	97.2%	97.2%	84.5%		
Concentration Trend:	Stable	Stable	Decreasing	Decreasing	Stable		



- Notes:**
- At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
 - Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
 - Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

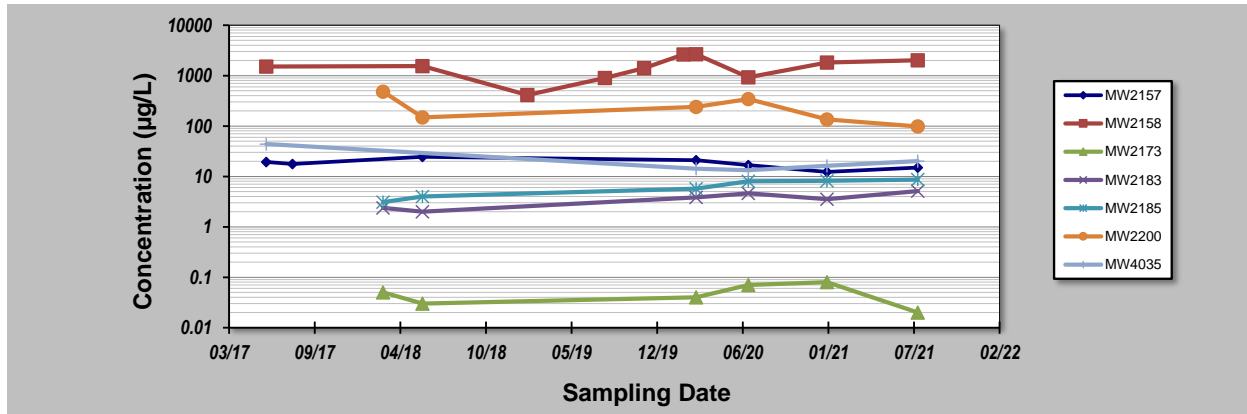
DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.
GSI Environmental Inc., www.gsi-net.com

GSI MANN-KENDALL TOOLKIT for Constituent Trend Analysis

Evaluation Date: 8-Dec-21	Job ID: 60612561
Facility Name: RAAF Base Edinburgh	Constituent: PFOS+PFHxS (Q2)
Conducted By: [REDACTED]	Concentration Units: µg/L

Sampling Point ID:	MW2157	MW2158	MW2173	MW2183	MW2185	MW2200	MW4035
--------------------	---------------	---------------	---------------	---------------	---------------	---------------	---------------

Sampling Event	Sampling Date	PFOS+PFHxS (Q2) CONCENTRATION (µg/L)						
1	Jun-17	19.3	1510					44
2	Aug-17	17.7						
3	Mar-18			0.05	2.38	3.1	480	
4	Jun-18	24.5	1540	0.03	2	4	148	
5	Feb-19		413					
6	Aug-19		898					
7	Nov-19		1410					
8	Feb-20		2620					
9	Mar-20	21.1	2650	0.04	3.84	5.73	241	14.3
10	Jul-20	16.7	924	0.07	4.63	8.05	343	13.3
11	Jan-21	12.3	1820	0.08	3.55	8.23	135	16.2
12	Aug-21	15	2020	0.02	5.13	8.68	98.1	20.1
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.22	0.46	0.48	0.34	0.38	0.61	0.59
Mann-Kendall Statistic (S):		-11	15	1	9	15	-9	0
Confidence Factor:		93.2%	89.2%	50.0%	93.2%	99.9%	93.2%	40.8%
Concentration Trend:		Prob. Decreasing	No Trend	No Trend	Prob. Increasing	Increasing	Prob. Decreasing	Stable



Notes:

- At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
- Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
- Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

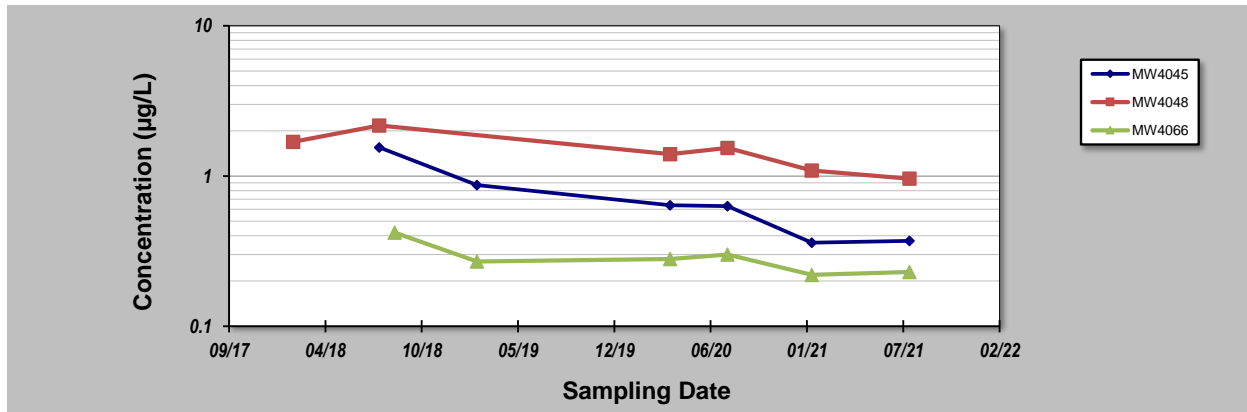
DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.
GSI Environmental Inc., www.gsi-net.com

GSI MANN-KENDALL TOOLKIT for Constituent Trend Analysis

Evaluation Date: 8-Dec-21	Job ID: 60612561
Facility Name: RAAF Base Edinburgh	Constituent: PFOS+PFHxS (Q2)
Conducted By: [REDACTED]	Concentration Units: µg/L

Sampling Point ID:	MW4045	MW4048	MW4066			
--------------------	---------------	---------------	---------------	--	--	--

Sampling Event	Sampling Date	PFOS+PFHXS (Q2) CONCENTRATION (µg/L)					
1	Feb-18		1.69				
2	Sep-18			0.42			
3	Jul-18	1.55	2.17				
4	Feb-19	0.87		0.27			
5	Mar-20	0.64	1.4	0.28			
6	Jul-20	0.63	1.54	0.3			
7	Jan-21	0.36	1.09	0.22			
8	Aug-21	0.37	0.96	0.23			
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
Coefficient of Variation:		0.60	0.30	0.25			
Mann-Kendall Statistic (S):		-13	-11	-7			
Confidence Factor:		99.2%	97.2%	86.4%			
Concentration Trend:		Decreasing	Decreasing	Stable			



Notes:

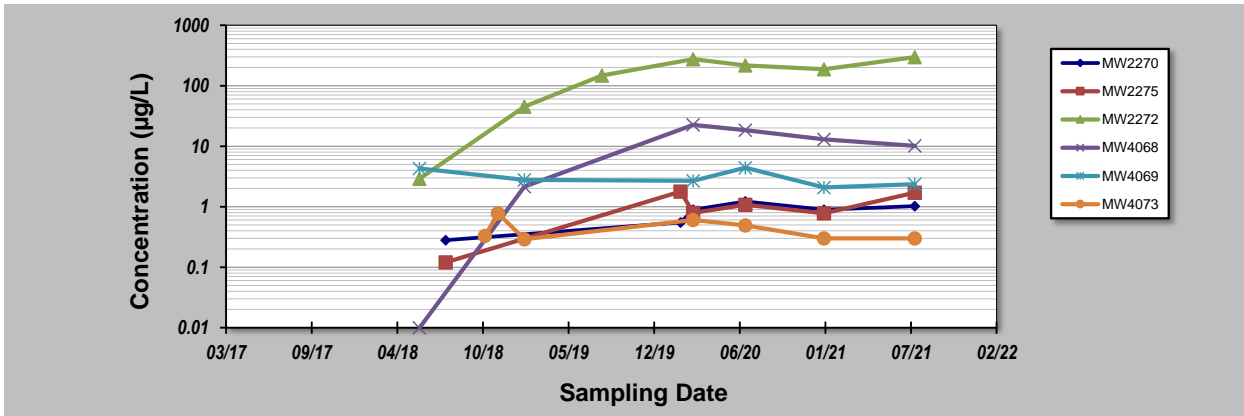
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.
GSI Environmental Inc., www.gsi-net.com

GSI MANN-KENDALL TOOLKIT for Constituent Trend Analysis

Evaluation Date: 8-Dec-21	Job ID: 60612561
Facility Name: RAAF Base Edinburgh	Constituent: PFOS+PFHxS (Q3)
Conducted By: [REDACTED]	Concentration Units: µg/L

Sampling Point ID:	MW2270	MW2275	MW2272	MW4068	MW4069	MW4073
Sampling Event	PFOS+PFHXS (Q3) CONCENTRATION (µg/L)					
1						
2						
3			2.9	0.01	4.3	
4	0.28	0.12				
5						0.33
6						0.78
7			45	2.14	2.77	0.29
8			147			
9						
10	0.55	1.78				
11	0.89	0.79	276	22.5	2.68	0.6
12	1.22	1.08	217	18.4	4.41	0.49
13	0.89	0.78	187	13	2.08	0.3
14	1.02	1.7	297	10.1	2.35	0.3
15						
16						
17						
18						
19						
20						
Coefficient of Variation:	0.42	0.60	0.66	0.80	0.32	0.43
Mann-Kendall Statistic (S):	10	3	15	3	-7	-6
Confidence Factor:	95.2%	64.0%	98.5%	64.0%	86.4%	76.4%
Concentration Trend:	Increasing	No Trend	Increasing	No Trend	Stable	Stable



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

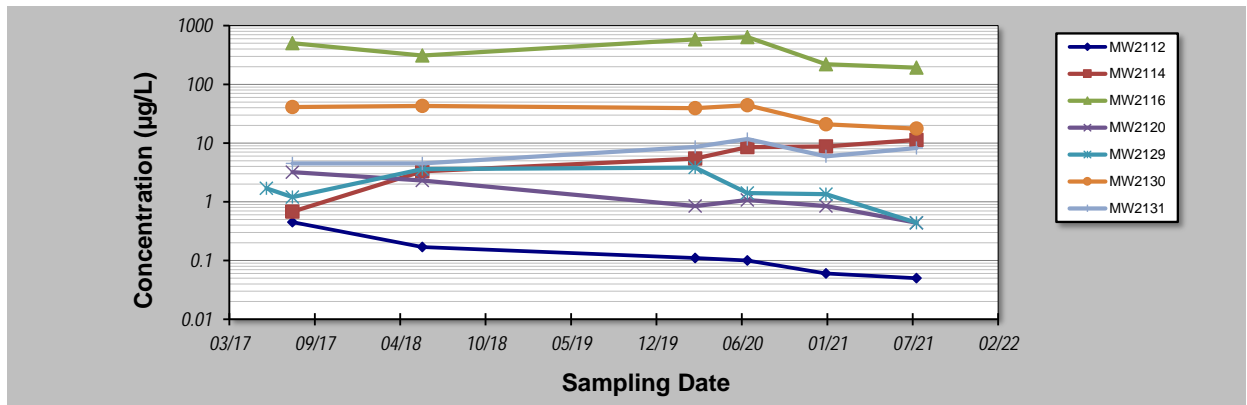
DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.
GSI Environmental Inc., www.gsi-net.com

GSI MANN-KENDALL TOOLKIT for Constituent Trend Analysis

Evaluation Date: **8-Dec-21** Job ID: **60612561**
 Facility Name: **RAAF Base Edinburgh** Constituent: **PFOA (Q1)**
 Conducted By: XXXXXXXXXX Concentration Units: **µg/L**

Sampling Point ID: **MW2112** **MW2114** **MW2116** **MW2120** **MW2129** **MW2130** **MW2131**

Sampling Event	Sampling Date	PFOA (Q1) CONCENTRATION (µg/L)						
1	Jun-17						1.7	
2	Aug-17	0.45	0.68	500	3.2	1.2	41	4.5
3	Jun-18	0.17	3.3	310	2.3	3.6	43	4.5
4	Mar-20	0.11	5.44	582	0.85	3.82	39.3	8.6
5	Jul-20	0.1	8.56	638	1.07	1.41	44.1	11.7
6	Jan-21	0.06	8.78	219	0.85	1.35	20.8	5.97
7	Aug-21	0.05	11.3	192	0.44	0.44	17.6	8.21
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.96	0.62	0.47	0.73	0.66	0.35	0.39
Mann-Kendall Statistic (S):		-15	15	-5	-12	-7	-7	6
Confidence Factor:		99.9%	99.9%	76.5%	98.2%	80.9%	86.4%	81.5%
Concentration Trend:		Decreasing	Increasing	Stable	Decreasing	Stable	Stable	No Trend



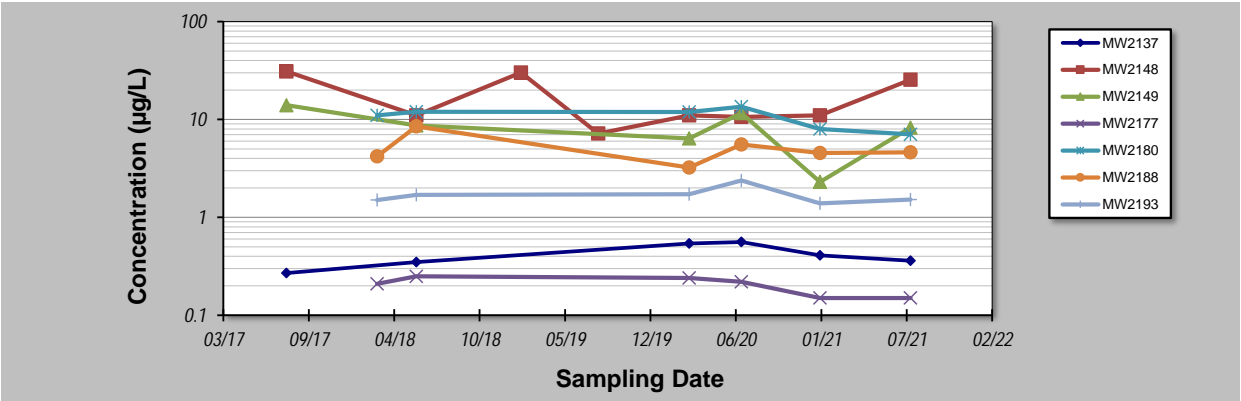
- Notes:**
- At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
 - Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
 - Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.
 GSI Environmental Inc., www.gsi-net.com

