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Blamey Barracks Kapooka PFAS Ongoing Monitoring Report (OMR), October 2023 to March 2025

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Executive summary

Introduction

Jacobs Group (Australia) Pty Ltd (Jacobs) was engaged by the Department of Defence (Defence) to implement the Ongoing Monitoring Plan (OMP) for monitoring of per- and poly-fluoroalkyl substances (PFAS) as part of the PFAS Management Action Plan (PMAP) Implementation at Blamey Barracks Kapooka, New South Wales (the 'base' or the 'site'). The OMP outlines the rationale and scope for the monitoring of the concentrations and extent of PFAS in groundwater, surface water and sediment originating from the base.

Blamey Barracks Kapooka, located in central New South Wales near Wagga Wagga, has been affected by PFAS contamination from historical site activities. The deployment of aqueous film forming foam (AFFF) during firefighting and training exercises has contributed to the presence of PFAS in specific areas both within and surrounding the base.

The objective of the OMP implementation is to provide information on changes in location and concentration of PFAS within the environment. The OMP used the monitoring network developed as part of the PMAP to monitor the extent of PFAS leaving the base through groundwater, surface water and sediment. The data is required to assist risk management decisions by Defence and NSW State Government agencies to protect human health and the environment.

Monitoring Program

The OMP includes sampling and analysis of groundwater, surface waters and sediments within the Management Area. Stantec Australia Pty Ltd (Stantec) completed two monitoring events in October 2023 and April 2024, and Jacobs completed one monitoring event in March 2025. All monitoring events were completed in general accordance with the sampling and analysis quality plans (SAQP).

Interpretive Assessment

No new exceedances of human health criteria were observed during the monitoring period. New maximums and new minimums were reported during the monitoring period, with concentrations within the same order of magnitude as the previous historical maximum or minimum

Groundwater

The PFAS concentrations in groundwater were generally similar to those reported in previous monitoring periods, with the exception of the following:

- A new maximum for the sum of perfluorooctane sulfonic acid and perfluorohexane sulfonic acid (PFOS+PFHxS) was recorded in MW103 (regional aquifer, near Wastewater Treatment Plant (WTP)) in October 2023 and increased further in April 2024, before reducing by an order of magnitude in March 2025. During the October 2023 sampling event, a first-time detection of PFOS was also observed at MW103. Despite these detections concentrations of PFAS have consistently reported below the adopted ecological screening criteria. Further monitoring at this location is required to determine if results continue to remain low, or if they increase again suggesting possible vertical migration of PFAS impacted waters from perched groundwater to the regional aquifer.

What is an 'order of magnitude'?

This refers to something decreasing or increasing by multiples of ten. For instance, from 10 to 100 is a single 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 can represent significant changes 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.

- PFAS was not detected in regional groundwater at MW104, which is to the north of the WTP (prior to San Isidore). This demonstrates that the extent of PFAS contamination and its migration in groundwater within this area is currently limited.
- A new maximum PFOS concentration was also recorded in MW601 (off-base perched aquifer, adjacent Kapooka Creek), in the October 2023 event, slightly above the previous maximum result. The concentration decreased in the April 2024 event and decreased again in the March 2025 event. It is noted that results have consistently exceeded the adopted ecological freshwater screening criteria at MW601, since monitoring started in 2020. The trend assessment currently indicates an increasing trend for PFOS in MW601; however, this appears to be related to the previous higher detections rather than the most recent two rounds of sampling results. The co-located well MW624 screened in the regional aquifer detected no PFAS above the laboratory limits of reporting (LOR), except for 6:2 FTS. The reported concentration of 6:2 fluorotelomer sulfonate (6:2 FTS) that was above the LOR in October 2023 (0.49 µg/L) but was below LOR during the April 2024 and February 2025 events.

Surface Water

Surface water results were consistent with previous data, with a few exceptions.

- All PFOS samples collected from SW103 (located on base within the Overland Pathway, downstream of the fire station) during the monitoring period were in exceedance of the adopted ecological screening criteria (freshwater 95% species protection). On 12 October 2023, SW103 reported concentrations of PFOS (0.88 µg/L) and PFOS + PFHxS (1.16 µg/L) that were similar but reduced from the previous maximum sampled on 4 October 2023 (outside of OMP). PFOS and PFOS + PFHxS concentrations reported since, in April 2024 and March 2025, have remained consistent, but exceed the adopted ecological freshwater 95% criteria (0.13 µg/L). Concentrations have remained relatively consistent with previous results and the risk levels are therefore not considered to have changed. However, the concentrations detected in Drainage Line 1 likely indicate that it is acting as a secondary source of PFAS contamination.
- An order of magnitude increase of PFOS+PFHxS and PFOS concentrations was reported at SW118 (located within Drainage Line 1 north of the Kapooka Visitor Car park) in October 2023, but this location has not been able to be sampled since, due to dry conditions. Concentrations reported in October 2023 for PFOS exceeded the adopted ecological freshwater 95% criteria. The detections of PFAS exceeding the adopted screening criteria supports the understanding that Drainage Line 1 is acting as a secondary source of PFAS contamination.
- An increasing trend in PFOS+PFHxS concentrations was observed in the surface water sample collected at a dam on private property along Kapooka Creek (SW680), with concentrations of PFOS exceeding adopted ecological screening criteria (freshwater 95% species protection) during the April 2024 (0.18 µg/L) and March 2025 (0.22 µg/L) monitoring rounds. The concentrations detected within SW680 are within the range of concentrations considered along Kapooka Creek during the HHERA and therefore no increased risk to human health or the environment based on the results detected. Further, the residents at the property where SW680 is located have stated that water from the dam is not used for watering of home consumed food.

There were no exceedances of recreational water guidelines for surface waters during the OMR period.

Sediment

The sediment sample results were consistent with previous data, with a few exceptions.

- An order of magnitude increase in PFOS concentrations was observed in SD121 at the northern eastern corner of the base (where Kapooka Creek leaves the military area) from the April 2024 to March 2025 sampling event. The March 2025 results aligning with levels observed during the initial site investigation (i.e. the Detailed Site Investigation (DSI)). Given the ephemeral nature of Kapooka Creek and the absence

of co-located surface water (SW121) at the time of sampling, it is likely that PFAS became more concentrated in the sediment due to reduced dilution, contributing to the observed increase.

- PFOS concentrations in SD108 (the southern WTP pond) also increased by an order of magnitude between the October 2023 and April 2024 rounds. A sediment sample was not collected in March 2025 due to the abundance of water at the sampling location. The resulting surface water sample were consistent with previous results and do not indicate a change in risk levels to surrounding environment.

Conceptual Site Model and Risk Summary

The conceptual site model (CSM) was reviewed based on the results from the three monitoring events presented in this ongoing monitoring report (OMR), the findings of the PFAS mass flux assessment along the overland drainage pathway and other infrastructure works at the base. Based on the PFAS mass flux study, the stormwater drainage line which receives drainage from the former fire station (Drainage Line 1) is now considered a secondary PFAS source. Another secondary source, the ELF Stockpiles, have now been removed from the base. The CSM has been updated to reflect these changes. No changes have been identified to the exposure pathways or receptors at the base or within the Management Area.

Although localised changes in PFAS concentrations in groundwater, surface water and sediment were observed during the monitoring period, the risk profiles associated with exposure to PFAS in these media, as described in the Human Health and Ecological Risk Assessment (HHERA) (Jacobs, 2021), remain unchanged.

An additional risk assessment was conducted to evaluate potential changes in risk to human health associated with increasing PFOS+PFHxS concentrations observed at SW680. The additional assessment indicates no change to the overall human health risk in relation to the property where SW680 is situated.

However, the risk assessment also noted that the derived exposure point concentrations used in the HHERA may no longer be representative for properties along the Kapooka Creek pathway if similar upward trends are occurring at other dams along the creek.

Next steps

The proposed redevelopment of the Fire Station and surrounding area at the base under the Riverina Redevelopment Program (RRP) will address a key management action in the PMAP and reduce PFAS movement from the base. Ongoing management of remaining PFAS at the base into the future can occur through Defence's routine environmental management processes including the PFAS Construction and Maintenance Framework. The OMP includes triggers for a review of risks and the potential implementation of management actions both on-base and off-base where changes to the risk profile occurs.

The following actions will be required to continue to monitor and manage PFAS originating from the base:

- A review of the OMP sampling locations and frequency will be undertaken to ensure monitoring targets areas of highest risk and continues to meet the overall objectives of the OMP.
- The revised OMP will be implemented. Data will continue to be shared with NSW government and local agencies. OMRs will continue to be made publicly available through Defence's website.

Important note about this report

The sole purpose of this report is to present the results of the Ongoing Monitoring Program for Blamey Barracks Kapooka between the period of October 2023 and March 2025 in accordance with the scope of services set out in the contract between Jacobs Group (Australia) Pty Ltd (Jacobs) and the Department of Defence (Defence). That scope of services, as described in this report, was developed with Defence.

All reports and conclusions that deal with sub-surface conditions are based on interpretation and judgement and as a result have uncertainty attached to them. You should be aware that this report contains interpretations and conclusions which are uncertain, due to the nature of the investigation. No study can investigate every risk, and even a rigorous assessment and/or sampling program may not detect all problem areas within a site.

The passage of time, the possibility of migration, the manifestation of latent conditions or impacts of future events may require further examination of the project and subsequent data analysis, and re-evaluation of the data, findings, observations and conclusions expressed in this report.

In preparing this report, Jacobs has relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by Defence and/or from other sources. Except as otherwise stated in the report, Jacobs has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

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Acronyms and abbreviations

Acronym	Term
ADWG	Australian Drinking Water Guidelines
AFFF	Aqueous Film-Forming Foam
AHD	Australian Height Datum
AMO	Aeronautical Meteorological Office
ARTC	Army Recruit Training Centre
AS	Australian Standard
ASS	Acid Soil Sulfate
CSM	Conceptual Site Model
CSR	Contaminated Site Register
BGL	Below Ground Level
BOM	Bureau of Meteorology
DCMM	Defence Contamination Management Manual
Defence	Department of Defence
DO	Dissolved Oxygen
DoH	Department of Health
DP	Deposited Plan
DQI	Data Quality Indicator
DQO	Data Quality Objective
DSI	Detailed Site Investigation
EC	Electrical Conductivity
ELF	Enhanced Land Force
EPA	Environment Protection Authority
EPC	Exposure Point Concentration
ESdat	Environmental Data Management Software
FTA	Fire Training Area
FSANZ	Food Standards Australia New Zealand
HEPA	Heads of Environment Protection Authority
HHERA	Human Health and Ecological Risk Assessment
LOR	Limit of Reporting
MW	Monitoring Well
NATA	National Association of Testing Authorities
NA	Not Applicable
NCP	North Control Point
NEMP	National Environmental Management Plan

Acronym	Term
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NHMRC	National Health and Medical Research Council
NSW	New South Wales
OMP	Ongoing Monitoring Plan
OMR	Ongoing Monitoring Report
ORP	Oxidation Redox Potential
PFAS	Per- and poly-fluoroalkyl substances
PFBS	Perfluorobutanesulfonic acid
PFDS	Perfluorodecane sulfonic acid
PFNS	Perfluorononanesulfonic acid
PFHpA	Perfluoroheptanoic acid
PFHxS	Perfluorohexane Sulfonate
PFPeA	Perfluoropentanoic acid
PFPeS	Perfluoropentane sulfonic acid
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctane Sulfonate
PFOS+PFHxS	Sum of PFOS and PFHxS
PFUnDA	Perfluoroundecanoic acid
PMAP	PFAS Management Area Plan
PWC	Parliamentary Standing Committee on Public Works (PWC)
QA/QC	Quality Assurance/Quality Control
RPD	Relative Percentage Difference
RWCC	Riverina Water County Council
SAQP	Sampling and Analysis Quality Plan
SCP	South Control Point
SER	Sampling Event Report
SW	Surface Water
SWL	Static Water Level
WTP	Wastewater Treatment Plant
6:2 FTS	6:2-fluorotelomersulfonic acid

Units	Term
°C	Degrees Celsius
µg/L	Micrograms per Litre

Units	Term
µS/cm	MicroSiemens per Centimetre
g	Grams
ha	Hectares
km	Kilometre
L	Litre
m	Metre
m AHD	Metres Australian Heigh Datum
m BGL	Metres below ground level
m BTOC	Metres below Top of Casing
mg/kg	Milligrams per kilogram
Mg/L	Milligrams per Litre
mV	Millivolts

1. Introduction

1.1 Background

The Department of Defence (Defence) engaged Jacobs Group (Australia) Pty Ltd (Jacobs) as the Lead Consultant for the delivery of the per- and poly-fluoroalkyl substances (PFAS) Management Area Plan (PMAP) (Defence, 2021a) and the implementation of the PFAS Ongoing Monitoring Plan (OMP) (Defence, 2021b) at Blamey Barracks Kapooka, NSW (the base, Site ID 0315). The base and surrounding Management Area are shown in Figure A-1, Appendix A.

The OMP monitors changes in PFAS concentrations within the Management Area over time. Changes may result from natural variability of transport trends (such as changes in surface water flow pathways), in response to remediation or containment actions, changes in hydrogeology or weather events. The OMP for the base includes two sampling events per year involving sampling of surface water, sediment and groundwater. A factual Sampling Event Report (SER) is prepared following each sampling event. An Ongoing Monitoring Report (OMR) is then prepared periodically to provide interpretation and findings from the sampling event data.

Jacobs has prepared this OMR to provide interpretation of the data collected over three sampling events that occurred in October 2023, April 2024 (both October 2023 and April 2024 events were conducted by Stantec Australia Pty Ltd) and March 2025 (conducted by Jacobs). These monitoring events were undertaken per the Sampling and Analysis Quality Plans (SAQPs) prepared by Stantec Australia for the October 2023 and April 2024 monitoring events and by Jacobs for the March 2025 event (refer to Appendix C). The SERs associated with this OMR are detailed below:

- Stantec (2024a), Blamey Barracks Kapooka PFAS OMP Factual Report – Biannual Sampling Event October 2023 (refer to Appendix D).
- Stantec (2024b), Blamey Barracks Kapooka PFAS OMP Factual Report – Biannual Sampling Event April 2024 (refer to Appendix E).
- Jacobs (2025), Kapooka Barracks, PFAS OMP Sampling Event Report February-March 2025 (No. IS419100- KAP- NP- RPT- 01). Jacobs Group (Australia) Pty Ltd (refer to Appendix F).

The Spring 2024 OMP sampling event initially scheduled for October 2024 was not completed due to service provider changeover and associated delays re-establishing access agreements for offsite sampling locations. The omission of this sampling event is not expected to materially change the understanding of PFAS impacts at the base or in the monitoring area, due to 10 rounds of OMP monitoring between October 2021 to April 2024, providing sufficient data to determine presence of seasonal influence and trends in results.

1.2 Objectives

The objective of the OMR is to assess and interpret the PFAS data and other information collected from the base, as specified in the OMP, to identify and evaluate:

- spatial and temporal (including seasonal) variability of PFAS in the environment;
- changes to sources, transport pathways and/or receptors (the conceptual site model [CSM]);
- whether risks to human and ecological receptors require review;
- the influence that risk management activities (e.g., remediation), as outlined in the PMAP, have had on PFAS in the environment; and,
- whether the identified changes trigger an action and/or review.

1.3 Scope of work

Jacobs carried out the following tasks to satisfy the objectives of this OMR:

- Identified and compiled information on known relevant changes to land use or environmental conditions in the Management Area during the reporting period;
- Summarised information on PMAP works or other base activities that may influence PFAS conditions in the Management Area;
- Reviewed monitoring data from the October 2023, April 2024 and March 2025 OMP sampling events, as well as data from the previous OMP events, Detailed Site Investigation (DSI) (Jacobs, 2019) and Human Health and Ecological Risk Assessment (HHERA) (Jacobs, 2021);
- Undertook qualitative analysis of PFAS concentration trends;
- Prepared this report to provide findings relevant to the objectives of the OMR.

Note that the OMR does not:

- Provide recommendations for changes to NSW government precautionary advice (refer to NSW Environment Protection Authority (EPA)).
- Recommend changes or amendments to remediation measures or activities (refer to Department of Defence).
- Provide health advice, such as recommendations to limit PFAS exposure through food consumption (refer to NSW Health).

2. Base Setting

2.1 Base location and description

The base is located approximately 5.0 km to the west of Wagga Wagga in central New South Wales and 160 km west of Canberra. The base is bound between the Sturt Highway to the north and the Olympic Highway to the east and south. Churches Plain Road runs along the western boundary. A detailed description of the base is provided in the OMP (Defence, 2021b).

The Commonwealth of Australia owns the base and comprises an area of approximately 1,990 hectares (ha). The Army Recruit Training Centre (ARTC) is located on the base, providing annual training to Army regular and Army Reserve recruits (KBR, 2013) and specialist training for the Army and other battalions. Recruits are housed on-base at Blamey Barracks, which has a range of functions and amenities. The base includes approximately 220 buildings and accommodation for up to 1,800 staff (Golder, 2017). A private lease has been held for stock agistment across grassed areas of the base for fire vegetation management for approximately 20 years. The base comprises the following areas (as shown in Figure A-1, Appendix A):

- Range Complex, which includes ranges and campsites.
- Field Training Areas, primarily used for movement exercises.
- Cantonment, including accommodation and administrative facilities, the Wastewater Treatment Plant (WTP) and Fire Station.
- Disused features, which include the Former Quarry, former informal Fire Training Areas and Fire Training Pad, Former Commandant's House, Former Incinerator, and Buried Waste Areas.

The base is zoned Commonwealth Land Special Use, SP2 – Infrastructure (Defence), and is comprised of the following legal parcels:

- Lots 1, 2, 6, 7, 9 & 10 in Deposited Plan (DP) 113507 (6.12 ha)
- Lots 3, 8, 9, 10, 11 & 12 DP 205379 (153.72 ha)
- Lots 1, 2, 3, 4, 5, 6 & 8 DP 262372 (104.98 ha)
- Lot 1 DP 389778 (72.86 ha)
- Lots 1 & 2 DP 534820 (1279.25 ha)
- Lots 1 & 2 DP 627836 (18.26 ha)
- Lots 1 & 2 DP 725226 (16.99 ha)
- Lots 1, 2, 3 & 4 DP 725227 (42.97 ha)
- Lots 58, 59, 64, 65, 66, 85, 87, 88, 89, 90, 91, 92, 93, 113 & 163 DP 754567 (288.80 ha)
- Lot 1 DP 851602 (0.28 ha)

2.1.1 Management Area description

The OMP includes sampling and analysis not only from the base, but also from off-base locations situated on public land. The 'Management Area' comprises the on-base Management Area and the off-base Management Area. The Management Area boundaries are presented in Figure A-2, Appendix A.

The 'on-base Management Area' is defined as a portion of the base including the eastern built-up portion of the base from the Former Quarry in the south to the WTP in the north. It extends as far west as the natural ridgeline that runs north-south through the middle of the base and to the east to include the Kapooka Creek flow pathway.

The 'Off-base Management Area' includes the Kapooka Creek flow pathway on public land and all private properties with some portion of the flow pathway passing through them. This area stretches from the base, north to the Murrumbidgee River.

2.2 Site setting

2.2.1 Surrounding land uses and zoning

Land surrounding the base is zoned 'Primary Production (RU1)', 'General Residential (R5)', 'Conservation (E2)' and 'Public Recreation (RE1)' in the Wagga Wagga Local Environmental Plan. The surrounding land uses are outlined in Table 2-1.