GSI MANN-KENDALL TOOLKIT for Constituent Trend Analysis

Evaluation Date: **8-Dec-21** Job ID: **60612561**
 Facility Name: **RAAF Base Edinburgh** Constituent: **PFOA (Q1)**
 Conducted By: XXXXXXXXXX Concentration Units: **µg/L**

Sampling Point ID:		MW2137	MW2148	MW2149	MW2177	MW2180	MW2188	MW2193
Sampling Event	Sampling Date	PFOA (Q1) CONCENTRATION (µg/L)						
1	Aug-17	0.27	31	14				
2	Mar-18				0.21	11	4.2	1.5
3	Jun-18	0.35	11	8.7	0.25	12	8.5	1.7
4	Feb-19		30.1					
5	Aug-19		7.18					
6	Nov-19							
7	Feb-20							
8	Mar-20	0.54	11	6.42	0.24	11.9	3.23	1.72
9	Jul-20	0.56	10.6	11.6	0.22	13.5	5.56	2.38
10	Jan-21	0.41	11	2.3	0.15	8.01	4.55	1.39
11	Aug-21	0.36	25.4	8.23	0.15	7.05	4.62	1.52
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.27	0.58	0.48	0.21	0.24	0.36	0.21
Mann-Kendall Statistic (S):		5	-5	-7	-8	-5	1	1
Confidence Factor:		76.5%	68.3%	86.4%	89.8%	76.5%	50.0%	50.0%
Concentration Trend:		No Trend	Stable	Stable	Stable	Stable	No Trend	No Trend



- Notes:**
- At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
 - Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
 - Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.

GSI Environmental Inc., www.gsi-net.com

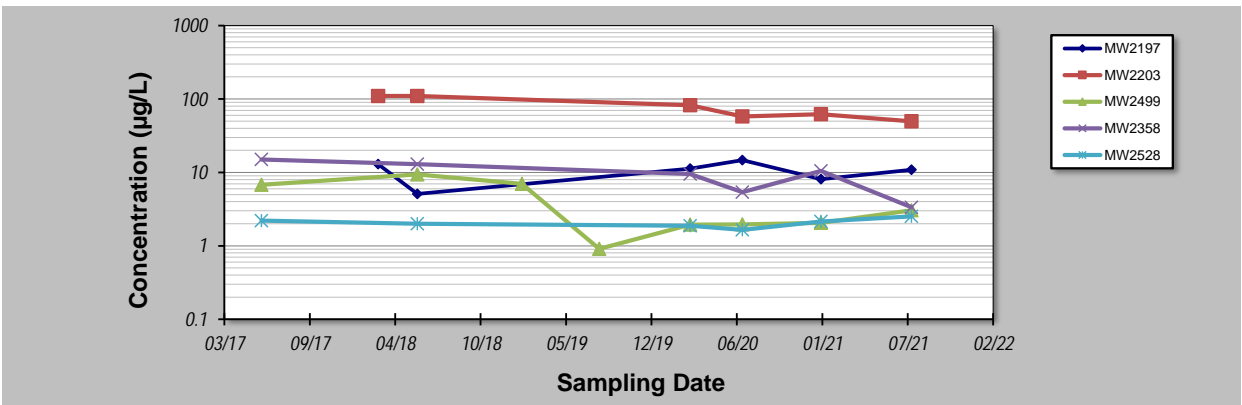
GSI MANN-KENDALL TOOLKIT for Constituent Trend Analysis

Evaluation Date: 8-Dec-21	Job ID: 60612561
Facility Name: RAAF Base Edinburgh	Constituent: PFOA (Q1)
Conducted By: XXXXXXXXXX	Concentration Units: µg/L

Sampling Point ID:	MW2197	MW2203	MW2499	MW2358	MW2528		
--------------------	---------------	---------------	---------------	---------------	---------------	--	--

Sampling Event	Sampling Date	PFOA (Q1) CONCENTRATION (µg/L)						
1	Jun-17			6.8	15	2.2		
2	Mar-18	13	110					
3	Jun-18	5.1	110	9.4	13	2		
4	Feb-19			7				
5	Aug-19			0.91				
6	Nov-19							
7	Feb-20							
8	Mar-20	11.3	82	1.94	9.49	1.88		
9	Jul-20	14.7	58	1.96	5.4	1.65		
10	Jan-21	8.11	62	2.06	10.5	2.15		
11	Aug-21	10.9	49.6	3.05	3.35	2.52		
12								
13								
14								
15								
16								
17								
18								
19								
20								

Coefficient of Variation:	0.33	0.34	0.76	0.47	0.14		
Mann-Kendall Statistic (S):	-1	-12	-4	-11	1		
Confidence Factor:	50.0%	98.2%	64.0%	97.2%	50.0%		
Concentration Trend:	Stable	Decreasing	Stable	Decreasing	No Trend		



- Notes:**
- At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
 - Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
 - Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.

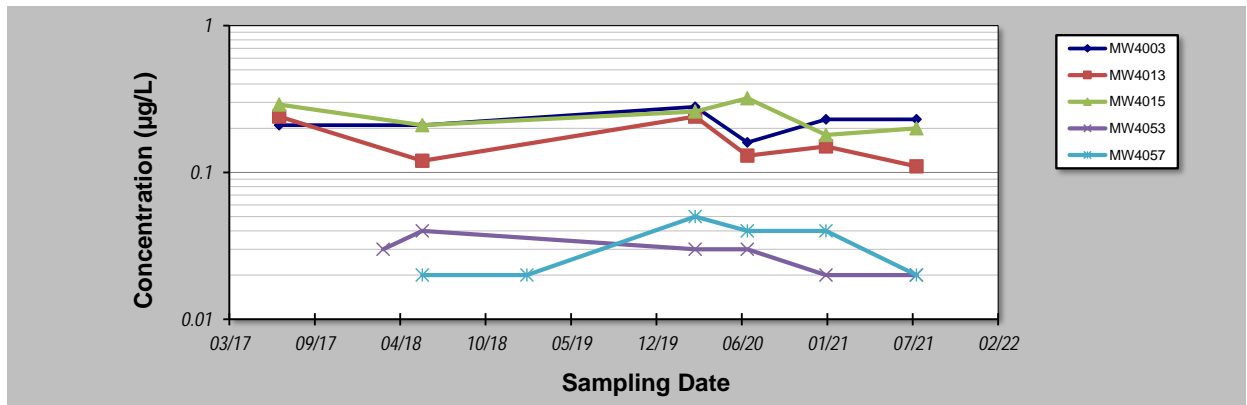
GSI Environmental Inc., www.gsi-net.com

GSI MANN-KENDALL TOOLKIT for Constituent Trend Analysis

Evaluation Date: 8-Dec-21	Job ID: 60612561
Facility Name: RAAF Base Edinburgh	Constituent: PFOA (Q1)
Conducted By: XXXXXXXXXX	Concentration Units: µg/L

Sampling Point ID:	MW4003	MW4013	MW4015	MW4053	MW4057	
--------------------	---------------	---------------	---------------	---------------	---------------	--

Sampling Event	Sampling Date	PFOA (Q1) CONCENTRATION (µg/L)						
		MW4003	MW4013	MW4015	MW4053	MW4057		
1	Jul-17	0.21	0.24	0.29				
2	Mar-18				0.03			
3	Jun-18	0.21	0.12	0.21	0.04	0.02		
4	Feb-19					0.02		
5	Aug-19							
6	Nov-19							
7	Feb-20							
8	Mar-20	0.28	0.24	0.26	0.03	0.05		
9	Jul-20	0.16	0.13	0.32	0.03	0.04		
10	Jan-21	0.23	0.15	0.18	0.02	0.04		
11	Aug-21	0.23	0.11	0.2	0.02	0.02		
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.18	0.36	0.23	0.27	0.42		
Mann-Kendall Statistic (S):		3	-6	-5	-9	1		
Confidence Factor:		64.0%	81.5%	76.5%	93.2%	50.0%		
Concentration Trend:		No Trend	Stable	Stable	Prob. Decreasing	No Trend		



- Notes:**
- At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
 - Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
 - Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.

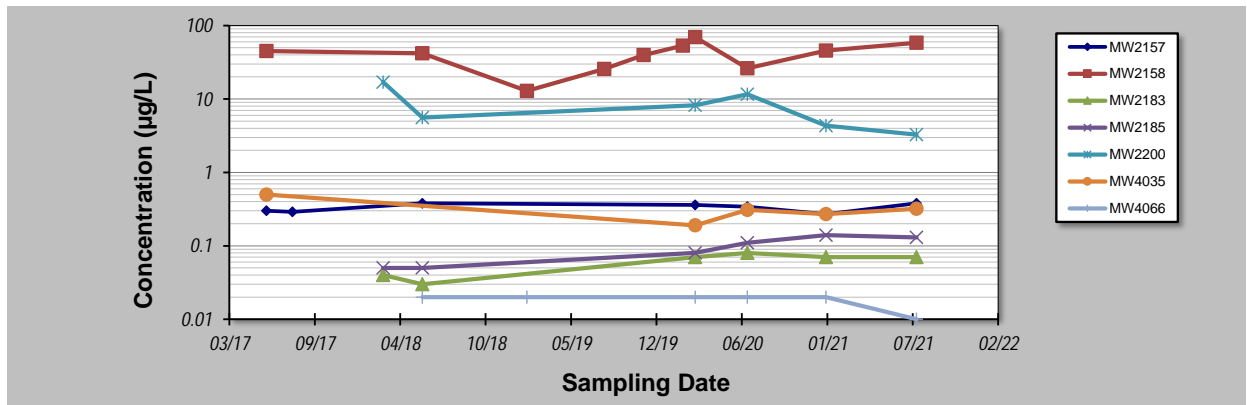
GSI Environmental Inc., www.gsi-net.com

GSI MANN-KENDALL TOOLKIT for Constituent Trend Analysis

Evaluation Date: **8-Dec-21** Job ID: **60612561**
 Facility Name: **RAAF Base Edinburgh** Constituent: **PFOA (Q2)**
 Conducted By: XXXXXXXXXX Concentration Units: **µg/L**

Sampling Point ID: **MW2157** **MW2158** **MW2183** **MW2185** **MW2200** **MW4035** **MW4066**

Sampling Event	Sampling Date	PFOA (Q2) CONCENTRATION (µg/L)						
1	Jun-17	0.3	45				0.5	
2	Aug-17	0.29						
3	Mar-18			0.04	0.05	17		
4	Jun-18	0.38	42	0.03	0.05	5.6		0.02
5	Nov-18							
6	Dec-18							
7	Feb-19		12.9					0.02
8	Aug-19		25.7					
9	Nov-19		39.6					
10	Feb-20		53.4					
11	Mar-20	0.36	69.4	0.07	0.08	8.23	0.19	0.02
12	Jul-20	0.34	26.2	0.08	0.11	11.6	0.31	0.02
13	Jan-21	0.27	45.6	0.07	0.14	4.34	0.27	0.02
14	Aug-21	0.38	58.2	0.07	0.13	3.27	0.32	0.01
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.14	0.40	0.33	0.42	0.62	0.36	0.22
Mann-Kendall Statistic (S):		2	15	6	12	-9	0	-5
Confidence Factor:		55.7%	89.2%	81.5%	98.2%	93.2%	40.8%	76.5%
Concentration Trend:		No Trend	No Trend	No Trend	Increasing	Prob. Decreasing	Stable	Stable



Notes:

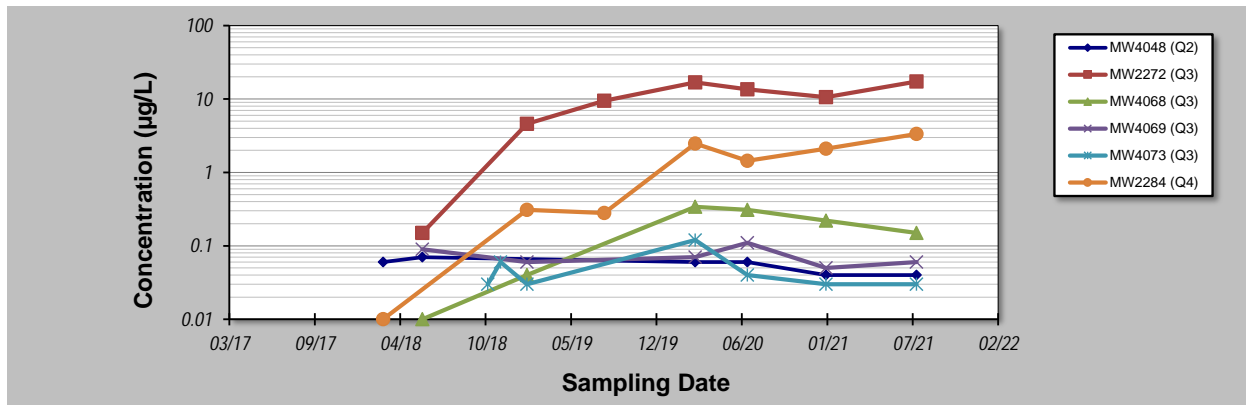
- At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
- Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
- Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.
 GSI Environmental Inc., www.gsi-net.com