Table 2-1. Surrounding Land Uses

Direction	Land Use
North	▪ RU1 – Primary Production, around the base and north of the Sturt Highway, consisting of cleared grassland with intermittent houses and farm dams, with primary agricultural activities identified as cattle, sheep and grain farming. ▪ R5 – Large Lot Residential, including San Isidore, which is immediately adjacent to the north-eastern boundary of the base. In addition to large, rural residential properties, it also contains a rural fire station, a sporting field and a church. ▪ RE1 – Public Recreation, at Pomingalarna Reserve to the north of Sturt Highway, north-east of the base.
West	▪ RU1 – Primary Production, west of the base towards Yarragundry, primarily consisting of cleared grassland with intermittent houses and farm dams, with primary agricultural activities identified as cattle, sheep and grain farming.
East	▪ E2 – Conservation, a strip which aligns with forested areas on the ridge to the east of the base, between the base and the City of Wagga Wagga. ▪ R1 – General Residential, approximately 3.6 km from the eastern boundary of the base, where the westernmost suburbs of the City of Wagga Wagga are located.
South	▪ RU1 – Primary Production, south of the base towards Uranquinty with intermittent housing, cultivated areas and irrigated pastures. ▪ Former quarry

No changes to the surrounding land use since the DSI (Jacobs, 2019), HHERA (Jacobs, 2021) and PMAP have been identified.

2.2.2 Environmental Setting

Key details defining the site are summarised in Table 2-2.

Table 2-2. Key Site Details

Setting	Description (Adapted from Defence, 2021c)
Climate	Climate indicators have been recorded near Wagga Wagga Aeronautical Meteorological Office (AMO) (Station ID 072150) since 1941. Mean annual maximum and minimum temperatures ranged from 9.1 to 22.3°C. The yearly mean rainfall is 573.2 mm and spread evenly throughout the year, with slightly increased rainfall from May to October. The prevailing wind direction in the morning (9 am) is towards the east, while in the afternoon (3 pm) the prevailing winds are towards the west[1].

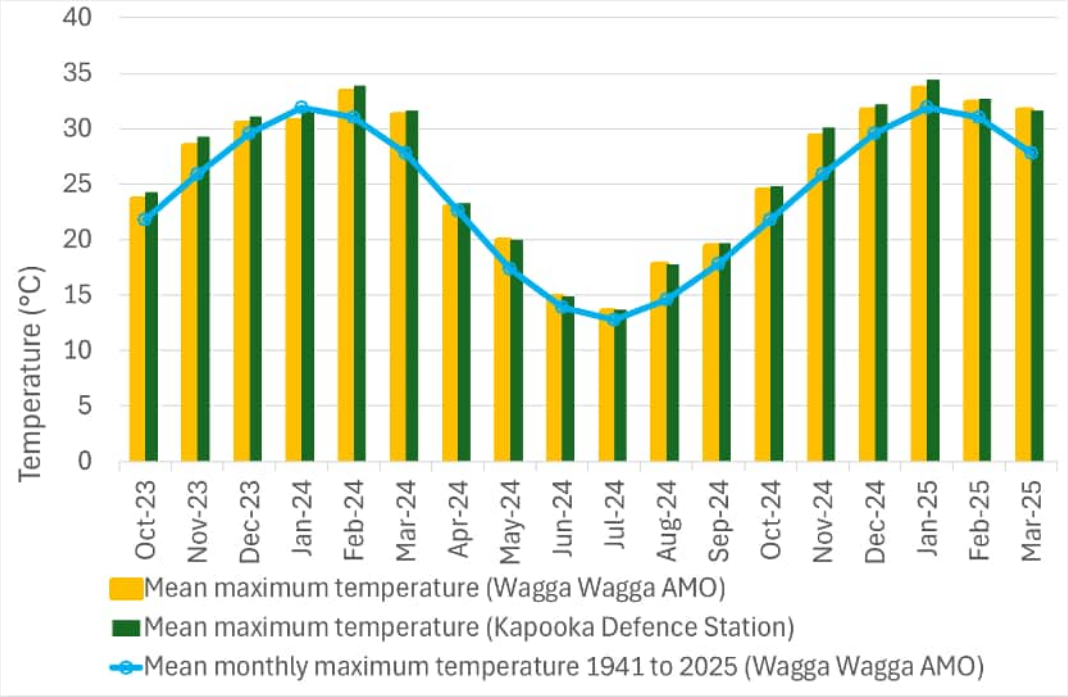
Setting	Description (Adapted from Defence, 2021c)
	There is another Bureau of Meteorology (BoM) station located within the base perimeter (Kapooka Defence Station (ID 074272)) that has been operational since September 2017, representing a record of seven years. The mean monthly maximum temperature at this station in the last seven years is 13.7°C in July and 31.6°C in January. The highest average volume of rainfall typically occurs during January (74.2 mm), with lower falls in July (13.2 mm)[2]. 1. Bureau of Meteorology (BoM), Station ID 072150, 1941 to 2025 (BoM, 2025), accessed 30/05/2025. 2. Bureau of Meteorology (BoM), Station ID 074272, 2007 to 2025 (BoM, 2025), accessed 30/05/2025.
Topography	The regional topography comprises ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Locally, a ridgeline intersects the base through the middle from south to north, comprising rocky outcrops, small hills and valleys. Elevations across the base range from 190 m Australian Height Datum (AHD) at the northern extent to 370 m AHD at the peak towards the centre. To the east of the ridge, developed areas including the Barracks drop from approximately 270 m AHD to 230 m AHD from west to east.
Geology	Geology at the base and surrounding areas consists of four main units including basement Ordovician aged metamorphic and sedimentary rock and Silurian aged Collingullie Granite. Colluvial soils overlie these basement lithologies on-base and to the south, and alluvial sands and gravels interbedded with clay layers in the north are associated with historical meanders of the Murrumbidgee River.
Acid Sulfate Soil	A review of the Acid Sulfate Soils (ASS) risk mapping in 2024 indicates that the most central ridgeline and the southern section of the site is classified as having an extremely low probability of ASS occurrence, and the rest of the site having a low probability of occurrence.
Hydrology	Rainwater drainage across the base is primarily directed by a central ridgeline from north to south. This ridge effectively divides the site, determining the direction of water flow. On the eastern side of this ridge, surface water flows eastward through smaller, local channels, which eventually lead into Kapooka Creek. Kapooka Creek is ephemeral and begins in the south-eastern portion of the base as an unlined channel. It runs northerly towards the Murrumbidgee River. Flow in the creek only occurs during heavy rainfall. Through San Isidore, Kapooka Creek transitions to a series of dams and low-lying areas. North of the Sturt Highway (near where the geology transitions from colluvial soils to alluvial deposits associated with the Murrumbidgee River), Kapooka Creek fans out and becomes discontinuous. Further to the east of Kapooka Creek is another north-to-south trending ridgeline that forms the eastern extent of the valley in which the eastern portion of the base and San Isidore site. West of the central ridge, surface water from areas including the Former Quarry and the Former Commandant's House drains westward towards Sandy Creek. Sandy Creek is also ephemeral, comprising a flow channel with intermittent farm dams. Sandy Creek flows northwards during heavy rainfall, eventually emptying into the Murrumbidgee River. This confluence with the Murrumbidgee is approximately 7.5 kilometres downstream (to the west) of where Kapooka Creek joins the river. The Murrumbidgee River, which receives water from Sandy Creek and Kapooka Creek, is a major and permanent regional river. It flows year-round from east to west and is approximately 80 meters wide.
Hydrogeology	▪ Hydrogeological units at the base and surrounding areas can be grouped into the following:

Setting	Description (Adapted from Defence, 2021c)
	▪ Perched water on-base surrounding the WTP hosted in clay with some silt. The DSI (Jacobs, 2019) findings indicate that this perched water is not laterally continuous and is likely related to the adjacent WTP ponds. ▪ Perched water identified in MW601 along the Kapooka Creek flow path off-base. Water in MW601 is hosted in colluvial soils at 13.0 m BGL associated with Kapooka Creek. Below this is a consistent clay layer from 25.0 to 30.0 m BGL, which is sufficiently continuous to act as an aquiclude preventing migration of PFAS impacted perched water from Kapooka Creek downwards into regional groundwater. ▪ Regional groundwater is hosted in fractured rock aquifers south of the Management Area and on-base. Groundwater wells in this unit are hosted in granite, shale and siltstone. ▪ Regional groundwater is hosted in alluvial deposits north of the Management Area, where the geology transitions to interbedded alluvial sandy gravels and clays associated with the Murrumbidgee River. ▪ Surface Water and Groundwater Connection – Although existing groundwater information is limited, it is inferred that regional groundwater flows north towards the Murrumbidgee River; localised flow driven by topography is also possible. This is consistent with the inferred groundwater flow direction observed from the DSI (Jacobs, 2019) and OMP events. ▪ Groundwater Use – Regional groundwater is used for domestic (irrigation only, not for drinking water purposes), and agricultural purposes (primarily for stock watering).
Environmental Sensitive Areas	The sensitive receptors in the area include (but are not limited to): ▪ Mammals including the Eastern Bent-winged Bat (Miniopterus schreibersii oceanensis), and the Squirrel Glider in the Wagga Wagga Local Government Area (Petaurus norfolcensis, endangered population) ▪ Birds including the Grey-crowned Babbler eastern subspecies (Pmatostomus temporalis temporalis), the Rainbow Bee-eater, the Magpie Goose, and the White-bellied Sea-Eagle ▪ Reptiles including the Southern Bell Frog (Litoria raniformis), and Sloane's Froglet (Crinia sloanei) ▪ Semi-aquatic and aquatic biota including Murray Cod (Maccullochella peelii) and Trout Cod (Maccullochella macquariensis) ▪ Grass, trees and other vegetation including the Lower Murray River aquatic ecological community, Grey Box (Eucalyptus microcarpa), Grassy Woodlands and Derived Native Grasslands of south-eastern Australia.

2.3 Climate and Rainfall

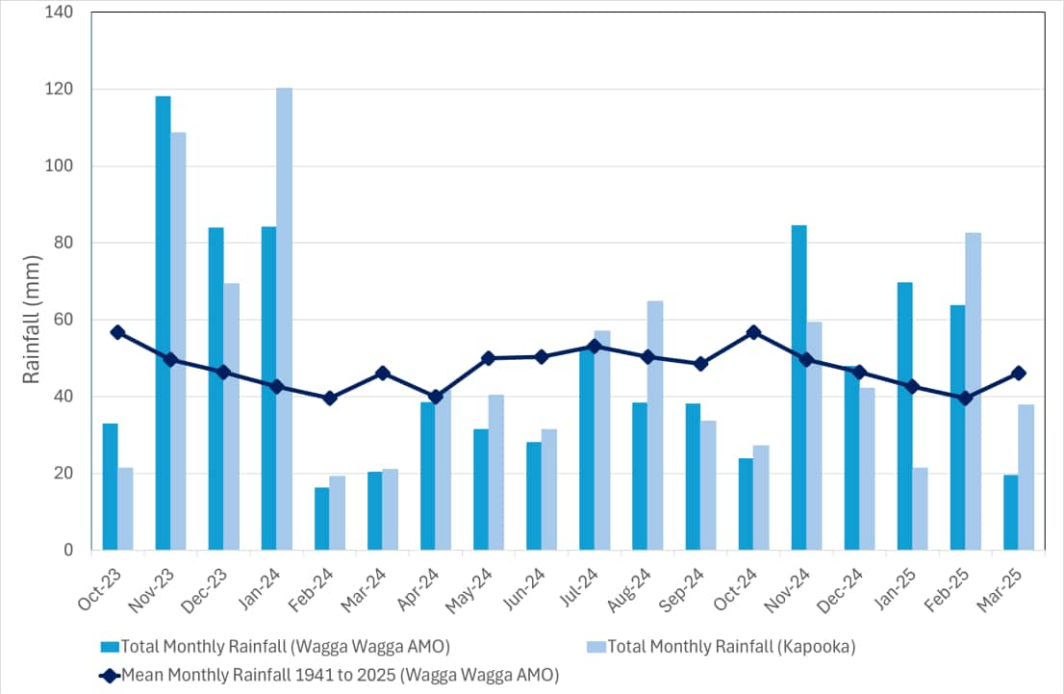
Between October 2023 and March 2025, the monitoring period was generally characterised by above-average temperatures in all months. Exceptions were observed in January 2024, which had a temperature slightly below the long-term average and in April 2024, which reported an average temperature slightly above the long-term average (0.4-0.7°C). A graph of monthly reported maximum temperatures alongside the long-term average is shown in Figure 2-1. The Kapooka Defence Station (ID 074272) has only been operational since September 2017 and, therefore, long-term average temperature data is not available for this station. Comparison against long-term data has been achieved using climate records from the Wagga Wagga AMO Station (ID072150) which dates to 1941.

Figure 2-1. Average monthly maximum temperature (April 2024 – March 2025) at Wagga Wagga AMO (ID072150) and Kapooka Defence Station (ID074272) vs long-term average monthly maximum temperature (Wagga Wagga AMO, ID072150) (BoM, 2025)



Monthly rainfall during the monitoring period (October 2023 to March 2025) was generally below or at the long-term average, with a few exceptions. Higher-than-average rainfall was observed at Wagga Wagga AMO and Kapooka Defence Station between November 2023 and January 2024, as well as in November 2024 and February 2025. In August 2024, a higher-than-average rainfall was also observed at Kapooka Defence Station, but below the long-term average at Wagga Wagga AMO. The opposite trend was seen in January 2025, where higher-than-average rainfall was only observed at Wagga Wagga AMO. A graph of monthly reported rainfall and the long-term average is shown in Figure 2-2. Long-term rainfall data is unavailable for Kapooka Defence Station since the weather station has only been operational for seven years.

Figure 2-2. Total monthly rainfall (April 2024 – March 2025) vs long-term average monthly rainfall (Wagga AMO, ID072150) (BoM, 2025)



2.4 PFAS source areas

The majority of primary PFAS source areas at the base relate to storage or testing of firefighting foam equipment, including the Fire Station (CSR_NSW_000872), Fire Training Pad (CSR_NSW_000399), former Fire Training Areas (CSR_NSW_000396, CSR_NSW_000397, CSR_NSW_000400), the Parade Ground and the Former Quarry (CSR_NSW_000391). Primary source areas also include several areas related to waste disposal, including the Enhanced Land Force (ELF) Stockpiles and Buried Waste Areas (CSR_NSW_000394). Two other primary source areas relate to singular or less frequent discharges of firefighting foam products, including use for a waterslide at annual Christmas parties from 1995 to 2003, and in response to a fire at the Former Commandant's House in 2006.

Secondary source areas are related to the WTP (CSR_NSW_000382) and grassy areas on-base irrigated with treated effluent (Reused Effluent Irrigation Areas). Primary and secondary source areas are shown in Figure A-2, Appendix A.

3. Other aspects

3.1 PFAS Management Area Plan (PMAP) implementation projects

As part of the PMAP implementation, Jacobs completed further investigation work across the base to assess the presence, nature, extent and migration of PFAS. The works included the following projects (detailed further in Sections 3.1.1 to 3.1.3):

- Surface Water Mass Flux Investigation
- Kapooka Creek Flood Study
- Remediation Investigation

Additional investigations to understand the relative contributions of PFAS source areas to PFAS mass flux are also currently underway. The results from these source area investigation works will be considered in the interpretation of future results once the report has been finalised.

3.1.1 Blamey Barracks Kapooka, Flood Study – Kapooka Creek

Jacobs completed the Kapooka Creek Flood Study (Jacobs, 2023) to better understand hydrology and flood levels in the catchment following concerns raised by community members in the San Isidore area regarding overland flow and that flooding impacts in Kapooka Creek were exacerbated by developments at the base. Two hydraulic models were developed for the project to represent the current conditions at the Kapooka base, and the pre-development conditions before the base had been constructed.

The two hydraulic models were compared for a range of storm durations and intensities. The flood mapping of the water level differences in the model was assessed to determine the impact of the development of the base on the flood risk in Kapooka Creek and its surrounds.

The mapping indicates that flooding in the entire Kapooka Creek catchment area has not been adversely impacted by the development at the base. There are localised increases and decreases in flood levels primarily where structures have been removed and areas of land use were reduced for the pre-development case model.

The Flood Study concluded that the development at Blamey Barracks Kapooka has had minor impact on flood levels in Kapooka Creek. Flooding to the area downstream of Blamey Barracks Kapooka, which was of particular interest in this flood study, is generally unaffected by the development within the Blamey Barracks Kapooka.

3.1.2 Blamey Barrack Kapooka, PFAS Mass Flux Investigation

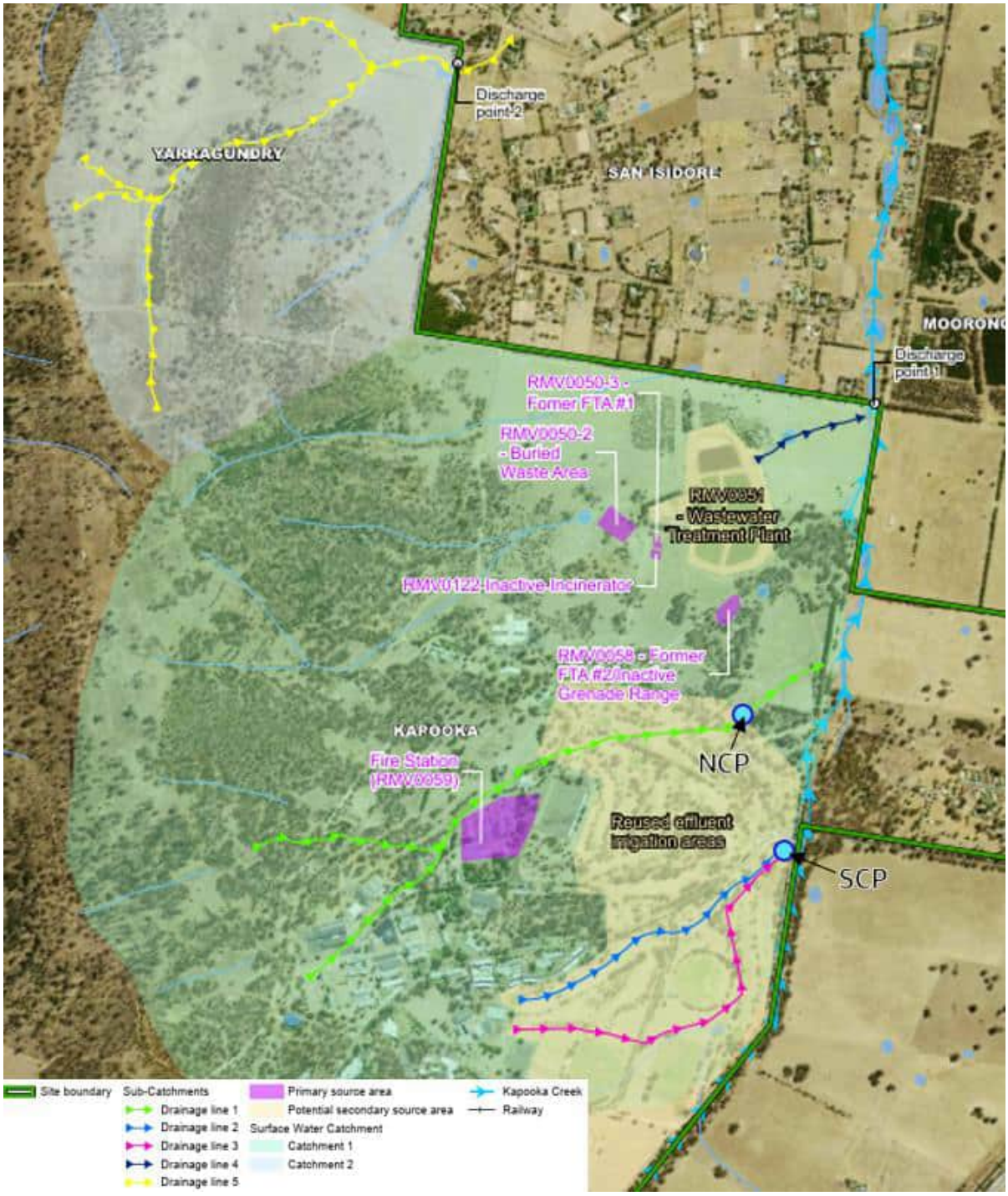
Jacobs conducted a PFAS Mass Flux Study at Blamey Barracks Kapooka between November 2023 and April 2024, with some opportunistic sampling also collected in October 2023 and October 2024 (Jacobs, 2025a).