GSI MANN-KENDALL TOOLKIT for Constituent Trend Analysis

Evaluation Date: 8-Dec-21	Job ID: 60612561
Facility Name: RAAF Base Edinburgh	Constituent: PFOA (Q2, Q3, Q4)
Conducted By: XXXXXXXXXX	Concentration Units: µg/L
Sampling Point ID: MW4048 (Q2) MW2272 (Q3) MW4068 (Q3) MW4069 (Q3) MW4073 (Q3) MW2284 (Q4)	

Sampling Event	Sampling Date	PFOA (Q2, Q3, Q4) CONCENTRATION (µg/L)					
1	Jun-17						
2	Mar-18	0.06					0.01
3	Jun-18	0.07	0.15	0.01	0.09		
4	Nov-18					0.03	
5	Dec-18					0.06	
6	Feb-19		4.6	0.04	0.06	0.03	0.31
7	Aug-19		9.44				0.28
8	Nov-19						
9	Feb-20						
10	Mar-20	0.06	16.8	0.34	0.07	0.12	2.48
11	Jul-20	0.06	13.5	0.31	0.11	0.04	1.44
12	Jan-21	0.04	10.6	0.22	0.05	0.03	2.11
13	Aug-21	0.04	17.3	0.15	0.06	0.03	3.34
14							
15							
16							
17							
18							
19							
20							
Coefficient of Variation:		0.22	0.61	0.77	0.31	0.69	0.90
Mann-Kendall Statistic (S):		-9	15	3	-4	-3	15
Confidence Factor:		93.2%	98.5%	64.0%	70.3%	61.4%	98.5%
Concentration Trend:		Prob. Decreasing	Increasing	No Trend	Stable	Stable	Increasing



Notes:

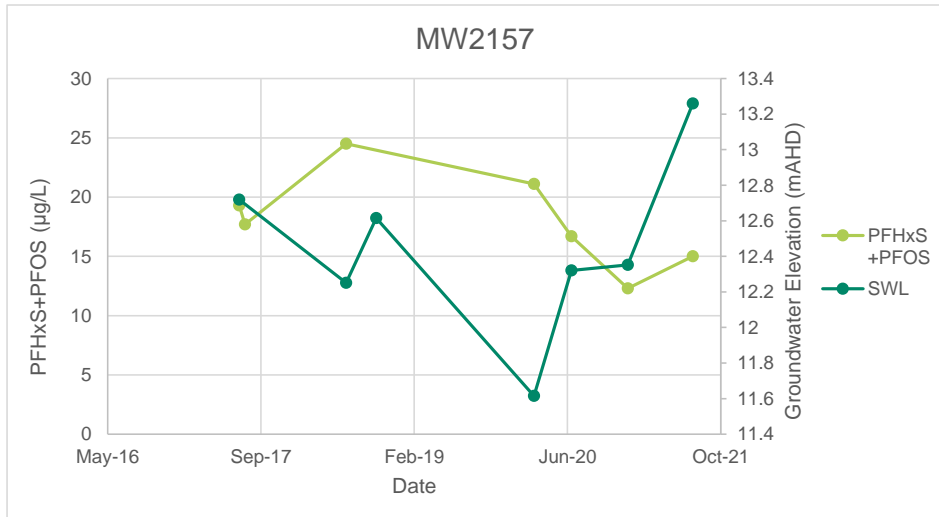
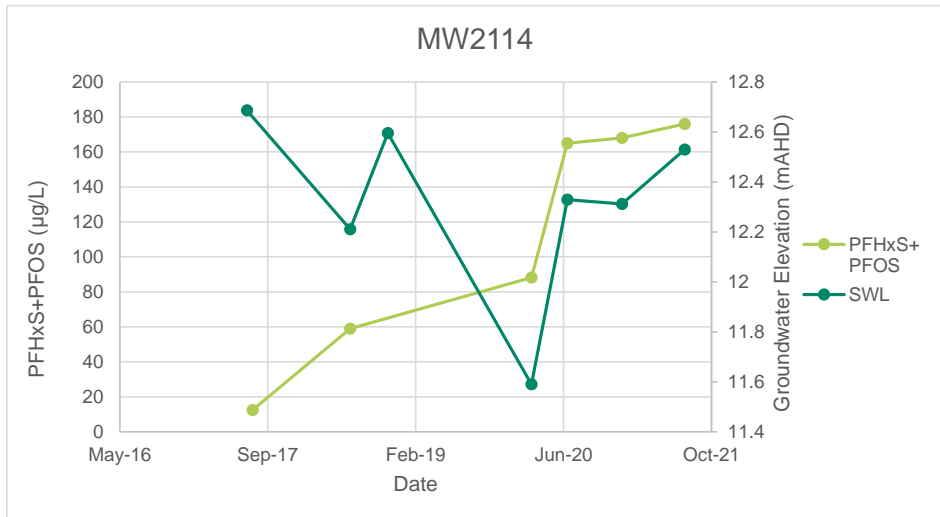
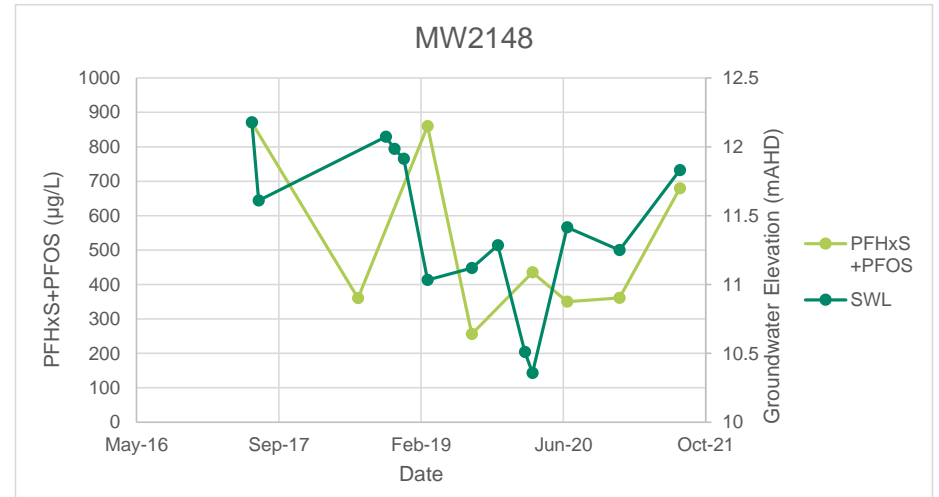
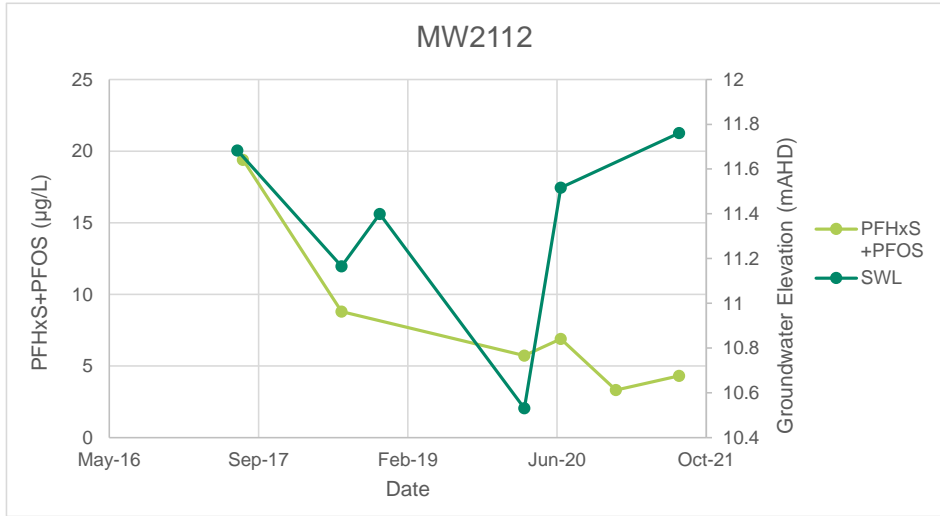
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.

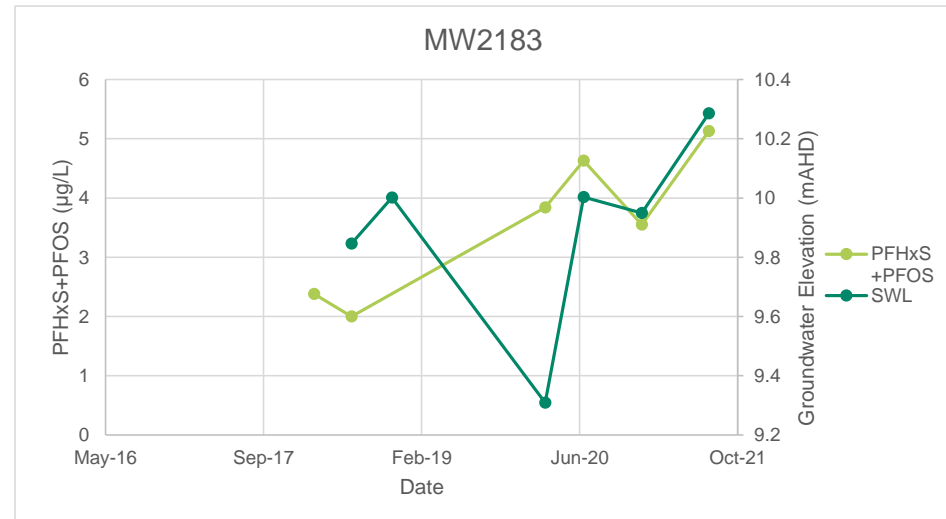
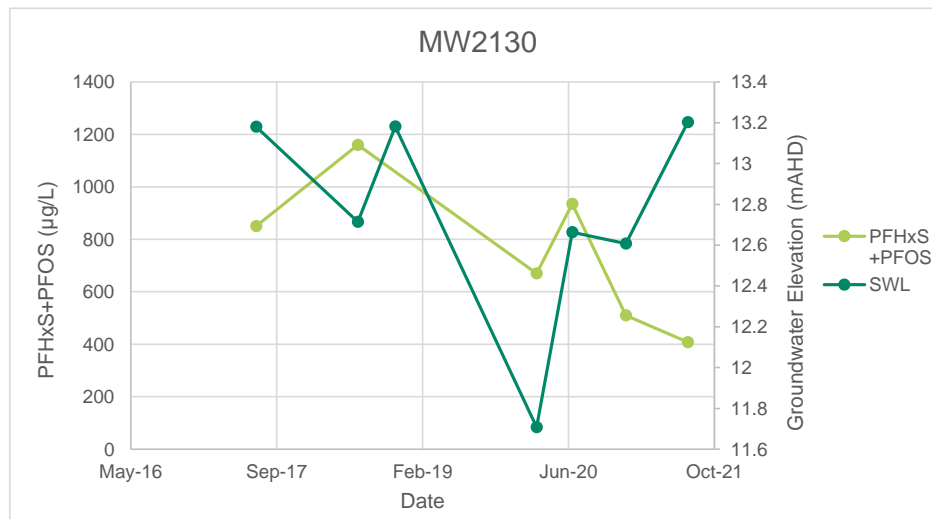
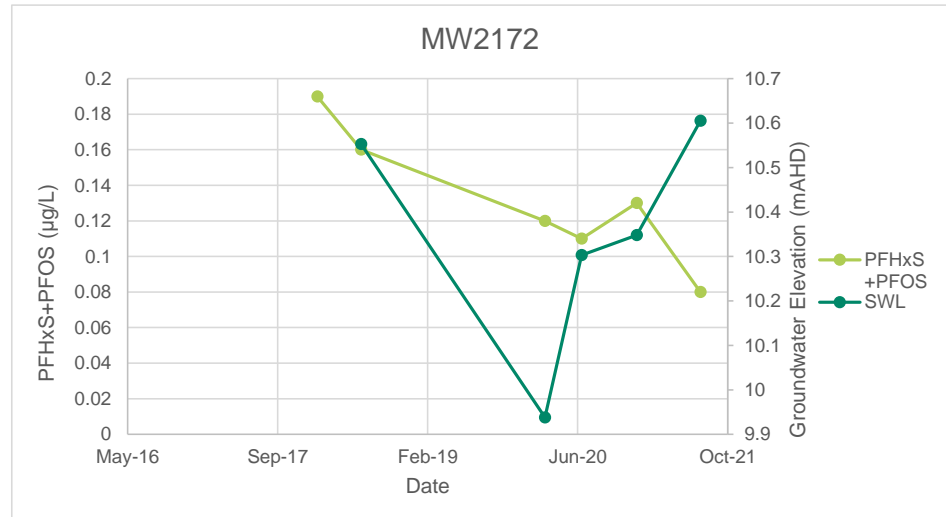
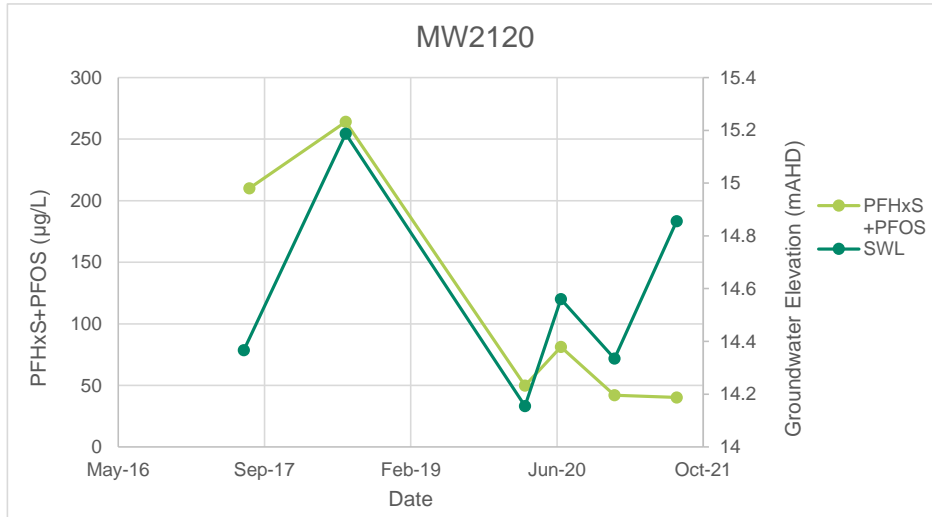
Appendix F