The study was designed to understand the approximate mass of PFAS migrating from the base to Kapooka Creek, downstream of the base (Discharge Point 1) and from the northeast corner of the base into the western part of San Isidore near Bermingham Avenue (Discharge Point 2), as shown in Figure 3-1. The study also aimed to establish a baseline of PFAS mass flux at the base and collect drainage flow data during rain events to enable the calibration of a hydrological model.

The investigation included the installation of two sets of autosamplers and stormwater flow monitoring equipment at two stormwater flow control points (North Control Point, NCP and South Control Point, SCP). During storm events when water levels would increase at the control points, the autosamplers were triggered to sample water every hour for 24 hours (when water samples were available). Additional grab water samples

were manually collected across Catchment 1 (draining to Discharge Point 1) and Catchment 2 (draining to Discharge Point 2).

Figure 3-1. Kapooka Mass Flux, Surface Water Catchments



A hydrological model was developed using the eWater Source modelling framework. The model was set up using an hourly timestep to enable the capture of rapid stream flow response associated with the small catchment area at Kapooka and the built-up stormwater system associated with the infrastructure of the base. The model simulated the stream flow velocities and PFAS Mass Flux discharging from the base. The hourly water level and rainfall data collected from the NCP and SCP installations over a 10-month period (12 April 2023 to 8 August 2024), were used to calibrate the model. The PFAS concentrations sampled during several storm events at the NCP and SCP monitoring sites were used to develop PFAS concentration functions

within the Source model. The function could then be fitted separately for low-flow and high-flow events in relation to the observed flow volumes at the NCP and SCP. These PFAS generation functions were used in the eWater Source model to estimate the PFAS concentration and load for the flow volumes.

The study confirmed that the majority of PFAS mass flux from the base (approximately 94%) is via the NCP (also referred to as Drainage Line 1, beneath Hospital Road). Grab samples collected from Drainage Line 1 close to the fire station indicate this source is a primary contributor to the PFAS mass flux.

In a year with average rainfall the mass of PFAS, measured as sum of PFOS + PFHxS (PFOS + PFHxS), discharged from the two Catchment 1 control points via stormwater was estimated to be:

- NCP = 11.06 g of PFOS + PFHxS per year
- SCP = 0.68 g of PFOS + PFHxS per year

Different climate conditions alter the mass of PFAS discharging via these catchments with wetter years generally resulting in an increase in PFAS mass discharged and drier years resulting in a reduction.

The concentration of PFAS in overland water flow from Catchment 2 (at Discharge Point 2) in the north of the base was found to be below detection limits. No PFAS sources were identified in this catchment. Therefore, the mass flux study confirms there is no significant PFAS movement from the base via Discharge Point 2 to the western part of San Isidore near Bermingham Avenue.

3.1.3 Blamey Barracks Kapooka, Remediation Investigation

Jacobs commenced a Remediation Investigation in February 2025, with final samples collected during wet weather in September 2025. The Remediation Investigation will allow Defence to better understand the relative contributions of PFAS source areas to the PFAS mass flux to Kapooka Creek. The source areas investigated include the former Fire Training Area (FTA) sites (FTA1, FTA2 and FTA3 and their adjacent former facilities) and the treated effluent irrigation areas (including the golf course and sporting fields).

The investigation also extended vertically and laterally around existing sampling points from the DSI (Jacobs, 2019), to refine the understanding of the depth and extents of PFAS mass within soils in PFAS source areas and to assess leaching mechanisms and potential remedial options.

The Remediation Investigation is yet to be finalised; however, the preliminary review of the results that have been gathered has not identified an increased risk to receptors around the base but have assisted in understanding of the extent of PFAS impacts and potential contributions to PFAS mass flux. Based on this preliminary review, and the results of the PFAS mass flux study, the sources investigated do not appear to be significant contributors to PFAS mass flux in surface water.

3.2 On-Base Infrastructure projects

Infrastructure projects undertaken by others at Blamey Barracks Kapooka are detailed below.

3.2.1 Riverina Redevelopment Program

The Blamey Barracks Kapooka Redevelopment Project, part of the Riverina Redevelopment Program, has not commenced construction within the current monitoring period. The approval process for the works continues and the Project referred to the Parliamentary Standing Committee on Public Works (PWC) on 2 September 2025. It is currently expected that initial construction works will commence in mid-2026.

The Blamey Barracks Kapooka Redevelopment Project's proposed scope of works includes the following:

- Headquarters building
- Living-in Accommodation, training, wellbeing and support facilities
- Recruit Welfare Facility (Multi-Function Centre)

- Infrastructure including a ring road, car parking and pedestrian footpaths
- Kapooka Heritage Trail
- Expanded Chaplaincy and recruit well-being facilities
- Contractor's Precinct with land management compound
- Clothing store
- Explosive ordnance storage facilities
- Weapons range
- Upgrade and/or replacement of site-wide engineering services.

Stormwater quality improvement measures to be provided by the Project include:

- Major diversion swales which reduce overland flow through the developed base area - These measures are expected to lead to a reduction in pollutants migrating off the base.
- The provision of major stormwater detention basins which will reduce water flow from the base, including associated pollutants, up to and including the 100-year storm event.
- The proposed stormwater mitigation works will result in a slight improvement to downstream flood conditions including reduced flood levels and reduced peak flow rates.

The project team works closely with Defence's PFAS Investigation and Management Branch to support efforts to monitor and mitigate PFAS contamination on Blamey Barracks. The Blamey Barracks Kapooka Redevelopment Project is being delivered in line with Defence's PFAS Management Policy. As part of early site investigations; sampling and analysis were undertaken to understand the presence of PFAS and other contaminants within the project area. An Environmental Management Plan has been developed to ensure processes and controls are implemented for the identification, management, disposal or re-use of contaminants and contaminated waste. Any community enquiries about Defence's PFAS program are referred directly to the PFAS Branch.

Additionally, the project team is working alongside Defence's broader PFAS Investigation and Management Program, which continues to lead monitoring and remediation efforts across Defence sites nationally, including at Blamey Barracks Kapooka.

It is expected that the completion of the Redevelopment Works will assist in addressing Action 2 of the PMAP by implementing surface water drainage improvements and management of on-base PFAS impacted surface waters.

3.2.2 Enhanced Land Force Stockpile Management

The DSI (Jacobs, 2019) noted stockpiles of dumped soil were present approximately 100m south of the WTP. The stockpiles were thought to have originated from the construction of live-in accommodation buildings associated with the ELF program from 2007 – 2009. Soil samples collected from the stockpiles during the DSI (Jacobs, 2019) had PFOS + PFHxS concentrations ranging from 0.0006-0.0131 mg/kg.

Veolia was commissioned by Defence to manage the five ELF stockpiles located in the northeastern side of the Kapooka site (Veolia, 2024). Veolia commenced works on 14 May 2024 which included the following:

- Excavation, loading and disposal of PFAS impacted soils (ELF stockpiles 1, 4 and 5) to a NSW EPA licensed landfill facility.
- Screening, including the removal of solid waste material and all foreign objects within the ELF stockpiles 2 and 3.
- Offsite disposal of solid waste materials and foreign objects removed during the screening of ELF stockpiles 2 and 3.

- Levelling out of remaining materials from ELF stockpiles 2 and 3, after the screening works were completed.

The site works were completed by 25 May 2024. In total, 1,230 tonnes of soil and debris were removed from the base and taken to landfills in either Wetherill Park (681 tonnes), Kurnell (503 tonnes) or Gregadoo (46 tonnes).

3.3 Off-Base Infrastructure and Development Works

A property owner in San Isidore upgraded a driveway through Kapooka Creek on their property in August 2024. Jacobs understands Riverina Water County Council (RWCC) also undertook works in August 2025 to replace/upgrade a water main along Kapooka Road, San Isidore. Jacobs considers that these activities are unlikely to have changed PFAS distribution or movement in the area and are unlikely to materially influence the CSM.

No other off-base infrastructure developments, land or water use changes, or other external activities have been identified during the reporting period that would materially influence the CSM or the overall PFAS risk profile.

4. Sampling and analysis methodology

This ongoing monitoring report covers the three groundwater, surface water and sediment sampling events collected on-base and in the Management Area off-base between October 2023 and March 2025. The sampling events were completed by Stantec in October 2023 (2024a) and April 2024 (2024b), and by Jacobs in March 2025 (Jacobs, 2025b). The OMP sampling events were completed in accordance with the SAQP, which was reviewed and updated as required before each monitoring event. The latest SAQP is provided in Appendix C.

4.1 OMP sampling locations

The network of on-base and off-base groundwater monitoring wells included in the OMP is presented in Table 4-1. The surface water and sediment sampling locations are provided in Table 4-2. The groundwater, surface water and sediment sampling network is shown in Figure A-3, Appendix A.

Table 4-1. OMP Groundwater Monitoring Network

On/Off-base	Area	Location ID	Screened Formation	Total
On-base	WTP	MW103	Regional Aquifer	3
		MW104	Regional Aquifer	
		MW107	Perched Aquifer	
	Former Commandants House	MW008*	Unknown	1
		MW628*	Regional Aquifer	4
		MW109	Regional Aquifer	
		MW110	Regional Aquifer	
Off-base		MW625	Regional Aquifer	
	Kapooka Creek/flow path	MW601	Perched Aquifer	2
		MW624	Regional Aquifer	
			Total	**10**

Note: (*) At the completion of the Service Provider engagement in 2024, Stantec installed a replacement monitoring well for MW008 (old concrete well of unknown construction), with a new bore MW628. Only MW628 was sampled in the March 2025 monitoring event.

Perched: Groundwater that is isolated and exists above an impermeable layer, leading to its separation from larger aquifer systems.

Regional: Typically composed of sedimentary materials such as sand, gravel, and clay, wherein groundwater is stored and transmitted through pore spaces.

Table 4-2. Surface Water and Sediment Monitoring Locations

On/Off-base	Area	Location ID	Total
On-base	Overland drainage pathways	SW/SD136	5
		SW/SD103	
		SW/SD106	
		SW/SD107	
		SW/SD118	
	Sewer	SW140	4
		SW144	

On/Off-base	Area	Location ID	Total
		SW148	
		SW149	
	WTP ponds	SW/SD108	2
		SW/SD111	
	Former Quarry	SW/SD127	1
	Kapooka Creek	SW/SD121	1
Off-base		SW/SD614	
		SW/SD677	3
		SW680	
		Total	**16**

4.2 Summary of completed monitoring October 2023 – April 2025

A summary of the monitoring completed in the reporting period is provided in Table 4-3 below.

Table 4-3. Summary of monitoring events completed

Monitoring Events	Matrix	Number of samples required in SAQP	Number of samples collected
October 2023	Surface water / Sewer	16*	14
	Sediment	11*	11
	Groundwater	9	9
April 2024	Surface water / Sewer	16*	13
	Sediment	11*	11
	Groundwater	9	9
March 2025	Surface water / Sewer	16*	10
	Sediment	11*	6
	Groundwater	9	9

*** Surface water samples are collected when water is available in the creek lines (no sediment sample is intended to be collected when water is available). If the creeks are dry then a sediment sample is collected instead of the surface water sample.**

4.3 Deviations from OMP requirements

Deviations from the SAQP for each sampling event during the monitoring period (April 2024 to March 2025) are summarised in Table 4-4 below. Complete details of deviations for each event are outlined in the respective SERs provided in Appendix D, Appendix E and Appendix F.

Table 4-4. Deviation from OMP SAQP Summary

SAQP requirement	Deviation	Impact on the existing dataset
October 2023 sampling event (Appendix D)		
SAQP required sampling of 16 surface water/sewer locations, 14 surface water/sewer samples were able to be collected.	SW106 was dry, thus unable to be sampled	Minor impact The PFOS + PFHxS has been above the limit of reporting (LOR) in both November 2022 and April 2023 events, with PFOS detected above the LOR for the first time in April 2023. However, locations SW118 and SW121, both located downstream along the onsite overland drainage pathway leading to Kapooka Creek, were sampled in this event.
	SW677 was dry, thus unable to be sampled	Potential minor data gap SW677 is the most downstream monitoring location along the Kapooka Creek pathway and thus closest to downstream receptors. Historically, the location is dry, with only one sample collected in November 2022. PFOS and the PFOS + PFHxS results were reported above the LOR but below the assessment criteria.
April 2024 sampling event (Appendix E)		
SAQP required sampling of 16 surface water/sewer locations, 9 surface water/sewer samples were able to be collected.	SW121, SW614 and SW677 were dry, thus unable to be sampled.	Potential minor data gap ▪ SW121 is intended to monitor PFAS in surface water discharging off-site along Kapooka Creek and was last sampled in the October 2023 event. ▪ SW614 monitors PFAS along the Kapooka Creek pathway, and the PFOS + PFHxS exceeded the guidance criteria in April 2023. ▪ SW677 was dry in almost all OMP sampling events, with only one sample collected in November 2022.
	SW106, SW118, SW127, and SW149 were dry, thus unable to be sampled	Minor impact ▪ SW106 was dry and unable to be sampled in the October 2023 event. Downstream locations (SW118 and SW121) could not be sampled, presenting a potential gap. ▪ PFOS + PFHxS at SW118 exceeded the criteria in the last event and has been reported above the LOR in all previous events. Location was sampled in all previous events. ▪ PFOS + PFHxS at SW127 has been reported below LOR for all previous sampled events.

SAQP requirement	Deviation	Impact on the existing dataset
		The location was last sampled in October 2023. ▪ SW149 was sampled in all previous events. The PFOS + PFHxS was reported above LOR in October 2023.
October 2024 sampling event		
Groundwater, surface water/sewer and sediment sampling	The Spring 2024 OMP sampling event initially scheduled for October 2024 was not completed due to consultant changeover and associated delays re-establishing access agreements for offsite sampling locations.	Minor impact Missing the October 2024 event will mean a gap in the temporal dataset. As more sampling events are completed in the future, this impact will reduce.
March 2025 sampling event (Appendix F)		
SAQP required sampling of 16 surface water/sewer locations, 10 surface water/sewer samples were able to be collected.	SW121, SW614 and SW677 were dry, thus unable to be sampled.	Potential minor data gap As mentioned above, SW121, SW614 and SW677 are intended to monitor the surface water discharging off-site along Kapooka Creek. The lack of sampling data at these locations might represent a minor data gap. Sediment samples were collected from these locations when surface water could not be sampled. Sediment may accumulate higher concentrations of PFAS compared to water; however, the accumulated PFAS is likely released when disturbed during sampling.
	SW106 was dry, thus unable to be sampled	Minor impact Sediment samples were collected from these locations when surface water was not present. Sediment may accumulate higher concentrations of PFAS compared to water; however, the accumulated PFAS is likely released when disturbed during sampling.
	SW118 and SW127 were dry, thus unable to be sampled	

4.4 Changes to the monitoring network

One off-base surface water location (SW680) was added to the monitoring network as of October 2022. SW680 is located within a private property farm dam along the Kapooka Creek flow path. The location of SW680 is not shown in the figure for privacy reasons.

In July 2024, Stantec installed a new monitoring well (MW625) approximately 10m to the southeast of the existing MW008. The location was replaced as MW008 comprised a large diameter open well, with unknown construction details. The new replacement monitoring well MW625, was drilled to a depth of 21m below ground level (m BGL) and was screened between 15 and 21m BGL. MW008 was not sampled during the March 2025 event and instead a sample was collected from MW625 only. It is intended that only MW625 will be sampled in this location in the future.

5. Quality assurance and quality control

The analytical data presented in this OMR is considered reliable for the report's objectives. A thorough data validation was completed for each monitoring event to assess the field and laboratory data quality assurance and quality control (QA/QC) results against the Data Quality Objectives (DQOs) specified in the SAQP.

The detailed data validation for each event, including the assessment of QA/QC samples (such as trip and field blanks, rinsate samples, field and laboratory duplicates, and matrix spikes), is presented in the respective SERs, which can be found in Appendix D, Appendix E and Appendix F.

The data validation confirmed that all DQOs were achieved for precision, accuracy, representativeness, completeness, comparability and sensitivity. All sample results were deemed acceptable for use, with any minor deviations noted in the SERs having no material impact on the conclusion of this OMR. Based on this validation, Jacobs confirms that the data set is representative of the on- and off-base environmental conditions at the time of sampling.

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

6. PFAS screening criteria

6.1 Groundwater and surface water

As per the Kapooka OMP and the SAQP provided in the Appendix C, the analytical data collected during each sampling event were screened against PFAS screening criteria outlined in the PFAS NEMP 3.0 (HEPA, 2025) to identify potential changes to the current risk profile. The HHERA (Jacobs, 2021) found that surface water and groundwater were not used for drinking purposes in the area surrounding the base. The OMP screening criteria therefore focuses on changes in PFAS distribution and screening for recreational or ecological risk. The criteria adopted for this screening at the base are presented in Table 6-1 and Table 6-2.

Table 6-1. Summary of Adopted Screening Criteria for Groundwater (PFAS NEMP, 2025)

Exposure Scenario	PFOS + PFHxS	PFOS	PFOA
Ecological - Freshwater direct toxicity, slightly to moderately disturbed ecosystems (95% species protection)	-	0.13 µg/L	220 µg/L

Table 6-2. Summary of Adopted Screening Criteria for Surface Water (PFAS NEMP, 2025)

Exposure Scenario	PFOS + PFHxS	PFOS	PFOA
Human heath – Recreational water	2 µg/L	-	10 µg/L
Ecological - Freshwater direct toxicity, slightly to moderately disturbed ecosystems (95% species protection)	-	0.13 µg/L	220 µg/L

In June 2025, the National Health and Medical Research Centre (NHMRC, 2025) released new health-based drinking water guideline values for PFAS. The new drinking water guideline for PFOS is 0.008 µg/L. This is below the laboratory limit of reporting for PFOS of 0.01 µg/L used for the analysis of water samples collected for this OMR. Therefore, samples with a reported PFOS concentration below the LOR cannot be compared to the new guideline value.

A review of surface water and groundwater use in the Management Area was undertaken including the review of water use surveys provided by property owners. This did not identify any use of surface water or groundwater for drinking water purposes in the Management Area. Riverina Water County Council has a reticulated water supply network throughout the area. Therefore, use of surface or groundwater drinking water purposes is considered unlikely.

The exposure scenario for human health recreational criteria is not applicable to groundwater use; therefore, the groundwater results of the March 2025 SER have been screened against the adopted ecological guideline only.

6.2 Sediment

The PFAS NEMP 3.0 notes insufficient ecotoxicity data for PFAS in freshwater sediments to provide guideline values. Therefore, concentrations of PFAS in sediment have been used to assess trends rather than comparing to screening criteria.

7. Monitoring data summary

A summary of monitoring completed in this OMR reporting period is provided in Table 4-3, Section 4.2. The sample locations are shown in Figure A-3 and Figure A-4, Appendix A. Results are summarised in the following sections.

The monitoring activities are summarised in the respective SERs provided in Appendix D, Appendix E and Appendix F. In addition to the OMP data, Jacobs also considered the historical data for the Management Area that is available in the Defence database.

7.1 Groundwater results

7.1.1 Groundwater elevation and flow direction

During each monitoring round, the standing water level (SWL) was gauged in all sampled groundwater monitoring wells, using either an interface probe or a water level meter from a specified mark at the top of the well casing. The SWLs can be used to determine the inferred groundwater flow within the Management Area. A summary of groundwater elevations measured across the three monitoring events is presented in Table 7-1.

Table 7-1. Summary of groundwater elevations measured in the Management Area

Aspect	October 2023	April 2024	March 2025
SWL (mAHD)	158.27 (MW109) to 203.19 (MW103)	157.49 (MW109) to 202.99 (MW103)	156.41 (MW109) to 203.12 (MW103)
Inferred flow direction	North-westerly	North-westerly	North-westerly
Note: Groundwater levels measured within the perched aquifer are not considered representative and have therefore been omitted from the above data. Only wells targeting the regional aquifer have been included.			

Regional groundwater flow is inferred to be in a north-westerly direction, towards the Murrumbidgee River, consistent with the previous monitoring events.

The latest groundwater elevation contours and flow directions are shown in Figure A-5 and Figure A-6, Appendix A. Gauging records for the three sampling events are tabulated in Table B-1, Appendix B. Complete gauging records of field observations made during groundwater sampling is presented in the respective SERs provided in Appendix D, Appendix E and Appendix F.

7.1.2 Groundwater field parameters

Groundwater field measurements recorded during the sampling are tabulated in Table B1, Appendix B. A summary of maximum and minimum field parameters for this OMR period, along with historical maximum and minimums for the nominated wells, is presented in Table 7-2.

Complete records of field observations made during groundwater sampling is presented in the respective SERs provided in Appendix D, Appendix E and Appendix F.

Table 7-2. Groundwater quality parameter ranges

Aspect	October 2023	April 2024	March 2025	Historical (March 2017 to April 2023)
No. of samples	9	9	9	49
Temperature (°C)	16.7 (MW008) to 22.1 (MW109)	15.7 (MW625) to 20.7 (MW109)	18.2 (MW624) to 22.6 (MW109)	15.9 (MW625) to 29.7 (MW107)
pH	6.02 (MW104) to 7.23 (MW008)	6.37 (MW104) to 7.54 (MW008)	6.37 (MW104) to 7.44 (MW601)	6.22 (MW104) to 8.21 (MW008)
Electrical conductivity (EC) (µS/cm)	631 (MW109) to 5,100 (MW104)	640 (MW601) to 4,321 (MW104)	746 (MW601) to 5,244 (MW104)	1.53 (MW008) to 5,586 (MW104)
Redox potential (mV)	-82.4 (MW624) to 90.9 (MW104)	-62.3 (MW624) to 191.7 (104)	-119.3 (MW109) to 122.0 (MW110)	-205.0 (MW624) to 191.5 (MW104)
Dissolved oxygen (DO) (mg/L)	0 (MW109) to 5.48 (MW110)	0.85 (MW110) to 4.97 (MW103)	1.52 (MW625) to 3.23 (MW104)	0.15 (MW008) to 7.39 (MW109)

The data in Table 7-2 indicate that the groundwater in the Management Area ranges from fresh conditions within the perched aquifer adjacent to Kapooka Creek to brackish conditions in the remaining wells. The highest EC readings were measured at MW104, which targets the regional aquifer and is located between the WTP and the San Isidore community.

The other readings indicate groundwater to be poor to moderately oxygenated, slightly acidic to neutral, and reducing to oxidising conditions.

The water quality parameters between the three sampling events (October 2023, April 2024 and March 2025) are consistent with the historical data set.

7.1.3 Groundwater Sampling Methodology

Groundwater samples were collected using a no-purge methodology with Hydrasleeves., with the exception of a large diameter open well (MW008), that was sampled using low-flow micorpurge methods until it was replaced in November 2024 by MW628.

The Hydrasleeve was installed within the screened interval of the well for a minimum of 24 hours prior to sampling. Once sampling was completed a new Hydrasleeve is deployed for the subsequent event.

7.1.4 Groundwater analytical results

Groundwater analytical results for each sampling event covered in this OMR, as well as the available historical results for OMP sampling locations, are presented in Table B-3, Appendix B. PFOS, PFOA and PFOS+PFHxS and Sum of PFAS concentrations in groundwater for the latest monitoring round (March 2025) are presented in Figure A-7, Appendix A.

Groundwater results have been grouped with respect to different sampling areas across the Management Area, as listed in Table 4-1. These locations were used to identify trends in PFAS concentrations laterally along indicative groundwater flow paths and vertically from perched water into the deeper aquifer. Justification for grouping sampling locations into individual sampling areas is provided within the OMP (Defence, 2021c).

A summary of groundwater results for the monitoring period is provided in Table 7-3 for locations on- and off-base. The number of samples with concentrations exceeding human health criteria (recreational water water) and ecological criteria (95th percentile species protection) is presented. Deviations from the historical dataset for groundwater during the October 2023 to March 2025 monitoring period are summarised in Table 7-4.

Table 7-3. Summary of PFOA, PFHxS, PFOS and PFOS+PFHxS concentrations in groundwater

Analyte	No of Samples[1]	Sampling Event	Concentration Range (µg/L)	No of samples >LOR	Ecological Criteria	No of samples > Ecological Criteria
WTP (MW103, MW104, MW107)						
PFOA	5	October 2023	<0.01 (multiple) to 0.04 (MW103)	2	220	0
	3	April 2024	<0.01 (MW104) to 0.06 (MW103)	2		0
	3	March 2025	<0.01 (multiple) to 0.01 (MW107)	1		0
PFOS	5	October 2023	<0.01 (multiple) to 0.02 (MW103, MW107)	2	0.13	0
	3	April 2024	<0.01 (MW104) to 0.04 (MW103)	2		0
	3	March 2025	<0.01 (multiple) to 0.02 (MW107)	1		0
PFOS+ PFHxS	5	October 2023	<0.01 (multiple) to 0.14 (MW103)	2	N/A	NA
	3	April 2024	<0.01 (MW104) to 0.32 (MW103)	2		NA
	3	March 2025	<0.01 (MW104) to 0.13 (MW107)	2		NA
Former Commandants House (MW008, MW109, MW110, MW625[2], MW628)						
PFOA	4	October 2023	<0.01 (multiple)	0	220	0
	6	April 2024	< 0.01 (multiple)	0		0
	4	March 2025	<0.01 (multiple)	0		0
PFOS	4	October 2023	<0.01 (multiple) to 0.02 (MW008)	1	0.13	0
	6	April 2024	<0.01 (multiple) to 0.01 (MW008)	1		0
	4	March 2025	<0.01 (multiple) to 0.03 (MW628)	1		0
PFOS+ PFHxS	4	October 2023	<0.01 (multiple) to 0.11 (MW008)	1	N/A	NA
	6	April 2024	<0.01 (multiple) to 0.09 (MW008)	1		NA
	4	March 2025	<0.01 (multiple) to 0.13 (MW628)	1		NA

Analyte	No of Samples[1]	Sampling Event	Concentration Range (µg/L)	No of samples >LOR	Ecological Criteria	No of samples > Ecological Criteria
Kapooka Creek flow pathway (MW601[2], MW624[2])						
PFOA	2	October 2023	<0.01 (multiple)	0	220	0
	2	April 2024	<0.01 (multiple)	0		0
	2	March 2025	<0.01 (multiple)	0		0
PFOS	2	October 2023	<0.01 (MW624) to 0.37 (MW601)	1	0.13	1 (MW601)
	2	April 2024	<0.01 (MW624) to 0.27 (MW601)	1		1 (MW601)
	2	March 2025	<0.01 (MW624) to 0.23 (MW601)	1		1 (MW601)
PFOS+ PFHxS	2	October 2023	<0.01 (MW624) to 0.79 (MW601)	1	N/A	NA
	2	April 2024	<0.01 (MW624) to 0.56 (MW601)	1		NA
	2	March 2025	<0.01 (MW624) to 0.57 (MW601)	1		NA

Notes:

[1] All samples (primary and duplicates/triplicates)

[2] Off-base monitoring wells

NA = not applicable – where there are no applicable screening criteria

From the dataset above, there were no exceedances of the human health (recreational water) screening criteria. Exceedances of the ecological screening criteria (95% species protection values) for samples collected from MW601 across the three sampling events.

Table 7-4. Deviations from the historical groundwater dataset

Deviation	PFHxS			PFOS			PFOS+PFHxS			PFOA		
First-time detection during OMR period	None			MW103 (October 2023)			None			None		
New exceedances of ecological criteria during OMR period	NA			None			NA			None		
New exceedances of human health criteria during OMR period	NA			NA			None			None		
New maximums during OMR period	Sample	New max	Previous max	Sample	New max	Previous max	Sample	New max	Previous max	Sample	New max	Previous max
	MW103	0.12 µg/L (Oct 2023)	0.06 µg/L (Nov 2022)	MW601	0.37 µg/L (Oct 2023)	0.34 µg/L (Nov 2022)	MW103	0.14 µg/L (Oct 2023)	0.06 µg/L (Nov 2022)	MW103	0.04 µg/L (Oct 2023)	0.02 µg/L (Nov 2022)
	MW103	0.28 µg/L (Apr 2024)	0.12 µg/L (Oct 2023)	MW103	0.04 µg/L (Apr 2024)	0.02 µg/L (Oct 2023)	MW103	0.32 µg/L (Apr 2024)	0.14 µg/L (Oct 2023)	MW103	0.06 µg/L (Apr 2024)	0.04 µg/L (Oct 2023)
New minimums during OMR period	None			Sample	New min	Previous min	Sample	New min	Previous min	None		
				MW008	0.01 µg/L (Apr 2024)	0.02 µg/L (Apr 2023)	MW008	0.09 µg/L (Apr 2024)	0.10 µg/L (Apr 2022)			
NA = not applicable – where there are no applicable screening criteria												

The deviations outlined in Table 7-4 for the October 2023, April 2024 and March 2025 events, are generally consistent with historical results.

7.2 Surface water results

7.2.1 Summary of field observation

Water quality parameters, water colour and other field observations (e.g. sheen and odour) are presented in Table B-2, Appendix B. A summary of maximum and minimum field parameters for this OMR period, along with historical maximum and minimums at each surface water sampling location, is presented in Table 7-5 .

Complete records of field observations made during surface water sampling is presented in the respective SERs provided in Appendix D, Appendix E and Appendix F.

Table 7-5. Surface water quality field parameter ranges

Parameters	October 2023	April 2024	March 2025	Historical (Nov 2018 to April 2023)
No. of samples	14	9	101	66
Temperature (°C)	15.4 (SW121) to 24.7 (SW107)	15.4 (SW111) to 25.3 (SW630)	20.8 (SW111) to 31.2 (SW107)	10.5 (SW614) to 34.5 (SW107)
pH	6.64 (SW614) to 8.51 (SW108)	6.56 (SW136) to 9.64 (SW108)	7.10 (SW680) to 9.65 (SW108)	6.33 (SW140) to 9.93 (107)
Electrical conductivity (EC) (µS/cm)	62.6 (SW127) to 906 (SW144)	308 (SW136) to 1037 (SW108)	184 (SW136) to 1287 (SW111)	0.006 (SW107) to 1396 (SW148)
Redox potential (mV)	-100.7 (SW144) to 104.7 (SW140)	-31.6 (SW136) to 181.6 (SW140)	-7.3 (SW136) to 119.5 (SW680)	-169.6 (SW148) to 258.6 (SW106)
Dissolved oxygen (DO) (mg/L)	1.28 (SW644) to 5.33 (SW680)	0.67 (SW136) to 7.38 (SW108)	1.6 (SW111) to 8.01 (SW107)	0.08 (SW144) to 14.75 (SW107)

[1] water quality parameters were not collected for sewer samples (SW140, SW144, SW148, SW149)

The data in Table 7-5 indicate that the surface water in the Management Area is generally fresh at all locations, generally neutral for most surface water locations with the most alkaline detected in the WTP ponds (SW108), and typically showing oxidising conditions for most locations except for SW136 that can show slightly reducing conditions. The water quality parameters between the three sampling events (October 2023, April 2024 and March 2025) are consistent with the historical data set.

7.2.2 Surface water analytical results

Surface water analytical results for each sampling event covered in this OMR, as well as the available historical results for OMP sampling locations, are presented in Table B-4, Appendix B. A summary of surface water results for the monitoring period is provided in Table 7-6.

A similar approach to the groundwater has been adopted for surface water, where the results are presented based on the different sampling areas grouping (as listed in Table 4-2). Deviations from the historical surface water dataset are summarised in Table 7-7. No surface water samples reported exceedances of recreational water guidelines during the OMR monitoring period. The PFOS, PFOA, PFOS+PFHxS and Sum of PFAS concentrations in surface water from the latest monitoring round (March 2025) are presented in Figure A-8, Appendix A.

Table 7-6. Summary of PFOA, PFOS and PFOS+PFHxS concentrations in surface water

Analyte	No. of Samples[1]	Sampling Event	Concentration range (µg/L)	No. of samples > LOR	Ecological Criteria	No. of samples > Ecological Criteria	Recreational Criteria	No. of samples > Recreational Criteria
Overland drainage area (SW136, SW103, SW106, SW107, SW118)								
PFOA	4	October 2023	0.01 (SW107) to 0.04 (SW136)	4	220	0	10	0
	3	April 2024	<0.01 (SW107) to 0.03 (SW136)	2		0		0
	3	March 2025	<0.01 (SW136) to 0.02 (SW103)	2		0		0
PFOS	4	October 2023	0.20 (SW107) to 1.21 (SW136)	4	0.13	4 (SW103, SW107, SW118, SW136)	N/A	NA
	3	April 2024	0.16 (SW107) to 0.78 (SW136)	3		3 (SW103, SW107, SW136)		NA
	3	March 2025	0.10 (SW136) to 0.88 (SW103)	3		2 (SW103, SW107)		NA
PFOS+ PFHxS	4	October 2023	0.27 (SW107) to 1.91 (SW136)	4	N/A	NA	2	0
	3	April 2024	0.26 (SW107) to 1.38 (SW136)	3		NA		0
	3	March 2025	0.15 (SW136) to 1.22 (SW103)	3		NA		0
Sewer (SW140, SW144, SW148, SW149)								
PFOA	4	October 2023	<0.01 (multiple)	0	220	0	10	0
	3	April 2024	<0.01 (multiple)	0		0		0
	4	March 2025	<0.01 (multiple)	0		0		0
PFOS	4	October 2023	<0.01 (SW144) to 0.02 (SW148)	3	0.13	0	N/A	NA
	3	April 2024	<0.01 (multiple)	0		0		NA
	4	March 2025	<0.01 (multiple) to 0.02 (SW140)	1		0		NA
PFOS+	4	October 2023	<0.01 (SW144) to 0.03 (SW140)	3	N/A	NA	2	0

Analyte	No. of Samples[1]	Sampling Event	Concentration range (µg/L)	No. of samples > LOR	Ecological Criteria	No. of samples > Ecological Criteria	Recreational Criteria	No. of samples > Recreational Criteria
PFHxS	3	April 2024	<0.01 (multiple) to 0.02 (SW140)	1		NA		0
	4	March 2025	<0.01 (multiple) to 0.10 (SW140)	1		NA		0
WTP ponds (SW108, SW111)								
PFOA	6	October 2023	<0.01 (multiple) to 0.01 (SW108)	1	220	0	10	0
	4	April 2024	<0.01 (SW111) to 0.02 (SW108)	3		0		0
	2	March 2025	<0.01 (SW108) to 0.02 (SW111)	1		0		0
PFOS	6	October 2023	0.01 (multiple) to 0.02 (multiple)	4	0.13	0	N/A	NA
	4	April 2024	0.02 (multiple)	4		0		NA
	2	March 2025	0.01 (SW108) to 0.03 (SW111)	2		0		NA
PFOS+ PFHxS	6	October 2023	0.02 (SW108) to 0.04 (SW111)	6	N/A	NA	2	0
	4	April 2024	0.04 (multiple) to 0.05 (SW108)	4		NA		0
	2	March 2025	0.03 (SW108) to 0.09 (SW111)	2		NA		0
Former Quarry (SW127)								
PFOA	1	October 2023	<0.01	0	220	0	10	0
	0	April 2024	-	-		-		0
	0	March 2025	-	-		-		0
PFOS	1	October 2023	<0.01	0	0.13	0	N/A	NA
	0	April 2024	-	-		-		NA
	0	March 2025	-	-		-		NA
PFOS+ PFHxS	1	October 2023	<0.01	0	N/A	NA	2	0
	0	April 2024	-	-		NA		0

Analyte	No. of Samples[1]	Sampling Event	Concentration range (µg/L)	No. of samples > LOR	Ecological Criteria	No. of samples > Ecological Criteria	Recreational Criteria	No. of samples > Recreational Criteria
	0	March 2025	-	-		NA		0
Kapooka Creek (SW121, SW614[2], SW677[2], SW680[2])								
PFOA	3	October 2023	<0.01 (multiple) to 0.01 (SW121)	1	220	0	10	0
	1	April 2024	<0.01 (SW680)	0		0		0
	1	March 2025	<0.01 (SW680)	0		0		0
PFOS	3	October 2023	0.07 (SW614) to 0.31 (SW121)	3	0.13	1 (SW121)	N/A	NA
	1	April 2024	0.18 (SW680)	1		1 (SW680)		NA
	1	March 2025	0.22 (SW680)	1		1 (SW680)		NA
PFOS+ PFHxS	3	October 2023	0.08 (SW614) to 0.41 (SW121)	3	N/A	NA	2	0
	1	April 2024	0.23 (SW680)	1		NA		0
	1	March 2025	0.30 (SW680)	1		NA		0

Notes:

[1] All samples (primary and duplicates/triplicates)

[2] Off-base surface water sampling locations

NA = not applicable – where there are no applicable screening criteria

From the dataset above, there were no exceedances of the human health (recreational water) guidelines. Multiple exceedances of the ecological criteria (95% species protection values) were observed in numerous surface water samples across the three sampling events.

Table 7-7. Deviation from the historical surface water dataset

Deviation	PFHxS			PFOS			PFOS+PFHxS			PFOA
First-time detection during the OMR Period	SW149 (October 2023)			None			None			None
New exceedances of ecological criteria during the OMR period	NA			None			NA			None
New exceedances of human health criteria during the OMR period	NA			NA			None			None
New maximums during the OMR period	Sample	New max	Previous max	Sample	New max	Previous max	Sample	New max	Previous max	None
	SW680	0.05 µg/L (Oct 2023)	0.04 µg/L (Dec 2019)	SW121	0.31 µg/L (Oct 2023)	0.28 µg/L (Nov 2018)	SW121	0.41 µg/L (Oct 2023)	0.39 µg/L (Nov 2018)	
	SW680	0.08 µg/L (Mar 2025)	0.05 µg/L (Oct 2023)	SW680	0.18 µg/L (Apr 2024)	0.13 µg/L (Aug 2021)	SW680	0.18 µg/L (Oct 2023)	0.17 µg/L (Aug 2022)	
					0.22 µg/L (Mar 2025)	0.18 µg/L (Apr 2024)		0.23 µg/L (Apr 2024)	0.18 µg/L (Oct 2023)	
								0.30 µg/L (Mar 2025)	0.23 µg/L (Apr 2024)	
New minimums during the OMR period	None			None			None			None

NA = not applicable – where there are no applicable screening criteria

The deviations outlined in Table 7-7 for the October 2023, April 2024 and March 2025 events, are generally consistent with historical results.