Groundwater Elevations and PFAS Concentrations

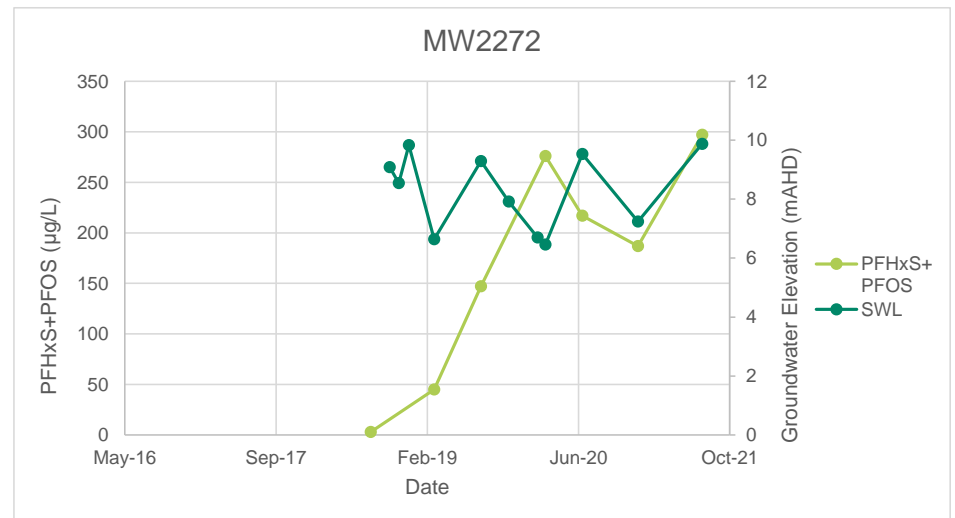
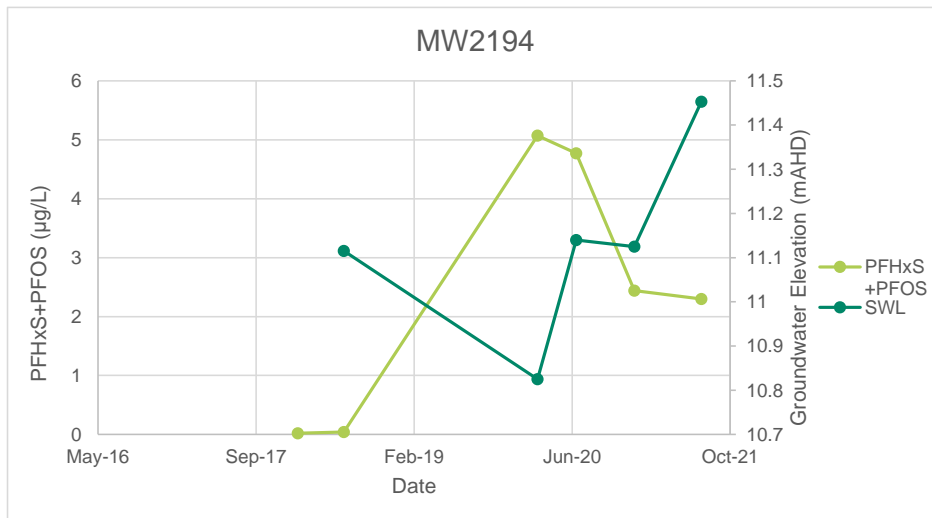
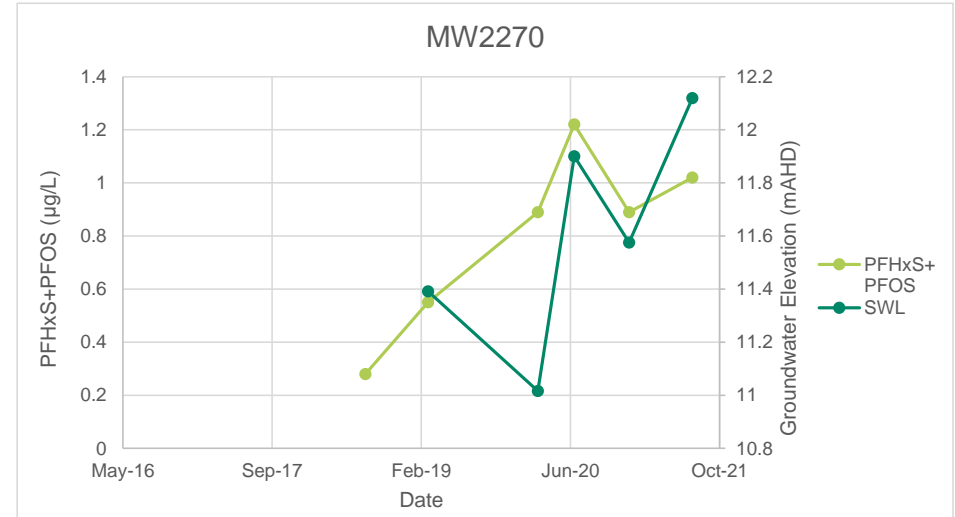
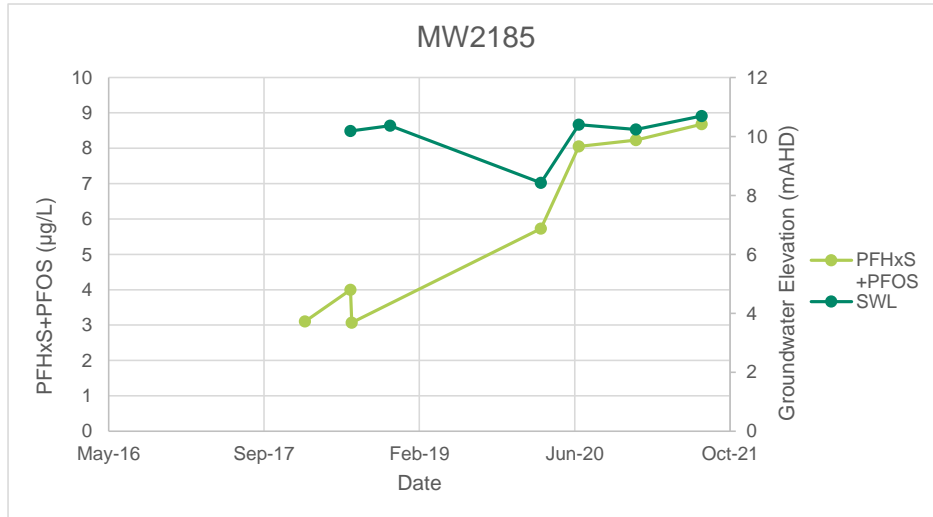
PFAS Concentrations and Groundwater Elevations



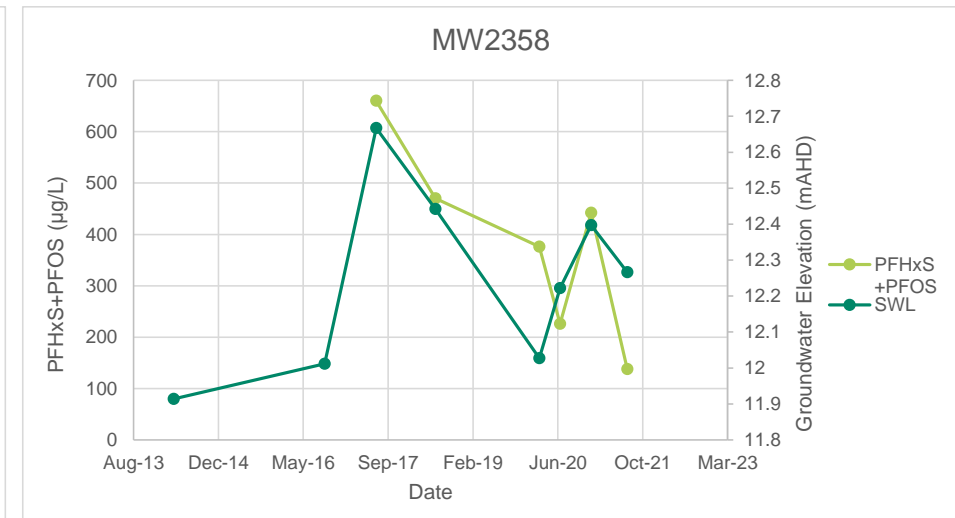
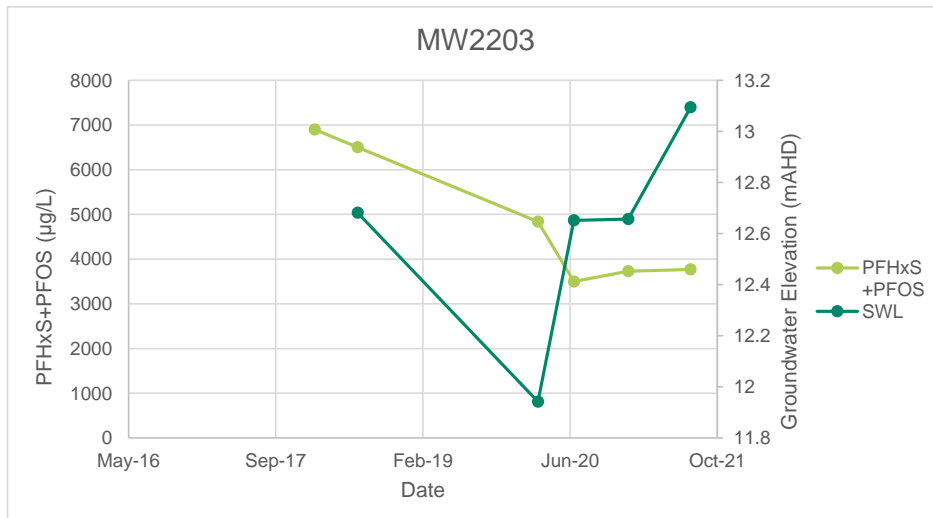
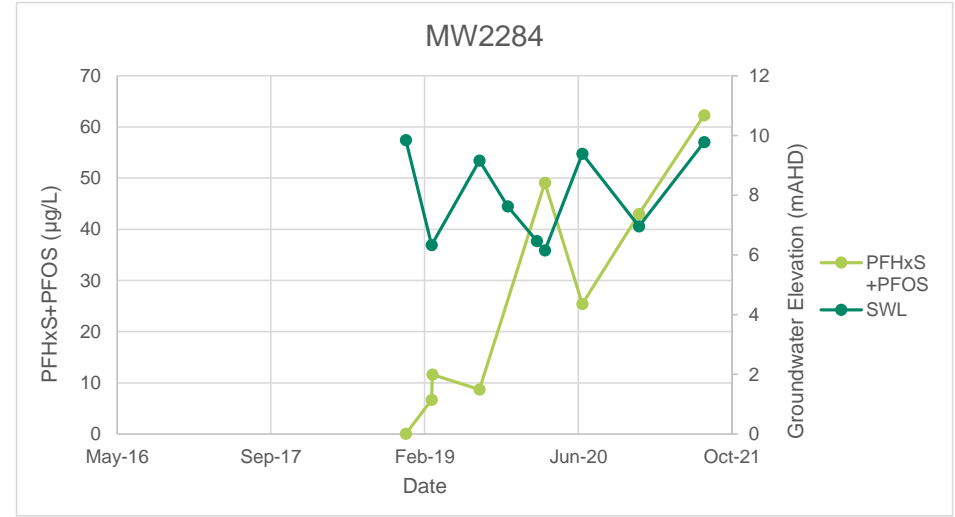
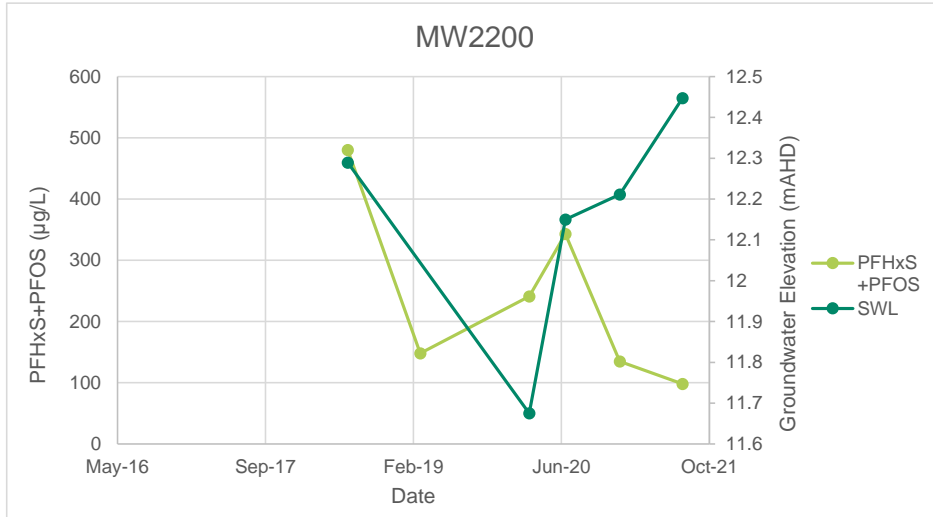
PFAS Concentrations and Groundwater Elevations