7.3 Sediment results

7.3.1 Summary of field observations

Between October 2023 and March 2025 (the OMP monitoring period), no significant changes to odour or sediment colour were identified, and observations were generally consistent with previous event observations. The sediment samples observed during the monitoring period ranged from silts and clays through to sand and some gravels. Some samples had the presence of organic matter in the form of roots and reeds. The field observations are presented in Table B-5, Appendix B.

Complete records of field observations made during sediment sampling is presented in the respective SERs provided in Appendix D, Appendix E and Appendix F.

7.3.2 Sediment analytical results

Sediment analytical results for each monitoring event during the monitoring period are summarised in Table 7-8. The complete dataset, as well as the available historical sediment analytical results for OMP sampling locations, is presented in Table B-6, Appendix B. Deviations from the historical sediment dataset are summarised in Table 7-9. The PFOS, PFOA, PFOS+PFHxS and Sum of PFAS concentrations in sediment from the latest monitoring round (March 2025) are shown in Figure A-9, Appendix A.

Table 7-8. Summary of PFOA, PFHxS, PFOS and PFOS+PFHxS concentrations in sediment

Analyte	No. of Samples[1]	Sampling Event	Concentration range (mg/kg)	No. of samples > LOR
Overland drainage area (SD136, SD103, SD106, SD107, SD118)				
PFOA	5	October 2023	<0.0002 (multiple)	0
	5	April 2024	<0.0002 (multiple) to 0.0005 (SD136)	1
	2	March 2025	<0.0002 (multiple)	0
PFHxS	5	October 2023	<0.0002 to 0.0005 (SD136)	2
	5	April 2024	<0.0002 (SD106) to 0.0020 (SD136)	4
	2	March 2025	<0.0002 (multiple)	0
PFOS	5	October 2023	0.0016 (SD118) to 0.0132 (SD103)	5
	5	April 2024	0.0052 (SD106) to 0.0234 (SD136)	5
	2	March 2025	0.0058 (SD118) to 0.0067 (SD106)	2
PFOS+ PFHxS	5	October 2023	0.0016 (SD118) to 0.0136 (multiple)	5
	5	April 2024	0.0052 (SD106) to 0.0254 (SD136)	5
	2	March 2025	0.0058 (SD118) to 0.0067 (SD106)	2
WTP ponds (SD108, SD111)				
PFOA	6	October 2023	<0.0002 (multiple) to <0.005 (multiple)[3]	0
	4	April 2024	<0.0002 (multiple) to <0.005 (multiple)[3]	0
	0	March 2025	-	-
PFHxS	6	October 2023	<0.0002 (multiple)	0
	4	April 2024	<0.0002 (multiple)	0
	0	March 2025	<0.0002 (multiple)	-
PFOS	6	October 2023	<0.005 (multiple) to 0.0012 (SD111)	4
	4	April 2024	<0.005 (SD111) to 0.0023 (SD108)	3

Analyte	No. of Samples[1]	Sampling Event	Concentration range (mg/kg)	No. of samples > LOR
	0	March 2025	-	-
PFOS+ PFHxS	6	October 2023	<0.005 (multiple) to 0.0012 (SD111)	4
	4	April 2024	<0.005 (SD111) to 0.0023 (SD108)	3
	0	March 2025	-	-
Former Quarry (SD127)				
PFOA	1	October 2023	<0.0002	0
	1	April 2024	<0.0002	0
	1	March 2025	<0.0002	0
PFHxS	1	October 2023	<0.0002	0
	1	April 2024	<0.0002	0
	1	March 2025	<0.0002	0
PFOS	1	October 2023	<0.0002	0
	1	April 2024	0.0005	1
	1	March 2025	0.0004	1
PFOS+ PFHxS	1	October 2023	<0.0002	0
	1	April 2024	0.0005	1
	1	March 2025	0.0004	1
Kapooka Creek (SD121, SD614[2], SD677[2])				
PFOA	3	October 2023	<0.0002 (multiple)	0
	3	April 2024	<0.0002 (multiple)	0
	6	March 2025	<0.0002 (multiple) to <0.005 (SD614)3	0
PFHxS	3	October 2023	<0.0002 (multiple) to 0.0004 (SD614)	1
	3	April 2024	<0.0002 (multiple) to 0.0003 (SD614)	1
	6	March 2025	<0.0002 (multiple) to 0.0007 (SD121)	1
PFOS	3	October 2023	0.0010 (SD121) to 0.0175 (SD175)	3
	3	April 2024	0.0028 (SD121) to 0.0126 (SD614)	3
	6	March 2025	0.0027 (SD677) to 0.0228 (SD121)	6
PFOS+ PFHxS	3	October 2023	0.0010 (SD121) to 0.0179 (SD175)	3
	3	April 2024	0.0028 (SD121) to 0.0129 (SD614)	3
	6	March 2025	0.0027 (SD677) to 0.0235 (SD121)	6

Notes:
1. All samples (primary and duplicates/triplicates)
2. Off-base sampling locations
3. Higher LOR for inter-laboratory sample

Table 7-9. Deviation from the historical sediment dataset

Deviation	PFHxS			PFOS			PFOS+PFHxS			PFOA		
First-time detection during the OMR period	SD118 (April 2024)			None			None			None		
New maximums during the OMR period	Sample	New max	Previous max	Sample	New max	Previous max	Sample	New max	Previous max	Sample	New max	Previous max
	SD118	0.0004 mg/kg (Apr 2024)	<0.0002 mg/kg (Nov 2018)	SD108	0.0023 mg/kg (Apr 2024)	0.0006 mg/kg (Nov 2022)	SD108	0.0023 mg/kg (Apr 2024)	0.0006 mg/kg (Nov 2022)	SD136	0.0003 mg/kg (Apr 2023)	0.0005 mg/kg (Apr 2024)
				SD118	0.0207 mg/kg (Apr 2024)	0.0077 mg/kg (Apr 2022)	SD118	0.0211 mg/kg (Apr 2024)	0.0077 mg/kg (Apr 2022)			
				SD614	0.0175 mg/kg (Oct 2023)	0.0110 mg/kg (Oct 2021)	SD614	0.0179 mg/kg (Oct 2023)	0.0114 mg/kg (Oct 2021)			
New minimums during the OMR period	None			Sample	New min	Previous min	None			None		
				SD106	0.0036 mg/kg (Oct 2023)	0.0040 mg/kg (Nov 2022)						
				SD677	0.0027 mg/kg (Mar 2025)	0.0052 mg/kg (Oct 2021)						

The deviations outlined in Table 7-9 for the October 2023, April 2024 and March 2025 events, are generally consistent with historical results.

8. Interpretation and discussion

8.1 Key changes during the monitoring period

Overall, the data collected during the monitoring period is relatively consistent with previous results and does not indicate any significant changes to the risk profile at the site. A more detailed discussion is provided in the following sections.

8.2 Hydrogeology

The groundwater elevations during each sampling event have been used to indicate groundwater flow direction from the base to off-base areas. Consistent standing water level measurements have been recorded during the past three sampling events. Groundwater flow within the regional aquifer is inferred to be north-westerly, towards the Murrumbidgee River, consistent with the previous monitoring events and the DSI (Jacobs, 2019). The inferred groundwater flow from the latest sampling event (March 2025) is shown in Figure A-5 and Figure A-6, Appendix A.

8.3 Groundwater results and trends

As mentioned in Section 4.1, the groundwater monitoring network has been arranged into three groups based on the sampling area: WTP, former commandant's house, and Kapooka Creek flow pathway. Each sampling area and inferred down-gradient locations are discussed in the following sections.

8.3.1 Wastewater Treatment Plant

A discussion of groundwater results for monitoring wells surrounding the WTP is presented below:

- PFAS concentrations in perched water (MW107) to the north of the WTP, were detected throughout the monitoring period. Concentrations of PFOA reported between October 2023 and March 2025 were consistent and slightly above the LOR (0.01 – 0.02 µg/L), and below the adopted ecological screening criteria. PFOS concentrations across the three sampling events also reported below the adopted ecological screening criteria and slightly above the LOR. Stantec (2024a; 2024b) previously indicated that the PFAS detection at MW107 might be due to a leakage from the clay-lined WTP or potentially due to rainwater infiltration. Stantec recommended additional monitoring following periods of high rainfall to provide a better understanding of the influence of rainwater infiltration on the observed PFAS concentrations. This was not able to be achieved in the October 2023, April 2024 or March 2025 events, as there had not been more than 1mm cumulative total of rainfall in the 7 days prior to sample collection at MW107. As the PFAS detections in MW107 were consistent with the previous monitoring results and below the ecological screening criteria there is not considered to be a change in risk levels to the surrounding area. Furthermore, it is noted that the DSI included an assessment of the extent of perched groundwater around the WTP. A total of nine soil bore push tube locations were advanced to 10 m BGL at a greater distance around the WTP and were left over night to test for the presence of perched water. These were all observed to be dry. Based on the observations, the DSI concluded that the extent of perched water around the WTP is limited to the immediate area around the WTP ponds (Jacobs, 2019).
- The PFHxS, PFOS, PFOA, and PFOS+PFHxS concentrations at MW103 (regional aquifer, south of WTP) exceeded the previous maximum concentrations initially during the October 2023 sampling and then again during the April 2024 sampling event. However, concentrations of PFOS and PFOA have consistently reported below the adopted ecological screening criteria, including the October 2023 event. Concentrations of perfluorobutane sulfonic acid (PFBS), perfluoroheptanoic acid (PFHpA) and perfluoropentanoic acid (PFPeA) were detected (slightly above the LOR) for the first time at MW103 in October 2023. Stantec (2024b) undertook additional sampling of MW103 in December 2023 which reported concentrations of PFBS, PFHpA and PFPeA below the LOR. In April 2024, Stantec detected a new maximum concentration of PFHxS (0.28 µg/L) and increased concentrations of PFBS (0.07 µg/L),

PFHpA (0.05 µg/L) and PFPeA (0.05 µg/L) were noted in addition to the first-time detection of perfluoropentane sulfonic acid (PFPeS) (0.04 µg/L). The April 2024 samples were still noted to remain below the adopted ecological screening criteria for PFOS and PFOA. The most recent (March 2025) sampling event, detected only PFHxS concentrations above the LOR. The PFAS concentrations in the Regional Aquifer at MW103 indicate the potential for PFAS migration from perched water to the regional aquifer. This had not been previously observed. The potential PFAS pathway into the regional aquifer is unclear and will be further assessed as more monitoring data is collected. As the maximum concentrations were still at levels below the ecological guidelines, the concentrations do not currently represent a risk to the environment. As discussed in Section 6, Defence understands that there is no use of regional groundwater in this area for drinking water purposes. Therefore, no unacceptable risks to human health have been identified.

- The northern regional groundwater well adjacent the WTP (MW104) reported concentrations less than the LOR and the adopted screening criteria between October 2023 and February 2025. These results are consistent with the historical dataset and demonstrates that the extent of PFAS contamination and its migration in groundwater within this area is currently limited. Therefore, the PFAS risks from the WTP are not considered to have changed.

8.3.2 Former Commandants House

A discussion of groundwater results for monitoring wells near the former commandant's house is presented below:

- PFAS was only observed in MW008 during the October 2023 and April 2024 events; and its replacement well MW628 during the March 2025 sampling event. All other groundwater monitoring locations (MW109, MW110, MW625) reported PFAS less than LOR and adopted ecological screening criteria.
- Concentrations of PFOS and PFHxS detected at MW008 and MW628 were generally consistent with the historical dataset, reporting the same PFAS compounds, within the same order of magnitude and below the adopted ecological screening criteria. PFOA has not been detected in MW008 or the replacement well MW628. The risks to the surrounding environment are therefore not considered to have changed.
- The presence of PFAS at MW008 was thought to be due to surface water infiltration, or migration through the sand and gravel alluvial deposits in the upper soil layers because of the construction of the sampling well (large diameter, open concrete structure, (Jacobs, 2019)). In July 2024, Stantec installed MW628 to replace monitoring well MW008. During the installation of MW628, Stantec constructed a well with a bentonite plug between 11 and 14 m BGL and a screened interval between 15 and 21m BGL. Despite MW628 targeting the regional aquifer and sealing off pathway for surface water infiltration and runoff, the results at MW628 are consistent with MW008, indicating there are impacts at depth in that area. Only a single round of sampling has been completed at the new location MW628 and therefore a conclusive statement on the source and pathway for the PFAS impacts at the location cannot be made. Further sampling will be necessary to determine if the result remains consistent or is transient potentially associated with construction of the well.
- Monitoring well MW625 is located to the northwest (i.e. down-gradient) of both MW008 and MW628. The concentrations in MW625 for all PFAS compounds analysed were below laboratory LOR, indicating that the impact at MW008 and MW628 is currently not widely distributed and risks are therefore considered to be low.

8.3.3 Kapooka Creek Flow Pathway

A discussion of groundwater results for monitoring wells within the Kapooka Creek pathway is presented below:

- The highest PFAS concentrations from the groundwater monitoring events conducted during the monitoring period (October 2023 and March 2025) were consistently observed at MW601, off-base along the Kapooka Creek flow pathway.

- MW601 is screened in perched water adjacent to Kapooka Creek. A new maximum PFOS concentration was detected in October 2023 (0.37 µg/L), while the previous maximum concentration was detected in November 2022 (0.34 µg/L). PFOS concentrations have since dropped and remain within the historical ranges in the April 2024 (0.27 µg/L) and March 2025 (0.23 µg/L) rounds. Concentrations of PFOS have consistently exceeded the adopted ecological freshwater 95% (0.13 µg/L) since 2020. The Mann-Kendall assessment (refer to Table 8-2), indicates there is an increasing trend for PFOS present at MW601, which appears to be due to the October 2023 result. A temporal chart was created for MW601 (refer to Figure 8-1) that shows the PFOS + PFHxS concentration during the current OMR period also remain within the historic ranges. Concentrations of PFOA reported below the LOR and adopted screening criteria during the monitoring period (October 2023 and March 2025). The slight increase of PFOS detected as a new maximum in October 2023 does not represent a material change in risk levels. The concentrations have since reduced in the April 2024 and March 2025 events. Therefore, the risk to the surrounding area is not considered to have changed.
- The regional groundwater well within the Kapooka Creek flow pathway (MW624) reported PFHxS, PFOS and PFOA concentrations below LOR and adopted ecological screening criteria during the monitoring period (October 2023 and March 2025). The non-detects for PFHxS, PFOS and PFOA reported over the monitoring period is consistent with the historical dataset. Concentrations of 6:2-fluorotelomersulfonic acid (6:2 FTS) were detected for the third time in April October 2023 (0.49 µg/L); however, concentrations have since been reported below the LOR in April 2024 and March 2025. The 6:2 FTS concentrations were only observed in the regional aquifer at Kapooka Creek (not within the perched aquifer at MW601), and in April 2022 around the WTP (MW104 and MW107). Concentrations of PFHpA were detected (at the LOR, 0.02 µg/L) for the first time at MW624 in April 2024 and then reported below the LOR in March 2025. PFHpA was also detected at similar concentrations in the perched aquifer (MW601) in 2019, however, concentrations have since reported below the LOR. The low concentrations and sporadic detections of PFAS at MW624 are therefore not considered to currently pose a risk to human health or the environment.

8.3.4 Groundwater Assessment

In addition to the dataset outlined in Section 7.1.4, all available historical data for OMP locations within Defence ESdat database were evaluated to analyse temporal patterns. Temporal trends at specific monitoring locations within the Management Area were assessed using Mann-Kendall trend analysis, based on the Defence ESdat database, for primary samples only and applying a significance level of 5%

To determine whether a Mann-Kendall test or if a seasonal Kendall test is appropriate for review of trends in the data set, a test of seasonality was undertaken. This was completed by using the Pearson Correlation Coefficient (R^2) to confirm if there is a linear relationship between the PFAS concentrations (for PFOS, PFHxS, PFOA and PFBS) and the SWL's (in mAHD). To determine the R^2 value, the dataset was first reviewed to confirm that more than 50% of the dataset had detections (otherwise below the LOR (<LOR) was applied), or where less than 50% results were LOR than ½ LOR value was used for the result.

An R^2 value greater than 0.7 indicates a very strong positive correlation between the data sets, demonstrating that that concentrations of PFAS increase as SWL increase, or the inverse situation where concentrations of PFAS decrease as SWL decreases. An R^2 result would therefore indicate that the PFAS results are seasonally affected and the Mann Kendall test would be inappropriate for assessment of trends, rather a Seasonal Kendall test would be better suited. The results of the Pearson Correlation Coefficient for the current dataset, are provided in Table 8-1.

Table 8-1. Assessment of Data Seasonality

Location	Area	Formation	PFOS	PFHxS	PFOA	PFBS
MW103	Waste Water Treatment Plant	Regional	<LOR	0.26	0.69	<LOR
MW104		Regional	<LOR	<LOR	<LOR	<LOR

Location	Area	Formation	PFOS	PFHxS	PFOA	PFBS
MW107		Perched	0.088	0.61	0.010	0.00072
MW601	Kapooka Creek	Perched	0.57	0.034	<LOR	0.075
MW624		Regional	<LOR	<LOR	<LOR	<LOR
MW008	Former Commandants House.	Regional	0.13	0.25	<LOR	<LOR
MW109		Regional	<LOR	<LOR	<LOR	<LOR
MW110		Regional	<LOR	<LOR	<LOR	<LOR
MW625		Regional	<LOR	<LOR	<LOR	<LOR
MW628		Regional	Not enough data			
Bold R^2 value – indicates >0.7						

The results of the seasonality assessment did not identify a strong correlation between SWL and the PFAS concentrations, therefore use of a Mann-Kendall analysis is considered appropriate. The temporal trends at specific monitoring locations within the Monitoring Area were assessed using Mann-Kendall analysis, based on the results within the Defence ESdat database, for primary samples only and applying a significance level of 5%.

A Mann-Kendall assessment was undertaken on all locations sampled during the monitoring period, utilising all data available (not just data from the OMP monitoring rounds). The assessment compared the historic results at each location for PFOS, PFHxS, PFOA and PFOS + PFHxS to identify whether concentrations in later samples were increasing compared to earlier concentrations.

The Mann-Kendall assessment demonstrates an increasing trend in more recent samples, when the calculated 'S-Value' exceeds 0. A reducing trend in more recent samples is present when the 'S-Value' is below 0. However, a statistically significant trend (i.e. where the probability that any observed trend would not occur purely by chance) is present when the probability 'p-value' is less than the significance level, in this case 5%.

Where the Mann-Kendall assessment has identified a significantly increasing trend (refer to Table 8-2), a temporal trend chart has been prepared. The cumulative rainfall (in mm) has also been included on the charts. The rainfall levels show the cumulative volume on record at the Bureau of Meteorology Kapooka (Defence) weather station (074272) in the 7 days prior to collection of the sample from the specific location, to allow for assessment of the influence of rainfall on PFAS concentrations in groundwater.

In relation to PFOA in groundwater, no trends were identified. Maximum concentrations across all groundwater sampling locations were well below the assessment criteria. Additionally, concentrations were identified below LOR at six of the nine groundwater sampling locations. No first-time detects or exceedances were reported.