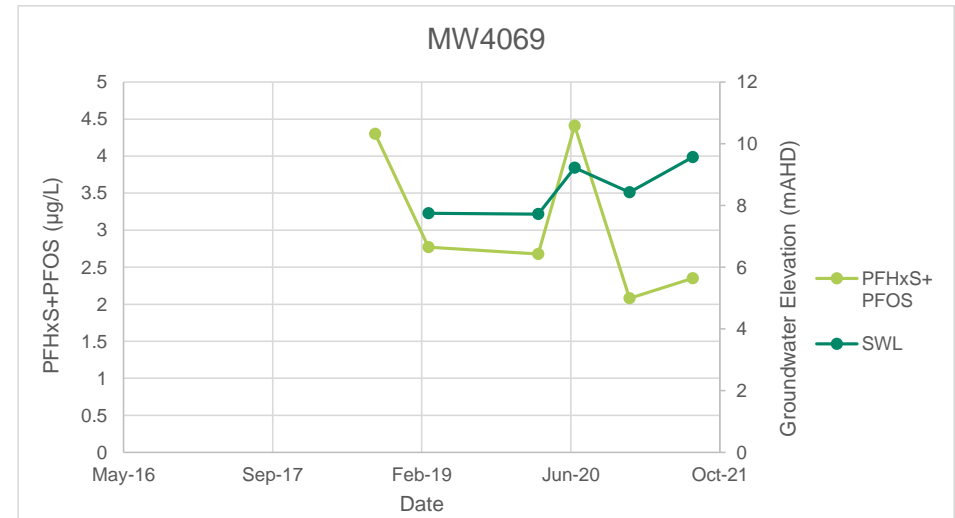
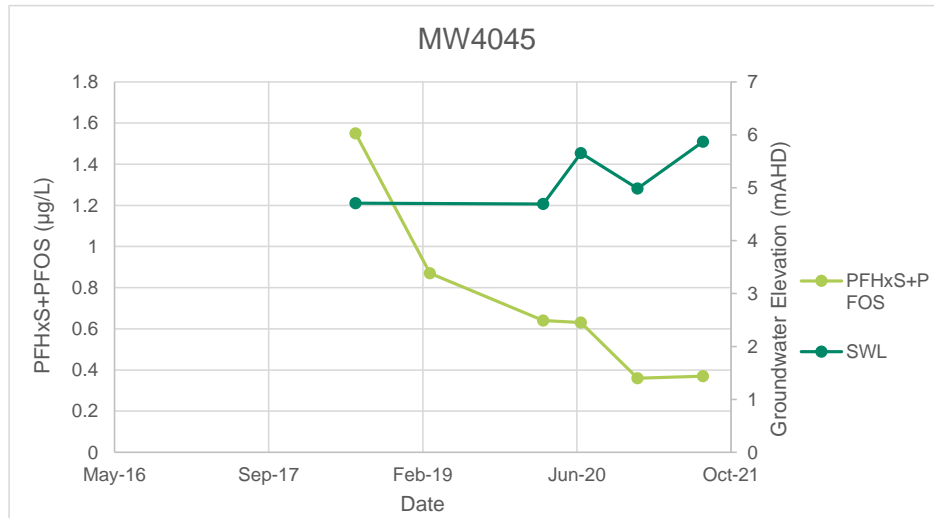
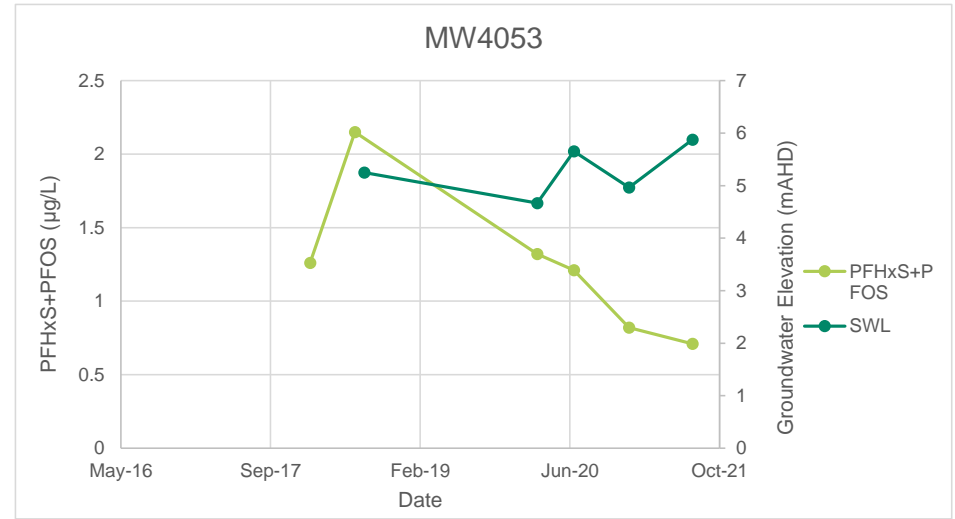
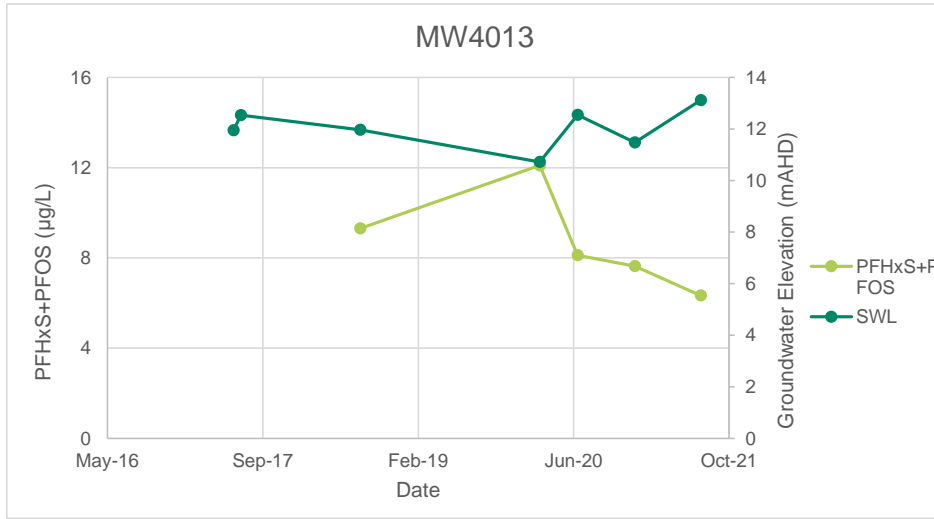
PFAS Concentrations and Groundwater Elevations



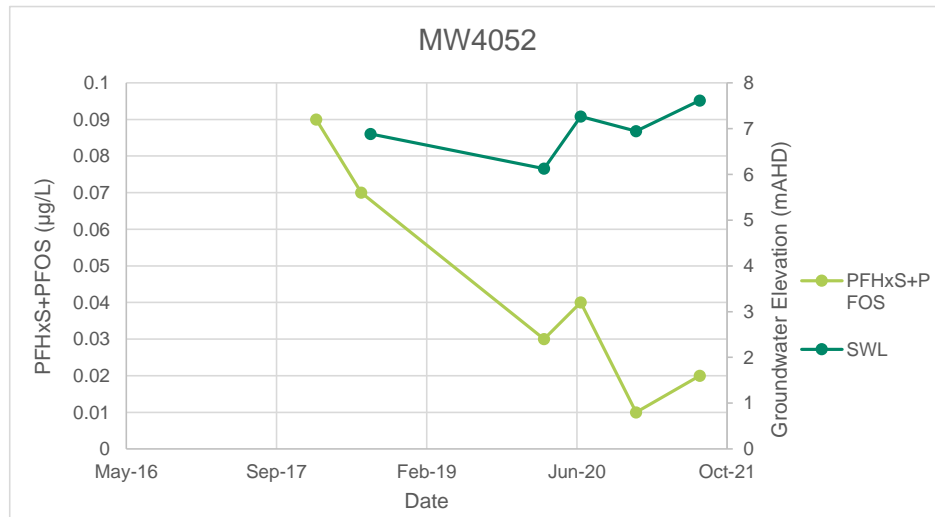
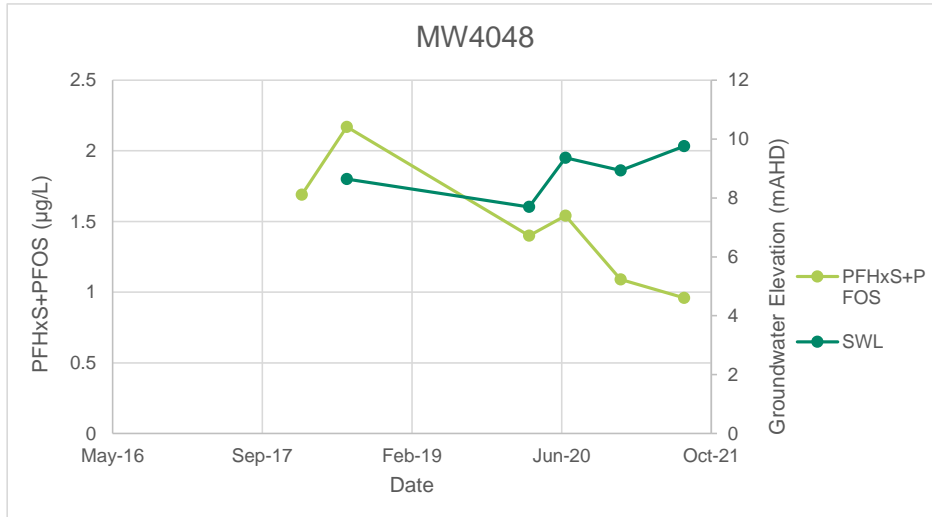
PFAS Concentrations and Groundwater Elevations