Increasing trends were identified in groundwater samples MW103 (PFHxS and PFOS + PFHxS) and MW601 (PFOS and PFOS+PFHxS). The temporal charts for these two wells are shown in Figure 8-1. MW103 is a groundwater well located close to the WTP with a screened section in the fractured rock representing the regional aquifer. MW601 is located in the field surrounding Norman Duck Oval, adjacent to Kapooka Creek and screened in the perched aquifer. The temporal charts for these locations do not show any seasonal influence or clear correlation with rainfall.

The increasing trend identified through Mann-Kendall assessment for MW103 (PFHxS and PFOS + PFHxS) is due to a previous maximum result that peaked in 2024. The potential for vertical migration from perched water around the WTP into the regional aquifer system is still possible but not confirmed with the most recent round of sampling that shows a decrease from the previous monitoring round.

The increasing trends in MW601 (PFOS and PFOS+PFHxS) also appears to be related to previous peaks in 2022 and 2023. Kapooka Creek has been identified as a losing system, with downward migration of surface water into the underlying perched water aquifer likely occurring (Jacobs, 2019). The losing nature of Kapooka Creek and the associated aquifer interactions are significant in understanding contaminant pathways.

Figure 8-1. Time series of PFOS, PFHxS and Sum (PFHxS + PFOS) results (µg/L) from MW103 and MW601, with 7 day rainfall prior to sampling.

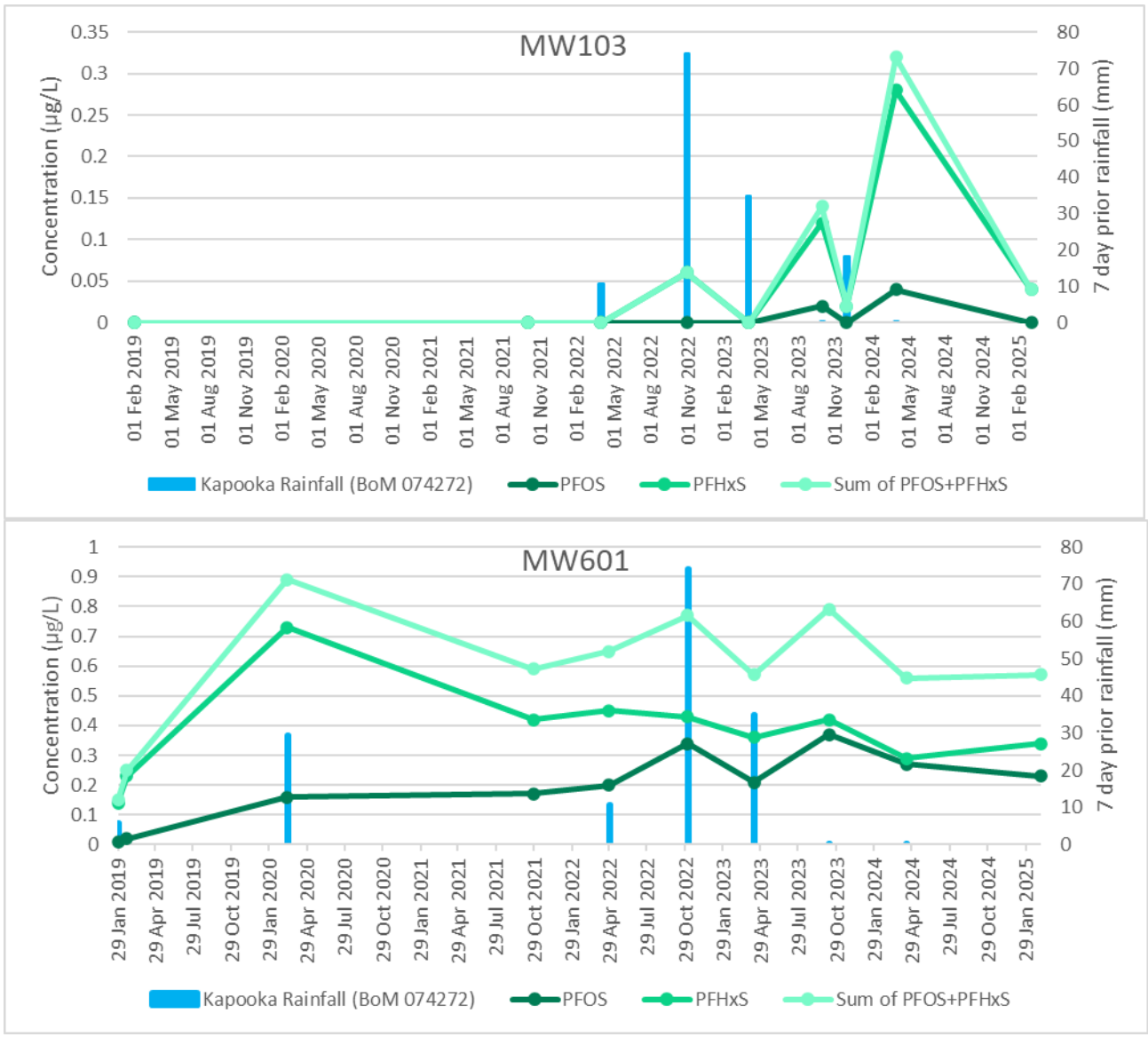


Table 8-2. Mann-Kendall Analysis Results – Groundwater

Monitoring Zone	Location Code	Monitoring Unit (Indicative)	PFOA (µg/L)	PFOS (µg/L)	PFHxS (µg/L)	PFOS+PFHxS PFOS + PFHxS (µg/L)
Wastewater Treatment Plant (WTP)	MW103	Regional	No Trend, S=9, N=9	No Trend, S=9, N=9	**Increasing, S=18, N=9**	**Increasing, S=18, N=9**
	MW104	Regional	No Trend, S=0, N=8	No Trend, S=0, N=8	No Trend, S=0, N=8	No Trend, S=0, N=8
	MW107	Perched	No Trend, S=9, N=8	No Trend, S=9, N=8	No Trend, S=2, N=8	No Trend, S=8, N=8
Former Commandants House	MW109	Regional	No Trend, S=0, N=8	No Trend, S=0, N=8	No Trend, S=0, N=8	No Trend, S=0, N=8
	MW110	Regional	No Trend, S=0, N=8	No Trend, S=0, N=8	No Trend, S=0, N=8	No Trend, S=0, N=8
Kapooka Creek/flow path	MW601	Perched	No Trend, S=-6, N=10	**Increasing, S=33, N=10**	No Trend, S=2, N=10	No Trend, S=6, N=10
	MW624	Regional	No Trend, S=0, N=9	No Trend, S=0, N=9	No Trend, S=0, N=9	No Trend, S=0, N=9
Former Commandants House	MW625	Regional	No Trend, S=0, N=8	No Trend, S=0, N=8	No Trend, S=0, N=8	No Trend, S=0, N=8

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8.4 Surface water results and trends

As mentioned in Section 4.1, the surface water sampling locations have been arranged into five groups with rationale provided in the OMP (Jacobs, 2021b): Overland drainage pathways (on-base), Kapooka Creek, Sewer, WTP ponds, Overland drainage pathway (former quarry). Each sampling area and inferred down-gradient locations are discussed in the following sections.

8.4.1 Overland drainage pathways (on-base)

A discussion of surface water results for on-base overland drainage pathway is presented below:

- With the exception of SW106, all on-base overland drainage locations (SW103, SW107, SW118 and SW136) reported PFOS concentrations during the monitoring period (October 2023, April 2024 and/or March 2025) above the adopted ecological screening criteria.
- All samples collected from SW103 (located downstream of the fire station, within Drainage Line 1 to the east of Parade Avenue) during the monitoring period were in exceedance of the adopted ecological screening criteria (freshwater 95% species protection). On 12 October 2023, SW103 reported concentrations of PFOS (0.88 µg/L) and PFOS + PFHxS (1.16 µg/L) that were similar but reduced from previous maximum sampled on 4 October 2023 (outside of OMP). PFOS and PFOS + PFHxS concentrations reported since, in April 2024 and March 2025, have remained consistent, but remain above the adopted ecological freshwater 95% criteria (0.13 µg/L). As concentrations have remained relatively consistent with previous results the risk levels are not considered to have changed. However, the concentrations detected in Drainage Line 1 likely indicate that it is acting as a secondary source of PFAS contamination.
- Concentrations of PFOS at SW107 (located within Drainage Line 1, downstream of the fire station just north of Hospital Road) were generally consistent across the monitoring period (October 2023 to March 2025) and exceeded the adopted ecological screening criteria (freshwater 95% species protection). This also supports the understanding that Drainage Line 1 is acting as a secondary source of PFAS contamination. As concentrations have remained consistent, there is not considered to have been a change in risk
- PFOS+PFHxS and PFOS concentrations at SW118 (located within Drainage Line 1 north of the Kapooka Visitor Car park) increased by an order of magnitude between April 2023 and the October 2023 sampling event. Concentrations of PFOS reported in October 2023 exceeded the adopted ecological screening criteria (freshwater 95% species protection). SW118 was dry in April 2024 and March 2025, however, a sediment sample was collected in lieu of surface water (refer Section 8.5.1). The detections of PFAS exceeding the adopted screening criteria supports the understanding that Drainage Line 1 is acting as a secondary source of PFAS contamination.
- The adopted ecological screening criteria (freshwater 95% species protection) for PFOS was exceeded at SW136 (located downstream of the fire station, within Drainage Line 1 to the west of Parade Avenue) in October 2023 and April 2024. SW136 reported a significant increase (greater than two orders of magnitude) in PFOS concentrations from April 2023 (0.004 µg/L) to October 2023 (1.21 µg/L). Similarly, PFOS+PFHxS concentrations increased from 0.004 µg/L in April 2023 to 1.91 µg/L in October 2023. Concentrations PFOS and PFHxS reduced between October 2023 to March 2025 to be 0.10 µg/L and 0.05 µg/L respectively. As concentrations have remained relatively consistent with previous results the risk levels are not considered to have changed. However, the concentrations detected in Drainage Line 1 likely indicate that it is acting as a secondary source of PFAS contamination.
- SW106 (located within Drainage Line 2) was dry and unable to be sampled during the October 2023 and March 2025 sampling events. The PFOS + PFHxS has been above the LOR in both November 2022 and April 2023 events, with PFOS detected above the LOR for the first time in April 2023. The low concentrations detected when this location has been able to be sampled suggests that there is a limited

risk from discharges at this location. It is noted however that surface water at this location has only been able to be sampled twice as part of the OMP and therefore further sampling is recommended to confirm the results.

8.4.2 Kapooka Creek

A discussion of surface water results for the Kapooka Creek (off-base) pathway sampling locations is presented below:

- New maximums for PFOS (0.31 µg/L, previous maximum was 0.22 µg/L in April 2023) and PFOS+PFHxS (0.41 µg/L, previous maximum was 0.28 µg/L) were observed in October 2023 at SW121 (located at the northern boundary of the base, where Kapooka Creek discharges into San Isidore). The concentrations do not exceed the recreational water guideline values but do exceed the adopted ecological criteria for PFOS. SW121 was dry in April 2024 and March 2025, however, a sediment sample was collected in lieu of surface water (refer Section 8.5.2).The new maximum concentrations are only minor increases from the previous maximum. It is also noted that this location has been frequently dry during sample collection and there are only 2 OMP rounds (including October 2023) to compare results against. Therefore, there is not considered to be a greater risk in the Kapooka Creek then was understood during the OMR and DSI. Further sampling of this location will help confirm the understanding of PFAS risks at Kapooka Creek.
- An increasing trend for PFOS+PFHxS has been observed at SW680 (located within a dam on a private property along Kapooka Creek) in all three sampling events (0.18 µg/L in October 2023, 0.23 µg/L in April 2024 and 0.80 µg/L in March 2025). Concentrations of PFOS in samples collected in April 2024 and March 2025 exceeded the adopted ecological screening criteria (freshwater 95% species protection). The concentrations detected within SW680 are within the range of concentrations considered along Kapooka Creek during the HHERA and therefore no increased risk to human health or the environment based on the results detected. Further, the residents at the property where SW680 is located have stated that water from the dam is not used for watering of home consumed food.
- Concentrations of PFOS and PFOS+PFHxS sampled from SW614 (located in Kapooka Creek adjacent to Norman Duck Oval) in October 2023 were below the adopted screening criteria and generally consistent with the historical dataset. There is no change in risk identified during the HHERA, associated with these results. SW614 was dry in April 2024 and March 2025, however, a sediment sample was collected in lieu of surface water (refer Section 8.5.2).
- SW677 was dry in almost all OMP sampling events, with only one sample collected in November 2022. Sediment samples have been collected from the location in October 2023, April 2024 and March 2025 lieu of surface water (refer Section 8.5.2).
- There is a spatial trend of higher PFAS concentrations close to the base SW121 compared to the furthest sample SW614. The potential risk impact of the increase in the PFAS concentrations at surface water within the Kapooka Creek flow pathway is discussed in Section 10.

8.4.3 Sewer

A discussion of sewer sampling results is presented below:

- None of the sewer network samples collected during the monitoring period (October 2023 to March 2025) exceeded the adopted ecological screening criteria for PFOS or PFOS+PFHxS.
- PFOA was below the LOR throughout the OMR monitoring period (October 2023 to March 2025).
- The PFOS+PFHxS concentration in SW140 was detected at 0.10 µg/L during the March 2025 sampling round. The concentrations within the remaining sewer network samples ranged between below the LOR and 0.03 µg/L, consistent with historical sampling results. The concentrations detected for the sewer samples during the period are consistent with the risk levels and findings identified in the DSI (Jacobs, 2019) and HHERA (Jacobs, 2021).

8.4.4 Wastewater treatment plant ponds

A discussion of surface water results from the WTP ponds is presented below:

- SW111 (the northern WTP pond) reported detections of PFOA (0.02 µg/L), PFBS (0.02 µg/L) and PFHxA (0.02 µg/L) in March 2025. This is the first detection of PFOA and PFBS since December 2018. Concentrations of PFOS and PFOS+PFHxS were reported below the adopted ecological screening criteria and consistent with historical results. The new maximum results are still at very low concentrations and are higher in other locations around the base. The concentrations within the northern WTP pond is therefore not considered to change the risk levels identified in the DSI (Jacobs, 2019) and HHERA (Jacobs, 2021).
- The PFAS concentrations at SW108 (the southern WTP pond) were below the adopted screening criteria and appear relatively stable. The concentrations therefore are not considered to change the risk levels identified in the DSI (Jacobs, 2019) and HHERA (Jacobs, 2021).

8.4.5 Overland drainage pathway (former quarry)

A discussion of surface water results for the former quarry overland drainage path is presented below:

- PFAS concentrations in SW127 (located on the western side of the ridgeline, downstream of the quarry) were below the LOR in October 2023. The location was dry in April 2024 and March 2025. Sediment sample was collected in lieu of surface water (refer Section 8.5.4).
- These results continue to demonstrate that there is limited migration of PFAS from the former quarry to Sandy Creek via the surface water drainage pathway.

8.4.6 Surface Water Assessment

In addition to the dataset outlined in Section 7.2.2, historical data were used to analyse temporal patterns. The historic surface water results (primary samples only) were reviewed and confirmed to meet the following assumptions:

- The samples from each round of monitoring were independent from one another and were not serially correlated.
- The sample results are considered to be representative of the true conditions at the sampling time.
- The sample collection, handling and measurement methods are consistent with standard consulting and analytical laboratory practices.

The above assumptions are consistent with the requirements under a Mann-Kendall assessment to determine where there are monotonic trends (either increasing or decreasing). Therefore, the temporal trends in PFAS for surface waters was undertaken at all locations within the management and monitoring areas using the Mann-Kendall analyses, based on the available results within the Defence ESdat database, for primary samples only and applying a significance level of 5%, utilising all data available (not just data from the OMP sampling events).

Where the Mann-Kendall assessment has identified a significantly increasing trend (refer to Table 8-3), a temporal trend chart has been prepared. The cumulative rainfall (in mm) has also been included on the charts. The rainfall levels show the cumulative volume on record at the Bureau of Meteorology Kapooka (Defence) weather station (074272) in the 7 days prior to collection of the sample from the specific location, to allow for assessment of the influence of rainfall on PFAS concentrations in groundwater.

In relation to PFOA, no trends were identified. Maximum concentrations across all surface water sampling locations were well below the assessment criteria. Additionally, no first-time detects or exceedances were reported.

Increasing trends were identified in surface water sample SW680 (PFOS and PFOS+PFHxS). SW680 is a private property dam within the Kapooka Creek flow path. Figure 8-2 provides a temporal chart of SW680 PFOS, PFHxS and PFOS + PFHxS concentrations.

The increasing trend identified through Mann-Kendall assessment for SW680 (PFOS and PFOS + PFHxS) appears to have been consistent over the last four sampling events since a minimum in November 2022. The minimum concentration in November 2022 appears to be correlated with increased rainfall as observed at Bureau of Meteorology station no. 074272.

Figure 8-2. Time series of PFOS, PFHxS and PFOS + PFHxS results (µg/L) from SW680, with 7-day rainfall prior to sampling.

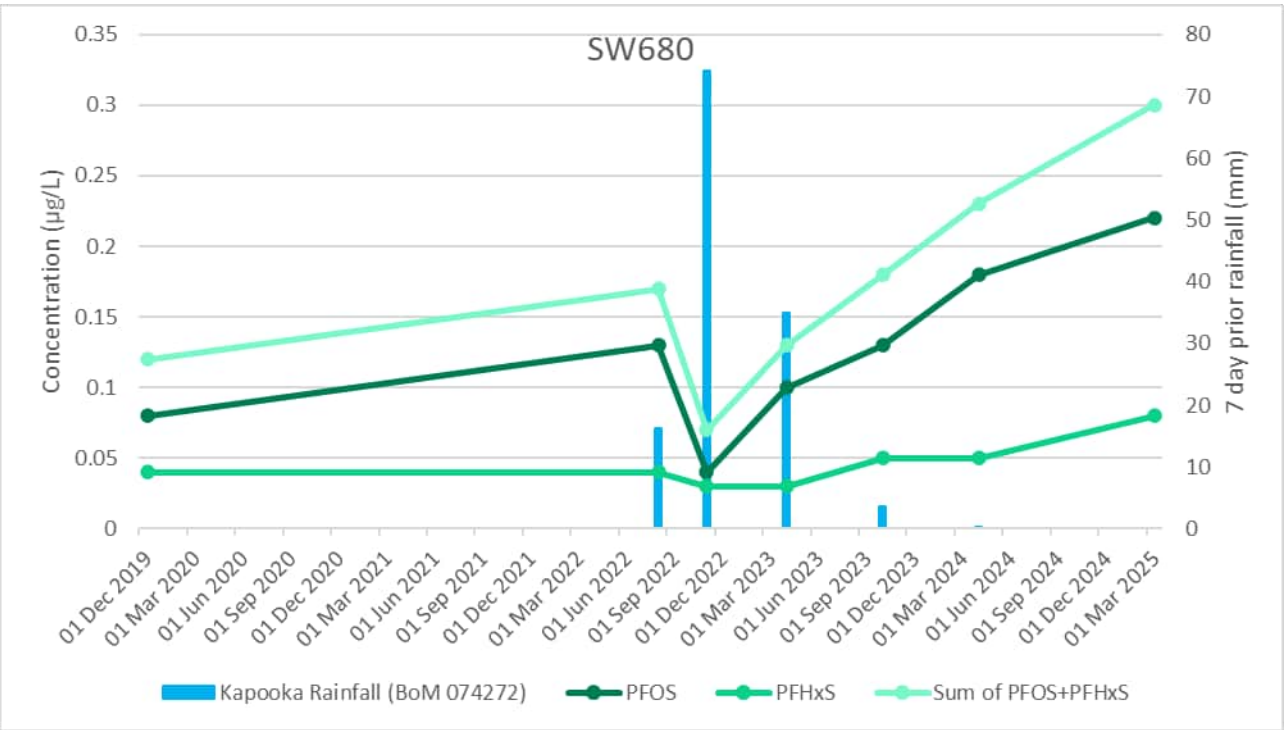


Table 8-3. Mann-Kendall Analysis Results – Surface Water

Monitoring Zone	Location Code	PFOA (µg/L)	PFOS (µg/L)	PFHxS (µg/L)	PFOS + PFHxS (µg/L)
Overland drainage pathways	SW103	No Trend, S=3, N=9	No Trend, S=2, N=9	No Trend, S=6, N=9	No Trend, S=4, N=9
	SW106	No Trend, S=0, N=3	No Trend, S=2, N=3	No Trend, S=2, N=3	No Trend, S=3, N=3
	SW107	No Trend, S=-5, N=8	No Trend, S=-2, N=8	No Trend, S=3, N=8	No Trend, S=4, N=8
WTP ponds	SW108	No Trend, S=-5, N=8	No Trend, S=-5, N=8	No Trend, S=-3, N=8	No Trend, S=-5, N=8
	SW111	No Trend, S=0, N=8	No Trend, S=-1, N=8	No Trend, S=0, N=8	No Trend, S=-1, N=8
Overland drainage pathways	SW118	No Trend, S=0, N=6	No Trend, S=-3, N=6	No Trend, S=-2, N=6	No Trend, S=-3, N=6
Kapooka Creek	SW121	No Trend, S=-9, N=8	No Trend, S=-7, N=8	No Trend, S=-10, N=8	No Trend, S=-7, N=8
Former Quarry	SW127	No Trend, S=0, N=6	No Trend, S=0, N=6	No Trend, S=0, N=6	No Trend, S=0, N=6
Sewer	SW140	No Trends, S=0, N=8	No Trend, S=2, N=8	No Trends, S=-2, N=8	No Trend, S=1, N=8
	SW144	No Trends, S=0, N=8	No Trend, S=-6, N=8	No Trends, S=-7, N=8	No Trend, S=8, N=8
	SW148	No Trends, S=-7, N=8	No Trend, S=-8, N=8	No Trends, S=-7, N=8	No Trend, S=-8, N=8
	SW149	No Trends, S=0, N=7	No Trend, S=1, N=7	No Trends, S=4, N=7	No Trend, S=2, N=7
Kapooka Creek/flow path	SW614	No Trend, S=0, N=5	No Trend, S=3, N=5	No Trend, S=3, N=5	No Trend, S=3, N=5
	SW680	No Trend, S=0, N=7	**Increasing, S=14, N=7**	No Trend, S=10, N=7	**Increasing, S=15, N=7**

8.5 Sediment results and trends

Sediment samples were collected from the surface water monitoring locations where surface water was not present, except for the sewers (SW140, SW144, SW148 and SW149) and the private property dam (SW680). The sediment PFAS results were arranged into four groups based on the sampling areas.

8.5.1 Overland drainage pathways (on-base)

A discussion of the sediment sampling locations within the overland drainage pathway on-base:

- PFHxS was detected for the first time at SD118 (located within Drainage Line 1 north of the Kapooka Visitor Car park) in April 2024 monitoring event, just above the laboratory LOR (0.0004mg/kg), that dropped below the LOR during the March 2025 sampling round. At the same location (SD118), a new minimum for PFOS concentration was seen in October 2023 (0.0016 mg/kg), followed by a new maximum for PFOS (0.0207 mg/kg) and then dropped back to levels consistent with previous sediment samples during the March 2025 event. Variability in PFAS concentrations in sediment samples is expected given the different material types in soil, and also that PFAS can likely become more concentrated in sediments due to reduced dilution, contributing to the observed increase. The concentrations at SD118 will need to be watched further as more results are received, but they are noted to be low and do not change current risk assessments in the area (based on the surface water results downgradient of this location, refer to Section 8.4.2).
- A new maximum for PFOA was also observed at SD136 (located downstream of the fire station, within Drainage Line 1 to the west of Parade Avenue) in April 2024, just above the laboratory LOR (0.0005mg/kg). The remaining PFAS results are consistent with previous concentrations and are not thought to be a risk to human health or the environment.
- Perfluorodecane sulfonic acid (PFDS) was detected at SD107 (at the LOR, 0.0002 mg/kg, located within Drainage Line 1, downstream of the fire station just north of Hospital Road) for the first time in October 2023. However, concentrations of PFDS in the most recent sediment sample (April 2024) reported below the LOR. The low concentrations and other results being consistent with previous concentrations, the risk levels are therefore considered to remain stable.
- The remaining sediment locations (SD103 - located downstream of the fire station, within Drainage Line 1 to the east of Parade Avenue; and SD106 - located within Drainage Line 2) reported stable or slightly increased PFOS+PFHxS and PFOA concentrations, when samples were collected. No change in risk levels associated with these results.

8.5.2 Kapooka Creek

A discussion of sediment sampling locations within Kapooka Creek pathway:

- PFOS concentration in SD121 at the northern eastern corner of the base (where Kapooka Creek leaves the military area) were consistent with previous monitoring in October 2023 and April 2024. In March 2025, PFOS concentrations in SD121 increased by an order of magnitude. The PFOS concentration recorded in March 2025 is comparable to the level observed during the DSI (Jacobs, 2019). Perfluorononanesulfonic acid (PFNS) was detected for the first time at SD121 (0.0004 mg/kg) in March 2025. PFNS has only previously been analysed during the April 2023 sampling event and the LOR used by the laboratory was higher than the concentration detected in March 2025. Based on the concentrations remaining consistent with previous results, there is no inferred change in risk levels.
- A new maximum for PFOS was recorded for SD614 (located in Kapooka Creek adjacent to Norman Duck Oval) in October 2023. PFOS concentrations decreased slightly in the April 2024 and March 2025 results. PFNS was analysed for the first time at SD614 in March 2025 and detected at 0.0002 mg/kg. The increase at SD614 is not considered to change the risk levels, as the respective surface water samples are

not showing the same increase (refer to Section 8.4.2). Therefore, the risks determined during the DSI (Jacobs, 2019) and HHERA (Jacobs, 2021) are considered appropriate.

- SD677 (i.e. the most northern sediment monitoring location along the Kapooka Creek) reported a new minimum PFOS concentration in the March 2025 event. Further confirming that the risk levels in Kapooka Creek are consistent with expectations and variations in sample results are more likely due to the heterogeneity of sediment samples.

8.5.3 Wastewater treatment plant ponds

A discussion of the sediment sampling locations within the WTP ponds:

- PFOS increased by an order of magnitude at SD108 (the southern WTP pond) during the April 2024 monitoring event, with a new maximum PFOS concentration of 0.0023 mg/kg. A sediment sample was not collected during the March 2025 event due to the presence of water at the location. The PFOS in the surface water sample (refer to Section 8.4.4), was generally consistent with historical results and appears relatively stable. Perfluoroundecanoic acid (PFUnDA) was detected for the first time at SD108 (0.0002 mg/kg) in April 2024. The low concentrations and the majority of results being consistent with previous results, indicates that the variation in sample results is likely due to the heterogeneity of sediment samples.
- PFAS concentrations at the SD111 (the northern WTP pond) appear consistent with the historical results and do not change the previous risk assessments.

8.5.4 Overland drainage pathway (former quarry)

The PFAS concentrations within SD127 (former quarry overland drainage pathway) also appear to be stable and consistent with the historical results, do not indicate a change in risk levels to the western side of the base and Sandy Creek.

8.5.5 Sediment Assessment

There is currently no Australian regulatory endorsed assessment levels for risk posed to ecology or human health by PFAS in sediment. However, consistent with the DSI (Jacobs, 2019) and HHERA (Jacobs, 2021), the presence or absence of PFAS in sediments are collected to obtain an understanding of the nature of PFAS within the Management Area environment.

The variability in sediment concentrations recorded between the sampling events are likely to be attributed to the inherent variability associated with sediment sampling, due to the heterogeneous nature of the sample matrix, the repeatability of the sampling location and the impact climatic conditions. In addition, increases in PFAS concentrations may also be likely within sediment samples, due to reduced dilution (as the ephemeral creek dries), contributing to the observed increase.

9. Conceptual site model

9.1 Conceptual Site Model changes

A conceptual site model (CSM) was developed during the DSI (Jacobs, 2019) and summarised in the PMAP (Defence, 2021b).

The OMP sampling events over the monitoring period have provided additional data to further understand the changing conditions of the PFAS concentrations in groundwater, surface water and sediment. This data and the findings of other investigations and on base works (as described in Section 3), have been used to review the CSM as noted in Sections 9.1.1 to 9.1.3 below.

9.1.1 PFAS source areas changes

Defence engaged Veolia to complete the removal of 1,230 tonnes of PFAS impacted soils from the ELF stockpiles in May 2024. This secondary source area has, therefore, been removed from site and the CSM.

The completion of the PFAS Mass Flux Investigation at the base has identified that Drainage Line 1 is the most significant PFAS transport pathway for surface water. This drainage line receives runoff from the Fire Station. Sediment in the drainage line may be acting as a secondary source of PFAS. PFAS mass flux in surface water from Drainage Line 2 appears to be less significant. This drainage line receives runoff from the recreational areas that have historically been irrigated with treated effluent from the WTP.

9.1.2 PFAS pathways changes

Despite fluctuations in PFAS concentrations observed throughout the OMR monitoring period, the PFAS transport pathways remain the same as those developed in the DSI (Jacobs, 2019) and HHERA (Jacobs, 2021).

An increase in PFOS and PFHxS+PFOS concentrations has been observed within the private dam along Kapooka Creek (SW680) over time. However, given Kapooka Creek is a known pathway and the concentrations observed during the monitoring period are within the same order of magnitude, no change has been made to the PFAS pathways in the CSM.

Between October 2023 and April 2024, PFOS was detected for the first time in regional groundwater (MW103, below the adopted ecological criteria).Concentrations of PFHxS peaked in 2024 (0.28 µg/L), then reduced to 0.04 µg/L during the March 2025 event where all other PFAS reported below the LOR.

The pathway of PFAS into the regional aquifer is unclear. Although PFAS have been detected within the regional aquifer (MW103), the northernmost regional groundwater well on-base (MW104, downgradient of MW103) continues to report concentrations less than the LOR.

9.1.3 PFAS receptors changes

Based on the findings over the monitoring period, receptors of PFAS within the Management Area identified in the DSI (Jacobs, 2019) and HHERA (Jacobs, 2021) remain unchanged.

While an increase in PFOS concentrations has been observed within the private dam along Kapooka Creek (SW680), the concentrations remain an order of magnitude below the adopted recreational water quality criteria.

9.2 Updated conceptual site model

Based on the considerations within Sections 9.1, the previous CSM (Defence, 2021c) has been updated. The new CSM is outlined in Sections 9.2.1 to 9.2.3 and the revised CSM is presented as Figure 9-1.

9.2.1 PFAS source areas

Sources of PFAS contamination have been classified as either primary or secondary sources. Primary source areas are related to areas with historical usage or storage of fire-fighting foams containing PFAS as an active ingredient. Secondary source areas exist where PFAS migration from a primary source has occurred and are generally considered low-concentration diffuse source areas. With the removal of the ELF stockpiles by Veolia in May 2024 (Veolia, 2024), the secondary source has been removed from the CSM. A new secondary source Drainage Line 1 has been identified following the completion of the PFAS Mass Flux Study (Jacobs, 2025a). A summary of the primary and secondary source areas, taking into account the findings from October 2023 to March 2025 monitoring events, is shown in Table 9-1 below.

Table 9-1. PFAS Source Areas

Primary Sources
▪ Fire Station (CSR_NSW_000872) ▪ Fire Training Pad (CSR_NSW_000399) ▪ Former Fire Training Areas (CSR_NSW_000396, CSR_NSW_000397, CSR_NSW_000400) ▪ Parade Ground and the Former Quarry (CSR_NSW_000391) ▪ Several areas related to waste disposal, including the Buried Waste Areas (CSR_NSW_000394)
Secondary Sources
▪ WTP (CSR_NSW_000382) ▪ Grassy areas on-base irrigated with treated effluent (Reused Effluent Irrigation Areas) ~~▪ PFAS impacted soil in Enhanced Land Force (ELF) stockpiles~~ ▪ **PFAS impacted soil in Buried waste areas** ▪ **Drainage Line 1, downstream of the Fire Station**
Sources shaded green above, represent a change from the previous CSM within the PMAP, Areas that are struck out, have been removed from the base (Defence, 2021c)

9.2.2 PFAS pathways

The potential pathways for the migration of PFAS identified in the DSI (Jacobs, 2019) and HHERA (Jacobs, 2021) at the base remain unchanged. The pathways include the following:

- PFAS from impacted soil potentially leached into surface water runoff, subsequently flowing into Kapooka Creek
- On-base accumulation of impacted surface water and sediment in drainage channels, sewer infrastructure, and dams on-base
- Treated effluent from the WTP, potentially containing PFAS, was historically used for irrigation in designated grassed areas on-base
- Surface water migration into perched water surrounding the WTP and along Kapooka Creek
- Direct exposure of receptors to PFAS impacted soils and surface water in the Management Area
- Use of PFAS impacted surface water along Kapooka Creek for watering of gardens and home-grown produce (for home consumption)
- Surface water flows towards and discharges into the Murrumbidgee River during heavy rain events
- Bioaccumulation in higher-order species from consumption of lower-order species that inhabit PFAS-impacted environments (e.g., dams along Kapooka Creek)

The primary pathway for PFAS migration from source to receptors at the base remains the same as what was noted in the PMAP (i.e., primarily via surface water) (Defence, 2021c). Groundwater is not a major transport pathway for PFAS from the base. However, the detection of PFAS in the regional groundwater at MW103 indicates that there may be potential for migration of PFAS from perched groundwater to regional groundwater in this area. This requires further monitoring to enable confirmation.

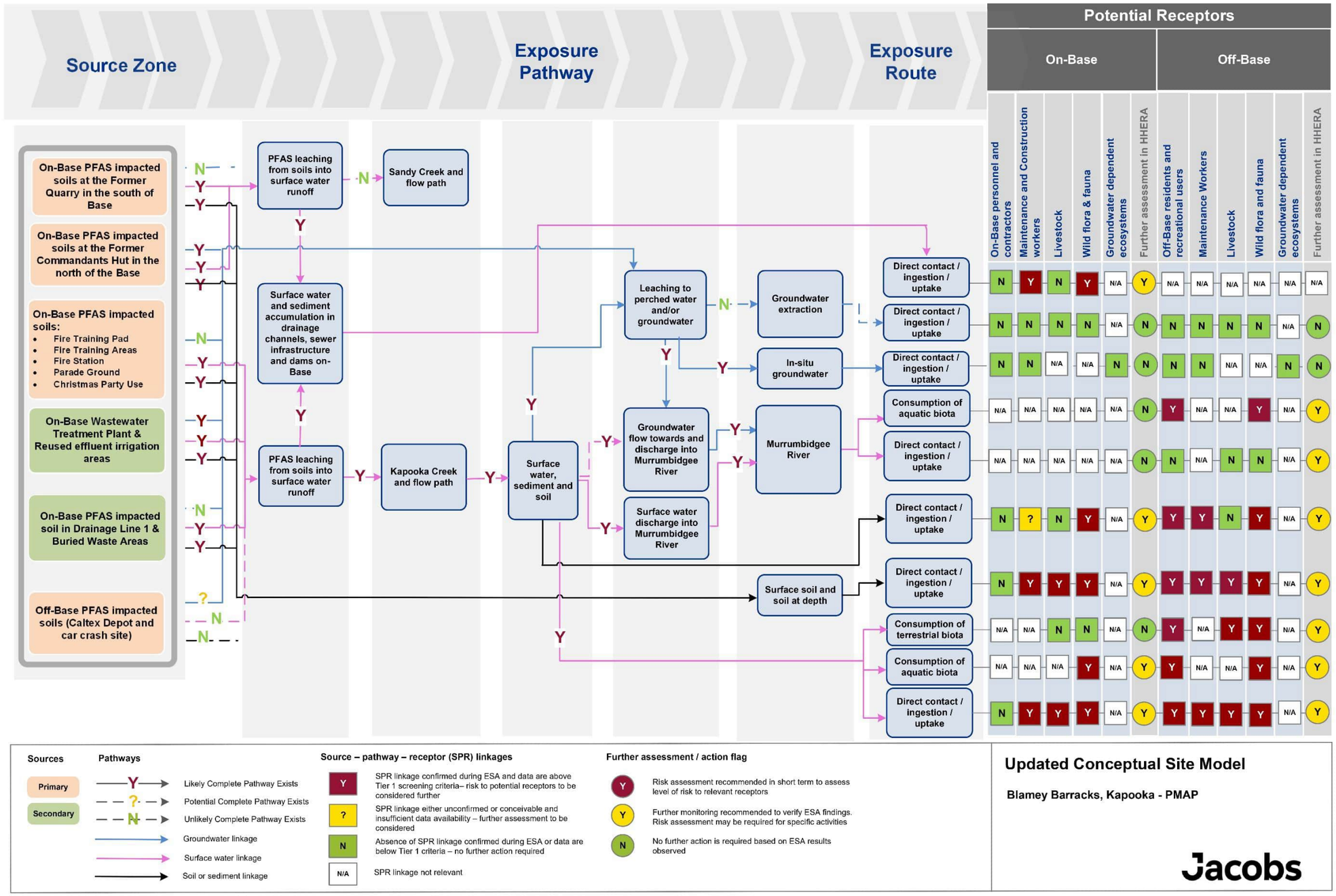
9.2.3 PFAS receptors

Receptors of PFAS within the Management Area identified in the DSI (Jacobs, 2019) and HHERA (Jacobs, 2021) remain unchanged. The receptors are summarised in Table 9-2 below.

Table 9-2. PFAS receptors within the management area

On-base Receptors	Off-base Receptors
▪ Defence personnel and contractors ▪ Maintenance and construction workers ▪ Livestock with access to PFAS impacted water ▪ Wild flora and fauna	▪ Residents and recreational users of land and dam water along the Kapooka Creek flow pathway ▪ Maintenance and construction workers within the Kapooka Creek flow pathway ▪ Livestock with access to the Kapooka Creek flow pathway ▪ Wild flora and fauna with access to the Kapooka Creek flow pathway and the Murrumbidgee River

Figure 9-1. Revised Conceptual Site Model – Blamey Barracks Kapooka (March 2025)



10. Risk profile review

The HHERA (Jacobs, 2021) assessed the potential human health and environmental risks resulting from exposure to base derived PFAS in soil, groundwater, surface water and sediment.

10.1 Human health risk assessment

The data collected during this OMP monitoring period (October 2023 to March 2025) and historical monitoring conducted at the base to date suggest that the risk profile to human health within the PFAS Management Area remains unchanged.

The HHERA (Jacobs, 2021) identified the following individual exposure pathways present a potentially elevated risk to human health for properties along Kapooka Creek:

- Consumption of home-grown duck eggs for both children and adults (for the upper limit scenario).
- Consumption of home reared sheep for children (upper limit scenario). This was found to present a low and acceptable risk when this is the only exposure pathway for adults.
- Consumption of fish from private dams that form Kapooka Creek for both children and adults
- Potential future consumption of home-slaughtered pigs for meat consumption by residents. This activity is not known to be currently carried out in the Management Area but could occur in the future.
- Potential future consumption of home-produced milk from dairy cattle raised on properties near and/or along the Kapooka Creek flow path. This risk is elevated for children. However, the risk is low and acceptable when this is the only exposure pathway for adults. This activity is not known to currently be carried out in the Study Area but could occur in the future.