PFAS Concentrations and Groundwater Elevations



PFAS Concentrations and Groundwater Elevations



Appendix G

Registered Groundwater
Bore Search

Registered Groundwater Bore Search Results Summary

Registered bores in the vicinity (<2km) of MW4068

Approximate Distance from site (m)	Approximate Direction from site	ID	Obs Well No.	Class	Aquifer	Max drill depth (m)	Max drill date	Purpose	Latest status	Latest Status Date	SWL (m)	RSWL (m)	Water level date	TDS (mg/L)	pH	Yield (L/s)	Decimal longitude	Decimal latitude (negative)	Original Plan	Original Parcel	Original Title
0	WNW	6628-29832		WW		45	31/08/2018	INV									138.61257	-34.72623			
20	WNW	6628-29807		WW		22.5	5/07/2018	INV									138.61245	-34.72618			
30	NNW	6628-29101		WW		7	17/05/2017	INV			6.5		17/05/2017				138.61254	-34.72602			
70	WNW	6628-31246		WW		101	16/04/2021	IRR			12		16/04/2021	652		10	138.61182	-34.72605	F107269	A1	CT 6007 23
150	SSE	6628-3015		WW	Qpah	22.86			ABD								138.61298	-34.72761	F113429	A45	CT 5972 488
180	ESE	6628-29064		WW		8	18/05/2011	INV			4		18/05/2011				138.61436	-34.72702	D74704	Q301	CT 6010 430
240	NW	6628-22565		WW	Tomw(T1)	110	25/03/2005	IRR	OPR	28/02/2006	12.4	2.31	25/03/2005	684		15	138.61093	-34.72455	D81619	A24	CT 6052 405
300	SE	6628-3021		WW	Qpah	45.72	2/12/1947	IRR	OPR	3/01/1963				2175		7.58	138.61529	-34.72777	D74704	A302	CT 6010 431
310	E	6628-3050		WW	Qpah	51.21	3/02/1956	IRR	OPR	3/02/1956				6037			138.61597	-34.72587	D68816	Q153	CT 5962 340
330	S	6628-3011		WW	Qpah(Q1)	9.14	4/05/1948		NL		1.83	12.17	4/05/1948	644		1.26	138.61221	-34.7292	F113421	A37	CT 5942 459
330	WNW	6628-3033		WW	Qpah	60.96	4/02/1955	IRR	OPR	4/02/1955	1.52	12.48	4/02/1955	4704			138.60953	-34.72468			
340	S	6628-3016		WW	Qpah	12.19			NL								138.61318	-34.72925	F113420	A36	CT 5671 95
360	NW	6628-3034		WW	Qpah	55.78		DOMIRR, STK	OPR							0.63	138.60959	-34.72416	D124499	A1008	CT 6242 574
360	W	6628-29067		WW		7.3	14/05/2017	INV			5		14/05/2017				138.60867	-34.72678			
370	SW	6628-22234		WW	Tomw(T1)	108	11/03/2005	IRR	OPR	16/12/2007				664		15.15	138.6093	-34.72826	F113423	A39	CT 6007 24
380	NW	6628-3032		WW	Qpah(Q3)	36.58	15/09/1969	STK	OPR	15/09/1969	12.19	2.81	15/09/1969				138.60928	-34.72413	D124499	A1008	CT 6242 574
390	ENE	6628-29099		WW		7	30/05/2017	INV			5		30/05/2017				138.61638	-34.72457	D68816	Q153	CT 5962 340
390	ENE	6628-29813		WW		23.5	22/06/2018	ENV									138.61636	-34.72454	D68816	Q153	CT 5962 340
400	SSW	6628-14418		WW	Tomw(T1)	110	21/04/1989	IRR	BKF	10/10/2000				644	8.1	12	138.61101	-34.72962	F113422	A38	CT 5844 100
410	S	6628-3013		WW	Qpah	7.62			NL								138.61196	-34.72989	F113421	A37	CT 5942 459
420	ESE	6628-29808		WW		30	6/07/2018	INV									138.61664	-34.72798			
420	SSE	6628-3014		WW	Qpah	13.72	6/06/1962	IRRSTK	ABD	8/05/1969							138.61385	-34.7299	D74704	A302	CT 6010 431
430	WSW	6628-22932		WW	Tomw(T1)	114	26/04/2007							717		12.5	138.60804	-34.72711	F4977	A2	CT 5401 201
450	NNW	6628-29068	ADE090	WW		8	20/05/2017	INV			4		20/05/2017				138.61134	-34.7223			
450	SW	6628-3018		WW	Tomw(T1)	114.3	1/01/1966	IRR	BKF	2/11/2016				688	8.4	18.94	138.60976	-34.72958	F107269	A1	CT 6007 23
460	SSW	6628-15214		WW	Tomw(T1)	110	18/01/1990	IRR	OPR	18/01/1990				1423	7.3	12	138.61063	-34.73007	F113422	A38	CT 5844 100
460	SW	6628-20489		WW	Tomw(T1)	109	10/10/2000	IRR	OPR	6/09/2005	15	-1.78	10/10/2000	649		14	138.60961	-34.72958	F107269	A1	CT 6007 23
460	WSW	6628-17292	ADE141	WW	Tomw(T1)	99.5	10/07/1995	IRR	OPR	16/12/2007				686	7.6	15	138.60795	-34.7279	D74180	A19	CT 5994 359
470	SW	6628-3010		WW	Tomw(T1)	111.86	20/01/1942	IRR	OPR	16/12/2007	5.18	7.12	13/08/1968	669	7.4	1.89	138.60861	-34.72898	F113423	A39	CT 6007 24
510	S	6628-3019		WW	Tomw(T1)		2/05/1968	IRR	OPR	7/01/1987				674	7.4		138.6126	-34.73085	D41854	A154	CT 5267 328
520	NNE	6628-29095		WW		7.5	22/05/2017	INV									138.61466	-34.72188	D87531	A3001	CT 6114 320
530	ESE	6628-29065		WW		7.5	20/05/2017	INV			4		20/05/2017				138.61773	-34.72848			
530	NNE	6628-29790		WW		21	13/04/2018	INV									138.61455	-34.72176	D87531	A3001	CT 6114 320
540	WSW	6628-27242		WW	Tomw(T1)	108	3/04/2014	IRR	OPR	2/12/2014	16		3/04/2014	681		15	138.6075	-34.72873	D74180	A22	CT 5994 360
550	W	6628-11194		WW	Tomw(T1)	102	1/01/1972	IRR	BKF	1/08/2006				801	7.8		138.6066	-34.727	D74180	A19	CT 5994 359
560	S	6628-3017		WW	Tomw(T1)	117.65	31/01/1961	IRR	OPR	7/01/1987				651	7.5	7.58	138.61308	-34.7313	D74704	A302	CT 6010 431
590	SSW	6628-27636		WW	Tomw(T1)	111	2/10/2014				11		2/10/2014	651		8	138.61051	-34.73124	F18920	A1	CT 5473 653
600	NNE	6628-29069		WW		7.5	23/05/2017	INV			5		23/05/2017				138.61401	-34.721	D87531	A3001	CT 6114 320
600	NNE	6628-29102		WW		16	4/07/2017	INV			7		4/07/2017				138.61399	-34.72097	D87531	A3001	CT 6114 320
610	S	6628-3012		WW	Qpah	18.29		IRRSTK	NL								138.6131	-34.73171	D74704	A302	CT 6010 431
610	S	6628-29063		WW		9.5	17/05/2017	INV									138.61267	-34.73177			
610	S	6628-29891		WW		19.5	2/03/2018	INV									138.61267	-34.73177			
610	WSW	6628-3031		WW	Tomw(T1)	106.68	15/11/1963	IRR	OPR	24/07/1986	10.06	2.94	4/04/1967	697	7.9	10.1	138.60612	-34.7274	F113424	A40	CT 5598 411
620	S	6628-23161		WW	Tomw(T1)	112	17/10/2007				12.5	0.84	17/10/2007	629		10	138.61171	-34.7318	F18920	A2	CT 5473 899
620	SE	6628-25229		WW	Qpah	10	17/05/2007	INV			4.4		17/05/2007				138.61793	-34.72965			
620	WSW	6628-3029		WW	Tomw(T1)	106.68	1/01/1967	IRR	BKF	18/11/2012				759	7.5	12.63	138.60631	-34.7283	F114414	A53	CT 5820 3
630	SW	6628-20327		WW	Tomw(T1)	107	25/08/2000	OBS	OPR	25/08/2000	8.78	3.51	22/09/2021	693	7.6		138.60714	-34.72968			
640	SW	6628-30767		WW	Tomw(T1)	108	4/03/2020				18.1		4/03/2020	684		8	138.6076	-34.73031	F114404	A43	CT 5348 305

Approximate Distance from site (m)	Approximate Direction from site	ID	Obs Well No.	Class	Aquifer	Max drill depth (m)	Max drill date	Purpose	Latest status	Latest Status Date	SWL (m)	RSWL (m)	Water level date	TDS (mg/L)	pH	Yield (L/s)	Decimal longitude	Decimal latitude (negative)	Original Plan	Original Parcel	Original Title
670	N	6628-29094		WW		8	19/05/2017	INV			6		19/05/2017				138.61258	-34.72022			
690	E	6628-22739		WW	Qpah	6.5	10/02/2003	INV	DRY	10/02/2003			10/02/2003				138.62009	-34.72532	D87531	A3001	CT 6114 320
690	N	6628-29096		WW		5.5	22/05/2017	INV			3.5		22/05/2017				138.61319	-34.72006	D87531	A3001	CT 6114 320
700	NNE	6628-29795		WW		20	2/04/2018	INV									138.61515	-34.72033	D87531	A3001	CT 6114 320
720	E	6628-3049		WW	Qpah	12.19	8/12/1967		ABD	8/12/1967				5675		4.42	138.62054	-34.72633	D87531	A3001	CT 6114 320
720	WSW	6628-29655		WW		8.5	16/03/2018	INV									138.60493	-34.72765			
740	SE	6628-17923		WW	Tomw(T1)	112	14/04/1996	IRR	OPR	14/10/2002				594	7.5	12	138.61803	-34.73119	D119715	A214	CT 6216 501
740	SSE	6628-25230		WW	Qpah	8	18/05/2007	INV			5.2		18/05/2007				138.61682	-34.73199	D87853	A501	CT 6085 986
740	WSW	6628-3027		WW	Qpac(Q4)	76.2	17/04/1967	IRR	BKF	24/07/2003				1032	8	3.79	138.60508	-34.72878	D76463	A10	CT 6008 879
790	E	6628-29103		WW		18.5	23/06/2017	INV									138.62123	-34.72651	D87531	A3001	CT 6114 320
790	ENE	6628-22740		WW	Qpah	6.9	10/02/2003	INV	DRY	10/02/2003			10/02/2003				138.61984	-34.72235	D87531	A3001	CT 6114 320
790	SSE	6628-3023		WW	Qpah	22.86	3/10/1968	IRR	OPR	25/10/1968				2925	6.8	12.63	138.61549	-34.73294	F113402	A18	CT 5559 155
810	WSW	6628-27640		WW			8/10/2009		BKF	8/10/2009							138.60509	-34.73019	F114410	A49	CT 5566 144
820	N	6628-29640		WW		6.3	24/01/2018	INV									138.61199	-34.71885	F114109	A2	CT 5870 504
830	ESE	6628-10976		WW	Qpah	36	30/03/1979	OBS	OPR	30/03/1979				2909	8.1		138.6206	-34.72979	D93257	A135	CT 6133 134
830	ESE	6628-16470	ADE103	WW	Qpah	36	30/03/1979	OBS	OPR	30/03/1979				4175	12		138.6206	-34.72979	D93257	A135	CT 6133 134
830	N	6628-29847		WW		18	12/02/2018	INV									138.61197	-34.71883	F114109	A2	CT 5870 504
840	N	6628-30050		WW		39	19/10/2018	INV									138.6119	-34.71875	F114109	A2	CT 5870 504
840	N	6628-30055		WW		57	25/01/2019	INV									138.61189	-34.71867	F114109	A2	CT 5870 504
850	ESE	6628-29313		WW		8	13/02/2018	INV									138.62081	-34.72988	D93257	A503	CT 6133 136
860	S	6628-3007		WW	Tomw(T1)	112.78	4/02/1966	IRR	OPR	7/01/1987	12.19	1.81	19/04/1967	677	7.4	15.15	138.61224	-34.73401	D40394	A106	CT 5222 260
870	SE	6628-3020		WW	Tomw(T1)	114.3	17/02/1953	DOMIRR, OBS	OPR	25/09/1998				605	8.3	9.47	138.61874	-34.73225	D87853	A52	CT 6085 954
870	SE	6628-25231	ADE061	WW	Qpah	8	18/05/2007	INV									138.61933	-34.73181			
870	SSW	6628-3008		WW					NL	6/06/1962							138.60877	-34.73341	F18920	A1	CT 5473 653
870	W	6628-3030		WW	Tomw(T1)	111.25	17/02/1963	IRR	OPR	5/04/1967	8.23	4.77	13/04/1964	770	7.6	18.94	138.60309	-34.72538	D22683	A12	CT 5281 168
880	NNE	6628-29072		WW		7.5	22/05/2017	INV			5.5		22/05/2017				138.61654	-34.71901	D87531	A3001	CT 6114 320
880	SW	6628-3028		WW	Tomw(T1)	109.73	25/02/1967	IRR	BKF	19/07/2007				624	7.5	12.63	138.60505	-34.73123	F114403	A42	CT 5991 483
900	E	6628-21321		WW	Tomw(T2)	178	23/06/2003	MON	OPR	23/06/2003	5.26	10.44	22/09/2021	1658		20	138.62239	-34.72709	D87531	A3001	CT 6114 320
900	E	6628-22741		WW	Qpah	6	10/02/2003	INV	DRY	10/02/2003			10/02/2003				138.62245	-34.72652	D87531	A3001	CT 6114 320
920	SE	6628-3022		WW	Qpah	30.48	2/01/1969	IRR	OPR	22/07/1986				2227	7.9	7.58	138.6194	-34.73239	D87853	A11	CT 6085 913
930	E	6628-29066		WW		8	19/05/2017	INV			5.5		19/05/2017				138.62261	-34.72763			
940	N	6628-27293		WW	Qpah	8.5	30/05/2014	INV			2.1		30/05/2014				138.61111	-34.7179	F114109	A2	CT 5870 504
960	SE	6628-29312		WW		8	13/02/2018	INV									138.61927	-34.73299			
960	SW	6628-29314		WW		8.5	8/02/2018	INV									138.60497	-34.73215			
960	SW	6628-29677		WW		8.5	8/02/2018	INV									138.60496	-34.73214			
970	E	6628-21325		WW	Tomw(T2)	180	26/06/2003	MAROBS	OPR	25/05/2017	17	-0.06	26/06/2003	1714		20	138.62318	-34.72686	D71564	A802	CT 6039 539
970	N	6628-3035		WW	Qpah	30.48		STK	ABD								138.61206	-34.71755	F114109	A2	CT 5870 504
1030	SW	6628-3009		WW	Tomw(T1)	106	29/08/2006	IRR	RHB	29/08/2006	4	9	29/08/2006	660	7.4	6.31	138.60549	-34.73351	F7982	A4	CT 5502 879
1070	NE	6628-29073		WW		9	14/06/2017	INV			7		14/06/2017				138.62018	-34.71887	D87531	A3001	CT 6114 320
1070	NNW	6628-3036		WW	Tomw(T1)	78.33	30/04/1959	IRR	OPR	7/01/1987				757	7.4		138.60728	-34.71764	D123735	A4312	CT 6237 928
1080	SSE	6628-14253		WW	Tomw(T1)	112.7	6/02/1989	IRR	OPR	6/02/1989				1714	7.2	18.94	138.61737	-34.73511	D65599	A8	CT 5929 681
1090	E	6628-21322		WW	Tomw(T1)	111	29/05/2003	IRRMON	OPR	29/05/2003	28.35	-12.64	22/09/2021	994		15	138.62449	-34.72676	D68390	A6	CT 6055 304
1100	E	6628-21324		WW	Tomw(T2)	178	19/06/2003	MAR	OPR	1/09/2016	20	-2.58	19/06/2003	1720		20	138.62459	-34.72685	D71564	A802	CT 6039 539
1120	NNE	6628-29789		WW		21	28/05/2018	INV									138.61676	-34.71673	D87531	A3001	CT 6114 320
1120	SW	6628-3026		WW			6/06/1962		ABD	6/06/1962							138.60282	-34.73242	D70756	A1	CT 5966 689
1130	ESE	6628-26270		WW	Qpah	13	29/11/2011	INV			4.76	11.73	29/11/2011				138.62439	-34.72933	D75400	A133	CT 5997 894
1130	NNE	6628-29668		WW		5.5	10/01/2018	INV								0	138.61683	-34.71673	D87531	A3001	CT 6114 320
1130	SSW	6628-29062		WW		9.5	17/05/2017	INV			4		17/05/2017				138.60852	-34.73584	F6648	A2	CT 5069 787
1130	SSW	6628-29829		WW		21	5/03/2018	INV									138.60851	-34.73582	F6648	A2	CT 5069 787

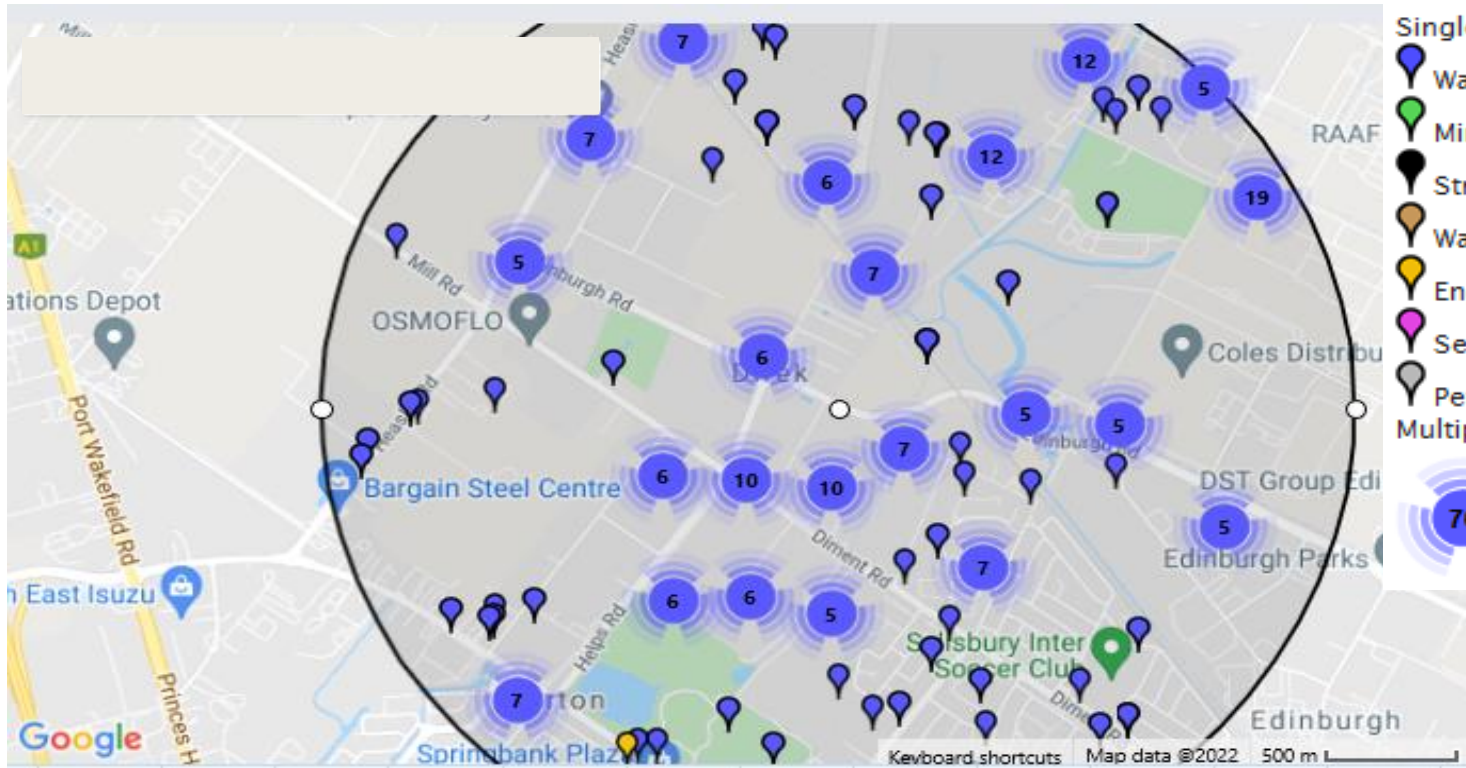
Approximate Distance from site (m)	Approximate Direction from site	ID	Obs Well No.	Class	Aquifer	Max drill depth (m)	Max drill date	Purpose	Latest status	Latest Status Date	SWL (m)	RSWL (m)	Water level date	TDS (mg/L)	pH	Yield (L/s)	Decimal longitude	Decimal latitude (negative)	Original Plan	Original Parcel	Original Title
1130	SSW	6628-29835		WW		36	24/08/2018	INV									138.60848	-34.73585	F6648	A2	CT 5069 787
1130	SSW	6628-30045		WW		9.5	18/05/2017	INV									138.60852	-34.73584	F6648	A2	CT 5069 787
1130	SSW	6628-30054		WW		48	1/02/2019	INV									138.60857	-34.73583	F6648	A2	CT 5069 787
1140	NNE	6628-3051		WW	Qpah	9.75		IRRSTK	OPR		6.1	9.9				6.32	138.61559	-34.71625	D87531	A3001	CT 6114 320
1140	NNE	6628-29106		WW		6.5	25/05/2017	INV			2.5		25/05/2017				138.61863	-34.71724	D87531	A3001	CT 6114 320
1140	NNE	6628-29788		WW		24	28/05/2018	INV									138.61859	-34.71726	D87531	A3001	CT 6114 320
1150	NNW	6628-29639		WW		10	25/01/2018	INV									138.60959	-34.7162	F114109	A2	CT 5870 504
1150	NNW	6628-29848		WW		20	15/02/2018	INV									138.60961	-34.71622	F114109	A2	CT 5870 504
1170	N	6628-29107		WW		8	3/06/2017	INV			5		3/06/2017				138.61329	-34.71568	F114109	A2	CT 5870 504
1170	SSE	6628-3006		WW	Tomw(T1)	117.35	4/04/1967	IRR	OPR	24/02/1992	45.72	-30.72	4/04/1967	659	7.6	11.37	138.61656	-34.73632	D89745	A403	CT 6097 591
1220	E	6628-21323		WW	Tomw(T2)	183	6/06/2003	MAR	OPR	1/09/2016	13.5	4.33	6/06/2003	1631		20	138.62593	-34.7275	D71564	A802	CT 6039 539
1220	S	6628-19416		WW	Tomw(T1)	104	2/12/1998	IRR	OPR	1/12/2003				320		15	138.61265	-34.73728	D41289	A105	CT 5255 338
1230	NNE	6628-27300		WW	Qpah	9	30/05/2014	INV			4.1		30/05/2014				138.6191	-34.71653	D87531	A3001	CT 6114 320
1260	NNE	6628-29811		WW		42	24/07/2018	ENV									138.61958	-34.71644	D87531	A3001	CT 6114 320
1270	NNE	6628-29105		WW		9.5	7/06/2017	INV			6		7/06/2017				138.61962	-34.71638	D87531	A3001	CT 6114 320
1270	NNE	6628-29114	ADE129	WW		17	6/07/2017	INV			4		6/07/2017				138.61964	-34.71639	D87531	A3001	CT 6114 320
1270	NNE	6628-30053		WW		61	13/12/2018	INV									138.61969	-34.71644	D87531	A3001	CT 6114 320
1290	NE	6628-29672		WW		8.7	5/02/2018	INV									138.62404	-34.71941	D87531	A3001	CT 6114 320
1290	NE	6628-30046		WW		24	29/03/2018	INV									138.624	-34.71939	D87531	A3001	CT 6114 320
1320	W	6628-3772		WW	Qpah(Q2)	19.2	4/02/1955	STK	UKN	23/03/1999	1.52	9.48	12/09/1963	8797			138.5981	-34.72646	D86975	A78	CT 6093 631
1340	NNE	6628-29641		WW		7	9/01/2018	INV					9/01/2018				138.61768	-34.71495	D87531	A3001	CT 6114 320
1340	NNW	6628-29638		WW		6	25/01/2018	INV									138.60828	-34.71469	F114109	A2	CT 5870 504
1340	SW	6628-20392		WW	Tomw(T2)	180	20/11/2000	MAR	OPR	21/01/2004	12.4	-1.38	20/11/2000	2745		20	138.6027	-34.73522	F6648	A2	CT 5069 787
1350	NE	6628-29649		WW		8.6	7/02/2018	INV									138.62109	-34.71625	D87531	A3001	CT 6114 320
1360	S	6628-30052		WW		39	14/12/2018	INV									138.6152	-34.73834			
1370	S	6628-27223		WW	Qpah	40	23/02/2014				5.7		23/02/2014			7.58	138.61403	-34.73854	F19261	A2	CT 5329 813
1370	SSE	6628-29316		WW		9.5	12/02/2018	INV									138.61859	-34.73753	D10067	A300	CT 5484 235
1370	WNW	6628-29876		WW		98	25/10/2018				16		25/10/2018	776		12	138.5992	-34.72072	D68938	A119	CT 5958 974
1390	WNW	6628-3803		WW	Tomw(T1)	83.82	16/03/1953	DOMIRR, OBS	OPR	29/03/2005	15.85	-2.85	13/08/1963	740	7.8	16.42	138.59902	-34.72052	D68938	A119	CT 5958 974
1400	WNW	6628-3804		WW	Qpah(Q4)	54.86	1/01/1959	IRRSTK	BKF	19/06/2006	5.49	6.51		540		0.63	138.59917	-34.72011	D80770	A303	CT 6042 640
1410	ESE	6628-29317		WW		8.5	15/02/2018	INV									138.62773	-34.72887			
1420	ESE	6628-26272		WW	Qpah	14	28/11/2011	INV			5.86	11.9	28/11/2011				138.62676	-34.73146	D121093	A1	CT 6224 168
1420	NNE	6628-29109		WW		9	2/06/2017	INV			7		2/06/2017				138.61906	-34.71465	D87531	A3001	CT 6114 320
1420	NNE	6628-29787		WW		23.5	25/05/2018	INV									138.619	-34.71463	D87531	A3001	CT 6114 320
1420	WNW	6628-29654		WW		8.5	30/01/2018	INV									138.59766	-34.72279			
1420	WNW	6628-29806		WW		24	4/07/2018	INV									138.59761	-34.72285			
1430	SSW	6628-2990		WW	Qpah	51.82	11/01/1957	IRR	OPR	11/01/1957				626			138.60802	-34.73856	F114399	A38	CT 5452 11
1480	SW	6628-28289		WW	Tomw(T1)	106	15/01/2016				14		15/01/2016	713		5	138.59973	-34.73443	F35781	A10	CT 5257 481
1490	N	6628-3044		WW	Qpah	42.67		DOM	ABD	1/06/1962							138.60996	-34.71296	F114109	A2	CT 5870 504
1500	NW	6628-29651		WW		8	5/04/2018	INV									138.60049	-34.7171	D92443	A501	CT 6121 647
1510	NNW	6628-30056		WW		57	14/11/2018	INV									138.60712	-34.71341	F114109	A2	CT 5870 504
1510	NW	6628-28229		WW	Qpah	8	29/02/2016	INV			4.8		29/02/2016				138.60198	-34.7158	D92443	A30	CT 6121 636
1520	NNW	6628-29831		WW		46.5	30/07/2018	INV									138.60704	-34.71332	F114109	A2	CT 5870 504
1520	NNW	6628-29841		WW		10	12/02/2018	INV									138.60702	-34.7133	F114109	A2	CT 5870 504
1520	NW	6628-28232		WW	Qpah	8	8/03/2016	INV			4.7		8/03/2016				138.60247	-34.71541	D92443	A30	CT 6121 636
1530	NW	6628-28230		WW	Qpah	9.5	29/02/2016	INV			4.4		29/02/2016				138.60187	-34.71566	D92443	A30	CT 6121 636
1530	NW	6628-28231		WW	Qpah	8	29/02/2016	INV			4.1		29/02/2016				138.60205	-34.7155	D92443	A30	CT 6121 636
1540	N	6628-3045		WW	Tomw(T1)	96.93	8/11/1946		ABD	1/06/1962				1670		1.01	138.60942	-34.71258	F114109	A2	CT 5870 504
1540	S	6628-2989		WW	Qpah	9.75	9/04/1969	STK	OPR	10/04/1969				4676	7		138.6099	-34.73994	F114398	A37	CT 5809 576

Approximate Distance from site (m)	Approximate Direction from site	ID	Obs Well No.	Class	Aquifer	Max drill depth (m)	Max drill date	Purpose	Latest status	Latest Status Date	SWL (m)	RSWL (m)	Water level date	TDS (mg/L)	pH	Yield (L/s)	Decimal longitude	Decimal latitude (negative)	Original Plan	Original Parcel	Original Title
1540	SSE	6628-3005		WW					NL	19/09/2005							138.61885	-34.73911	D10071	A176	CT 5532 539
1550	SE	6628-3024		WW	Qpah	45.72	10/06/1969	OBS	OPR	5/12/1975	2.83	15.31	5/12/1975	187	7.5	0.38	138.62284	-34.73744			
1550	SE	6628-21788		WW	Tomw(T1)	108.4	8/05/2004	IRR	OPQ	27/01/2005	4.8	14.08	8/05/2004	665	8.1	12	138.62533	-34.73553	D9593	A1	CT 6201 293
1560	SW	6628-21916	ADE035	WW	Qpah	4.5	3/04/2004	MON			3	7.61	3/04/2004				138.60116	-34.73671	F6648	A2	CT 5069 787
1570	ESE	6628-21260		WW	Qpah	30	28/05/2003	INV			10	9.12	28/05/2003	1968		1.5	138.62892	-34.73068	D75400	A101	CT 5997 880
1580	NE	6628-24575		WW	Qpah	12.6	25/03/2009		BKF	26/03/2009							138.62435	-34.71581	D87531	A3001	CT 6114 320
1590	NE	6628-29800		WW		25.5	11/06/2018	INV									138.62388	-34.71538	D87531	A3001	CT 6114 320
1610	NNE	6628-29642		WW		6.5	9/01/2018	INV					9/01/2018				138.62045	-34.71321	D87531	A3001	CT 6114 320
1620	SW	6628-18545		WW	Tomw(T2)	180	8/06/1997	MAR	OPR	26/08/2004	0.83	9.32	31/05/2000	253	8.1	15	138.60146	-34.73762	F6648	A2	CT 5069 787
1620	SW	6628-29061		WW		8.4	18/05/2017	INV									138.6011	-34.73738	F6648	A2	CT 5069 787
1620	SW	6628-31037		WW		6	2/12/2020	INV									138.59809	-34.73461	D22169	A102	CT 5207 465
1620	W	6628-3773		WW	Tomw(T1)	102.72	1/01/1959	DOMIRR	OPR	1/01/1959				684	8.5	12.63	138.59483	-34.72688	D87669	A80	CT 6092 483
1640	ESE	6628-26271		WW	Qpah	14	28/11/2011	INV			6.77	12.23	28/11/2011				138.62909	-34.73222	D121093	A1	CT 6224 168
1640	S	6628-29836		WW		24	14/08/2018	INV									138.61556	-34.74082	D10430	A286	CT 5740 212
1650	S	6628-29828		WW		10	18/05/2018	INV									138.61544	-34.74094			
1650	SSW	6628-29658		WW		10	4/04/2018	INV									138.60494	-34.73976	F6648	A2	CT 5069 787
1650	SW	6628-31036		WW		6	2/12/2020	INV									138.59806	-34.73503	D22169	A102	CT 5207 465
1650	W	6628-3774		WW	Tomw(T1)	80.16	1/01/1960	OBS	OPR	1/01/1960	5.64	5.62	1/08/1960				138.59449	-34.72694	D87669	A80	CT 6092 483
1660	SW	6628-21917		WW	Qpah	4.5	3/04/2004	MON			3	7.15	3/04/2004				138.60087	-34.73773			
1670	NNW	6628-29849		WW		20	16/02/2018	INV									138.60598	-34.71219	F114109	A2	CT 5870 504
1670	SW	6628-31035		WW		10	1/12/2020	INV									138.59781	-34.73515	D22169	A102	CT 5207 465
1680	NNW	6628-29070		WW		6	31/05/2017	INV			3.5		31/05/2017				138.60596	-34.71217	F114109	A2	CT 5870 504
1680	NNW	6628-29071		WW		7.2	17/05/2017	INV			5		17/05/2017				138.60279	-34.71341			
1680	NNW	6628-29817		WW		23.5	22/06/2018	ENV									138.60277	-34.71345			
1690	SSW	6628-2987		WW	Tomw(T1)	105.16	1/01/1930	OBSSTK	NL	25/09/1998	2.3	9.09	19/08/1976	1250	8.2	0.25	138.60413	-34.7398	D11291	A38	CT 5409 500
1700	NE	6628-29648		WW		6.1	5/02/2018	INV									138.62622	-34.71574	D87531	A3001	CT 6114 320
1710	ESE	6628-26269		WW	Qpah	14	29/11/2011	INV			7.47	11.95	29/11/2011				138.63065	-34.73056	D75400	A103	CT 5997 882
1710	NE	6628-29108		WW		7.5	1/06/2017	INV			5.5		1/06/2017				138.62529	-34.71488	D87531	A3001	CT 6114 320
1720	NE	6628-28175		WW	Qpah	9	31/01/2015				4		31/01/2015				138.62354	-34.71364	D87531	A3001	CT 6114 320
1720	SSW	6628-17040		ENG		3.8											138.60371	-34.73995			
1730	SSE	6628-22767		WW	Tomw(T1)	120	14/12/2006	IRR	OPR	21/12/2014	15	0.75	14/12/2006	660		15	138.61839	-34.74106	D10070	A322	CT 5483 909
1740	SW	6628-3770		WW	Qpah(Q4)	51.82	1/01/1920		ABD		0	10	9/03/1948	622	7.9		138.59847	-34.73677	D65671	A801	CT 5926 823
1750	ENE	6628-27301		WW	Qpah	18	9/06/2014	INV									138.62949	-34.71874	D81278	A20	CT 6052 298
1750	NE	6628-28176		WW	Qpah	6.5	31/07/2015				6		31/07/2015				138.62362	-34.71329	D87531	A3001	CT 6114 320
1750	SSW	6628-29657		WW		10	18/01/2018	INV									138.60766	-34.74148	F114398	A37	CT 5809 576
1750	SW	6628-3769		WW	Qpah	51.82		IRRSTK	ABD					434	1.26		138.59895	-34.73735			
1760	NE	6628-28174		WW	Qpah	9.2	31/07/2015				4.2		31/07/2015				138.62373	-34.71325	D87531	A3001	CT 6114 320
1760	S	6628-2992		WW	Qpah	7.92			NL						0.38		138.61262	-34.74211	D11167	A1255	CT 5192 364
1760	SE	6628-3002		WW	Qpah	45.72	11/09/1950	IRR	OPR	10/07/1969				2610	6.5	5.05	138.62368	-34.73921	F126160	A4	CT 6024 138
1770	NE	6628-28173		WW	Qpah	7.5	31/08/2015				4.5		31/08/2015				138.62306	-34.71283	D87531	A3001	CT 6114 320
1770	NNE	6628-29785		WW		22	23/05/2018	INV									138.61871	-34.71112	D87531	A3001	CT 6114 320
1770	WSW	6628-29678		WW		6.5	16/03/2018	INV									138.59626	-34.73482			
1780	NNE	6628-29643		WW		10	10/01/2018	INV									138.61876	-34.71108	D87531	A3001	CT 6114 320
1790	SE	6628-27461		WW	Qpah	10			BKF	30/09/2014	7.8		30/09/2014				138.62492	-34.73882	D95820	A3	CT 6159 620
1790	SE	6628-27466		WW	Qpah	10	30/09/2014		BKF		7.8		30/09/2014				138.62492	-34.73882	D95820	A3	CT 6159 620
1800	ENE	6628-30491		WW		7.5	5/09/2019	INV					5/09/2019				138.63035	-34.71906	D81278	A20	CT 6052 298
1810	SW	6628-3771		WW	Tomw(T1)	109.73	1/06/1966	IRRSTK			15.4	-5.4	18/03/2004	701		0.51	138.59858	-34.73782			
1820	ENE	6628-25849		WW	Qpah	14	18/05/2011	MON			5.2		18/05/2011				138.6299	-34.71806	D87531	A3001	CT 6114 320
1820	WNW	6628-15531	ADE102	WW	Tomw(T1)	97	19/10/1990	IRR	OPR	19/10/1990				1025		30	138.59392	-34.72055	D19001	A15	CT 6123 582

Approximate Distance from site (m)	Approximate Direction from site	ID	Obs Well No.	Class	Aquifer	Max drill depth (m)	Max drill date	Purpose	Latest status	Latest Status Date	SWL (m)	RSWL (m)	Water level date	TDS (mg/L)	pH	Yield (L/s)	Decimal longitude	Decimal latitude (negative)	Original Plan	Original Parcel	Original Title
1830	ENE	6628-30490		WW		7.5	4/09/2019	INV					4/09/2019				138.63076	-34.71931	D81278	A20	CT 6052 298
1830	W	6628-29676		WW		8.5	14/03/2018	INV									138.59269	-34.72838			
1840	NE	6628-29074		WW		10	23/05/2017	INV			7		23/05/2017				138.62643	-34.71416	D87531	A3001	CT 6114 320
1840	NE	6628-29786	ADE100	WW		18	30/03/2018	INV									138.62451	-34.71291	D87531	A3001	CT 6114 320
1850	ENE	6628-17227		WW	Qpah	11	12/04/1995	INV	BKF	17/09/2009							138.63033	-34.71811	D87531	A3001	CT 6114 320
1860	ENE	6628-25430	ADE175	WW	Qpah	12	7/12/2009	INV									138.63058	-34.71839	D87531	A3001	CT 6114 320
1860	ENE	6628-25848		WW		14	18/05/2011	INV			5.5		18/05/2011				138.63028	-34.7179	D87531	A3001	CT 6114 320
1860	NNE	6628-29644		WW		6	10/01/2018	INV									138.62241	-34.71157	D87531	A3001	CT 6114 320
1860	W	6628-3775		WW	Qpah(Q1)	3.66	4/02/1955	STK	UKN	26/05/1999				5985			138.59249	-34.72892	F5418	A8	CT 5798 87
1870	ENE	6628-17229	ADE101	WW	Qpah	13.5	19/04/1995	INV									138.63008	-34.71739	D87531	A3001	CT 6114 320
1870	N	6628-29637		WW		7.7	26/02/2018	INV									138.60864	-34.70971	F114109	A2	CT 5870 504
1880	ENE	6628-17228		WW	Qpah	9.2	12/04/1995	INV									138.62976	-34.71684	D87531	A3001	CT 6114 320
1880	ENE	6628-17230		WW	Qpah	13.5	19/04/1995	INV									138.63029	-34.71748	D87531	A3001	CT 6114 320
1890	S	6628-29656		WW		9.5	18/01/2018	INV									138.61077	-34.74322	D74911	A101	CT 5991 591
1900	ENE	6628-17231		WW	Qpah	13.5	19/04/1995	INV									138.6303	-34.7173	D87531	A3001	CT 6114 320
1900	NNW	6628-29636		WW		7.2	26/02/2018	INV									138.60514	-34.71023	F114109	A2	CT 5870 504
1910	ENE	6628-24583		WW	Qpah	12	25/03/2009		BKF	26/03/2009							138.63134	-34.71854	D87531	A3001	CT 6114 320
1910	S	6628-2994		WW	Tomw(T1)	116.25	30/01/1948	IRR	OPR	1/01/1952				1106		1.26	138.61499	-34.74331	D11245	A1206	CT 5700 950
1920	ENE	6628-17394		WW	Qpah	10.5	6/06/1995	INV									138.6311	-34.71795	D87531	A3001	CT 6114 320
1920	ENE	6628-24585		WW	Qpah	12.5	25/03/2009		BKF	26/03/2009							138.63118	-34.71807	D87531	A3001	CT 6114 320
1920	ENE	6628-24590		WW	Qpah	9.5	25/03/2009		BKF	26/03/2009							138.6301	-34.71661	D87531	A3001	CT 6114 320
1920	NE	6628-29090		WW		8	29/05/2017	INV			5		29/05/2017				138.62742	-34.71401	D87531	A3001	CT 6114 320
1920	NE	6628-29113		WW		17.5	30/06/2017	INV			6		30/06/2017				138.62739	-34.714	D87531	A3001	CT 6114 320
1920	S	6628-2995		WW	Qpah	48.77	30/05/1951		NL					1035		1.26	138.61578	-34.74331	D11306	A1197	CT 5098 39
1930	ENE	6628-24586		WW	Qpah	13	25/03/2009		BKF	26/03/2009							138.63156	-34.71858	D87531	A3001	CT 6114 320
1930	NNE	6628-3042		WW	Tomw(T1)	91.44	14/11/1946		ABD	1/06/1962	1.83	14.17	14/11/1946	4597			138.61842	-34.70952	H105400	S3076	CT 5870 504
1930	NNE	6628-29840		WW		42	20/07/2018	ENV									138.62358	-34.71137	D87531	A3001	CT 6114 320
1940	NNE	6628-29645		WW		7.5	2/02/2018	INV									138.62368	-34.71128	D87531	A3001	CT 6114 320
1940	NNE	6628-29812		WW		20	20/06/2018	ENV									138.62364	-34.71132	D87531	A3001	CT 6114 320
1940	S	6628-2991		WW	Qpah	7.62	8/07/1940		NL					2247		0.38	138.61177	-34.74371	D16306	A13	CT 5677 376
1960	ENE	6628-24582		WW	Qpah	11.7	25/03/2009		BKF	26/03/2009							138.63171	-34.71819	D87531	A3001	CT 6114 320
1960	ENE	6628-24584		WW	Qpah	19	25/03/2009		BKF	26/03/2009							138.6317	-34.7182	D87531	A3001	CT 6114 320
1960	NE	6628-27299		WW	Qpah	9	30/06/2014	INV			4.8		30/06/2014				138.62809	-34.71395	D87531	A3001	CT 6114 320
1960	NE	6628-29796		WW		24	7/06/2018	INV									138.62793	-34.71391	D87531	A3001	CT 6114 320
1980	NE	6628-25431		WW	Qpah	12	7/12/2009	INV									138.63017	-34.71583	D87531	A3001	CT 6114 320
1980	NE	6628-29794		WW		18	9/07/2018	INV									138.62527	-34.71173	D87531	A3001	CT 6114 320
1980	S	6628-20781		WW	Qpah	10	12/02/2002	INV	BKF	6/03/2003	6	8.28	12/02/2002				138.61102	-34.74401	D62388	A16	CT 5897 798
1990	NE	6628-29088		WW		7.5	1/07/2017	INV			4		1/07/2017				138.6256	-34.71188	D87531	A3001	CT 6114 320

Key	- Unknown	Aquifer Key	Qpah Hindmarsh Clay	Latest Status Key	ABD Abandoned	Purpose Key	DOM Domestic
SWL	Standing Water Level	Qpah(Q1)	Hindmarsh Clay, (Quaternary aquifer)	BKF	Backfilled	DOMIF	Domestic/Irrigation
RSWL	Reduced Water Level	Qpah(Q2)	Hindmarsh Clay, (Quaternary aquifer)	DRY	Dry	DOMIF	Domestic/Irrigation/stock
TDS	Total Dissolved Solids	Qpah(Q3)	Hindmarsh Clay, (Quaternary aquifer)	NL	Not Located	ENV	Environmental
m	metres	Tomw(T1)	Port Willunga Formation	OPQ	Operational as required	INV	Investigation
mg/L	milligrams per litre	Tomw(T2)	Port Willunga Formation	OPR	Operational	IRR	Irrigation
				RHB	Rehabilitated	IRRST	Irrigation/Stock
				UKN	Unknown	MON	Monitoring
Class Key						OBS	Observation
ENG	Engineering Well					STK	Stock
WW	Water Well						
Strat	Stratigraphic						


Data Source:
WaterConnect (2021) Groundwater Data Online Database, Department of Environment, Water and Natural Resources, Government of South Australia,
<https://www.waterconnect.sa.gov.au/GD>.



Single wells by class:

-  Water Well
-  Mineral Well
-  Stratigraphic Well
-  Water Point
-  Engineering Well
-  Seismic Point Well
-  Petroleum Well

Multiple wells:

 Shows number of wells in cluster. Colours correspond to classes (above).