No new exceedances of human health criteria were observed during the monitoring period. New maximums and new minimums were reported during the monitoring period, with concentrations within the same order of magnitude as the previous historical maximum or minimum.

Given that an increasing trend in PFOS+PFHxS concentrations was observed in the surface water sample collected at a dam on private property along Kapooka Creek (SW680), Jacobs conducted an additional assessment to evaluate potential changes in risks to human health associated with the data obtained during the OMP monitoring period. The additional assessment included review of the two exposure point concentrations (EPC) used in the HHERA for typical and upper limit scenarios. The typical EPC was calculated from the average, and the upper EPC was calculated from the 95% UCL of the mean concentration of samples from the receptor group.

The maximum PFOS+PFHxS concentration at SW680 exceeded the upper EPC limit used for various exposure scenarios in the HHERA. As such, the maximum PFOS+PFHxS concentration at SW680 was used instead of the EPC derived for upper limit exposure in the HHERA in the additional assessment. The outcome of the assessment indicated no change to the overall human health risk in relation to the property where SW680 is located. Furthermore, the residents at the property where SW680 is located have stated that water from the dam is not used for watering of home-consumed food.

It is noted that the derived EPCs used in the HHERA may no longer be relevant to the properties along Kapooka Creek if the same upward trend in PFOS+PFHxS concentrations at SW680 occurred at all dams along the creek.

10.2 Ecological risk assessment

The data collected during this OMP monitoring period (October 2023 to March 2025) and historical monitoring conducted at the base to date suggest no changes to the identified ecological risk assessment exposure pathways as identified within the HHERA (Jacobs, 2021).

The exposure pathways where potential risks were identified as elevated in the HHERA (Jacobs, 2021) were as follows:

- Ingestion of PFAS impacted surface water or sediment by ecological receptors.
- Ingestion of organisms (terrestrial and aquatic plants or animals) that have been exposed to PFAS, where bioaccumulation is occurring.

11. Conclusions

Groundwater, surface water and sediment sampling were undertaken between October 2023 and March 2025 at Blamey Barracks Kapooka, as part of the PFAS OMP sampling program. The results from the monitoring are reported and discussed in this OMR. The conclusions in relation to the investigation objectives in Section 1.2 during the monitoring period, are provided below.

11.1 Objective 1: To evaluate the spatial and temporal (including seasonal) variability of PFAS in the environment.

Overall, the PFAS concentrations in groundwater, surface water and sediment reported during the October 2023, April 2024 and March 2025 monitoring events were generally within historical ranges and the spatial extents of PFAS was consistent with previous sampling rounds, with few exceptions:

11.1.1 Groundwater

- PFOS+PFHxS concentrations continue to be detected in the perched aquifer within the WTP sampling area (MW107). The source of these detections (eg. leakage from the WTP ponds or other surface water infiltration) has not been determined. However it is noted that the DSI concluded that the extent of perched water around the WTP is limited.
- PFOS+PFHxS in the Regional Aquifer to the south of the WTP area in MW103 were detected at their highest concentrations in October 2023, and concentrations continued to increase further in April 2024. However, in the March 2025 event the concentrations decreased by over an order of magnitude to be just above the laboratory detection levels. The PFAS concentrations in the Regional Aquifer at MW103 indicate the potential for PFAS migration from perched water to the regional aquifer. This had not been previously observed. This will be further assessed as more monitoring data is collected. The maximum concentrations were still at levels below the ecological guidelines and therefore do not represent a risk to the environment. Defence understands that there is no use of regional groundwater in this area for drinking water purposes. Therefore, no unacceptable risks to human health have been identified.
- During the monitoring period, PFAS was not detected in regional groundwater at MW104, which is to the north of the WTP (prior to San Isidore). This demonstrates that the extent of PFAS contamination and its migration in groundwater within this area is currently limited.
- A maximum PFOS concentration was detected in MW601 (perched aquifer adjacent Kapooka Creek) in October 2023, which was slightly above the previous historic maximum. Since the maximum detection, the PFOS results in MW601 have continued to decrease. The trend assessment is still showing an increasing trend, but this appears to be related to the previous higher detections. The new maximum PFOS detection in October 2023 was only slightly above the previous maximum, and concentrations have since reduced in the April 2024 and March 2025 events. Therefore, the risk to the surrounding area is not considered to have changed.

11.1.2 Surface water

- An increasing trend in PFOS+PFHxS concentrations was observed in surface water samples collected at a dam on private property along Kapooka Creek (SW680). An additional risk assessment indicated no change to the overall human health risk in relation to the property where SW680 is located. However, the derived exposure point concentrations used in the risk assessment may no longer be representative for other properties along the Kapooka Creek pathway if similar upward trends are occurring at other dams along the creek.
- A new maximum concentration was detected in SW103 near the fire station for PFOS and PFOS+PFHxS in the October 2023 event. SW103 was retested and the results decreased back within historical ranges. The April 2024 and March 2025 results remained consistent with the historical ranges. All PFOS samples collected from SW103 (located on base within the Overland Pathway, downstream of the fire station

within Drainage Line 1) during the monitoring period were in exceedance of the adopted ecological screening criteria (freshwater 95% species protection). On 12 October 2023, SW103 reported concentrations of PFOS (0.88 µg/L) and PFOS + PFHxS (1.16 µg/L) that were similar but reduced from the previous maximum sampled on 4 October 2023 (outside of OMP). PFOS and PFOS + PFHxS concentrations reported since, in April 2024 and March 2025, have remained consistent, but remain above the adopted ecological freshwater 95% criteria (0.13 µg/L). As concentrations have remained relatively consistent with previous results the risk levels are not considered to have changed. However, the concentrations detected in Drainage Line 1 likely indicate that it is acting as a secondary source of PFAS contamination.

- No surface water samples reported exceedances of recreational water guidelines during the OMR monitoring period.

11.1.3 Sediment

- There are currently no Australian regulatory endorsed assessment levels for risk posed to ecology or human health by PFAS in sediment. Therefore, concentrations of PFAS in sediment have been used to assess trends rather than comparing to screening criteria.
- PFOS concentrations in SD121 (Kapooka Creek near the base discharge point to San Isidore) increased by an order of magnitude from April 2024 to March 2025. The March 2025 results are consistent with concentrations observed during the initial site investigation (i.e. DSI). Given the ephemeral nature of Kapooka Creek and the absence of co-located surface water (SW121) at the time of sampling, it is likely that PFAS became more concentrated in the sediment due to concentration via evaporation and reduced dilution, contributing to the observed increase.
- PFOS concentrations in SD108 (WTP pond) also increased by an order of magnitude between the October 2023 and April 2024 rounds. A sediment sample was not collected in March 2025 due to the abundance of water at the sampling location. The resulting surface water sample was consistent with previous results.

11.2 Objective 2: To identify any changes to the Conceptual Site Model (sources, transport pathways and/or receptors)

The mass flux assessment that was completed during the current period, concluded that surface waters within the drainage line from the fire station (and beneath Hospital Road) referred to as Drainage Line 1, had a higher contribution of PFAS then other drainage lines throughout the base. The CSM has been reviewed, and the Drainage Line 1 has been added as a secondary PFAS source. No changes have been identified to the exposure pathways or receptors at the base or within the Management Area.

Works undertaken by Defence during the monitoring period included the removal of the ELF Stockpiled materials (further discussed in relation to Objective 4 below). The PFAS impacted materials within the ELF Stockpiles were identified as a secondary PFAS source, that has now been removed, and the CSM has been updated to reflect the removal of the ELF stockpile.

11.3 Objective 3: To evaluate whether risks to human and ecological receptors require review

While there have been localised changes in PFAS concentrations during the monitoring period and a new secondary source area (Drainage Area 1) has been identified, the risk profiles associated with exposure to PFAS in groundwater, surface water, and sediment, as described in the HHERA (Jacobs, 2021), have not changed.

11.4 Objective 4: To evaluate the influence that risk management activities (e.g., remediation), have had on PFAS in the environment

One portion of remediation works has been completed during the current period. This involved the removal of the ELF Stockpiled materials (1,230 tonnes of PFAS impacted soils and associated construction debris) to licensed landfill facilities.

Other works that are currently still in the planning phase include the Riverina Redevelopment Program, that will cap ground areas and replace sub-surface infrastructure at one of the primary source areas (Fire Station and surrounds). The works will also include stormwater diversions and other measures that will lead to a slight improvement to downstream flood conditions including reduced flood levels and reduced peak flow rates. The Riverina Redevelopment Program will be undertaken in accordance with the requirements of the Construction and Maintenance Framework (Defence 2025), that ensures the completion of a risk assessment to demonstrate no increase in risk, or unacceptable risks to human health and the environment, following the application of appropriate management options.

The Riverina Redevelopment Works are not being completed by the Defence PFAS branch and will be reported separately. The approval process for the works continues and the Project was referred to the Parliamentary Standing Committee on Public Works (PWC) on 2 September 2025. It is currently expected that initial construction works will commence in mid-2026.

11.5 Objective 5: To determine whether any identified changes trigger an action or review

As discussed within Objective 1 and Objective 3, the increasing trend in PFOS+PFHxS concentrations in the surface water sample collected at a dam on private property along Kapooka Creek (SW680), triggered an additional risk assessment. The assessment indicated no change to the overall human health risk in relation to the property where SW680 is located.

Further assessment of the PFAS detected in regional groundwater near the WTP (MW103) will be undertaken as more data is collected.

11.6 Next steps

The proposed redevelopment of the Fire Station and surrounding area at the base under the Riverina Redevelopment Program will address a key management action in the PMAP and reduce PFAS movement from the base. Ongoing management of remaining PFAS at the base into the future can occur through Defence's routine environmental management processes including the PFAS Construction and Maintenance Framework (Defence, 2025). The OMP includes triggers for a review of risks and the potential implementation of management actions both on-base and off-base where changes to the risk profile occurs.

The following actions will be required to continue to monitor and manage PFAS originating from the base:

- A review of the OMP sampling locations and frequency will be undertaken to ensure monitoring targets areas of highest risk and continues to meet the overall objectives of the OMP.
- The revised OMP will be implemented. Data will continue to be shared with NSW government and local agencies. OMRs will continue to be made publicly available through Defence's website.

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Appendix A. Figures

Figure A-1. Site Locality Plan

Figure A-2. PFAS Sources and Management Area

Figure A-3. Groundwater Monitoring Network

Figure A-4. Surface Water and Sediment Monitoring Network

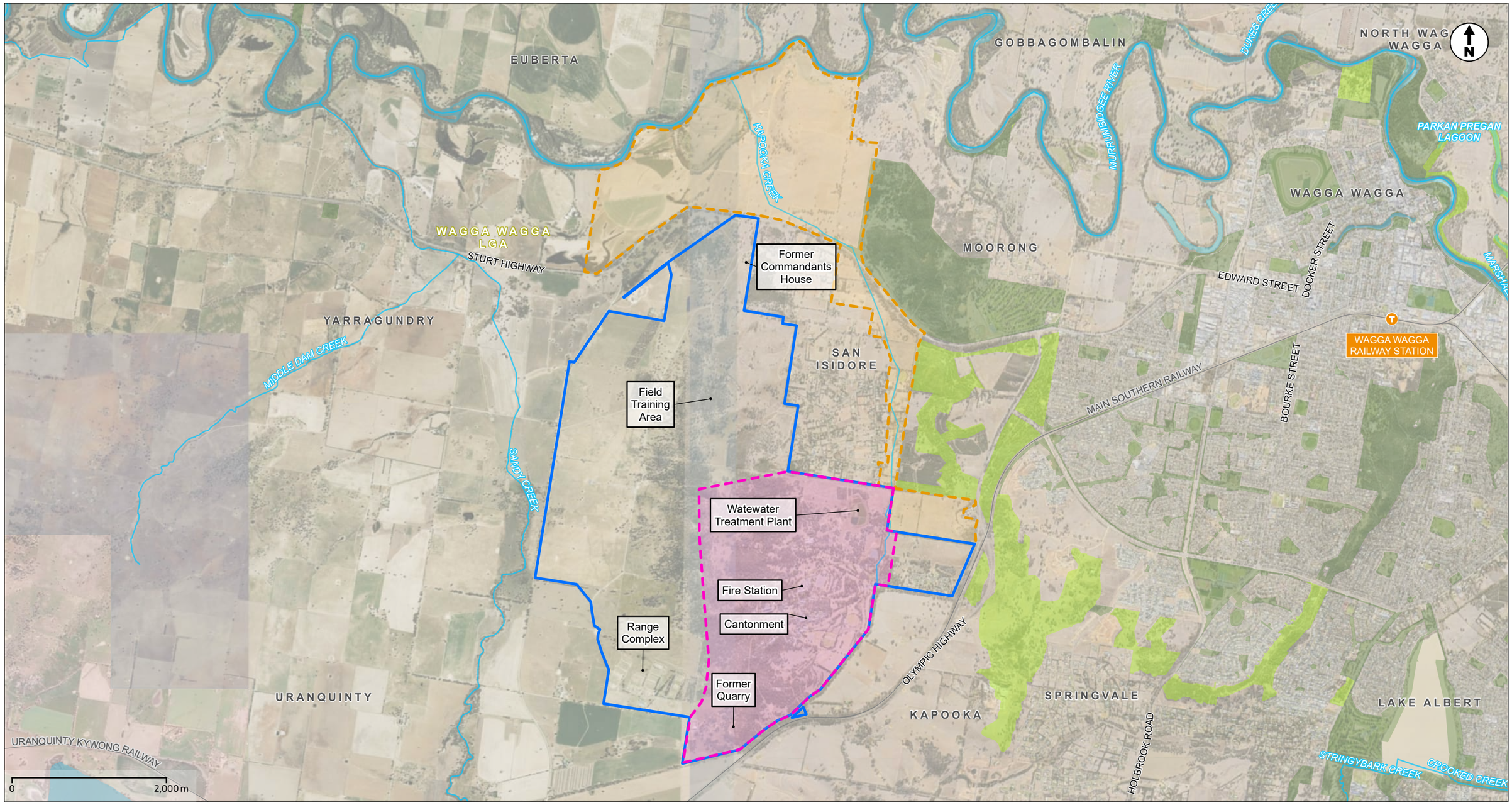
Figure A-5. Inferred Groundwater Contour (March 2025), Perched Wells

Figure A-6. Inferred Groundwater Contour (March 2025), Regional Wells

Figure A-7. PFAS Concentration Distribution - Groundwater (March 2025)

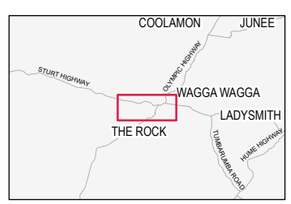
Figure A-8. PFAS Concentration Distribution – Surface Water (March 2025)

Figure A-9. PFAS Concentration Distribution – Sediments (March 2025)



Legend

- Site Boundary
- On-Base Management Area
- Off-Base Management Area
- Railway
- Watercourse
- Parks and recreation
- Environmental protection



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GDA2020 MGA Zone 55

Data sources: Jacobs 2025, DCS 2025
Basemap: Metromaps, ESRI Imagery 2025

Figure A-1: Blamey Barracks Kapooka, Site Locality Plan

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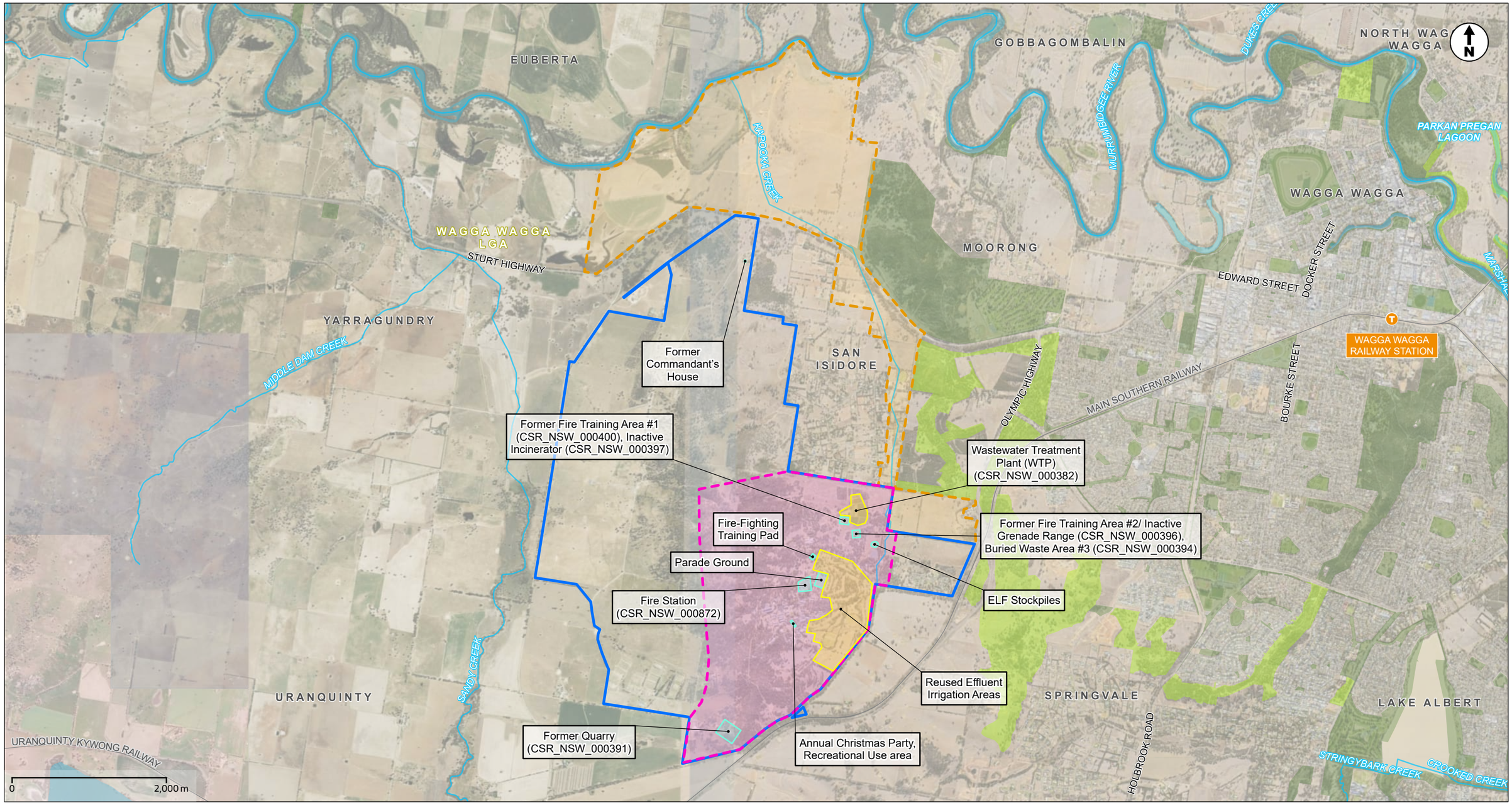


Legend

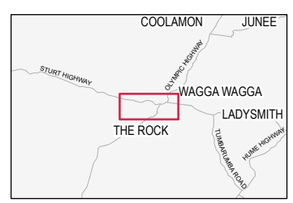
- Site Boundary
- On-Base Management Area
- Off-Base Management Area

Source areas

- Primary source area
- Secondary source area

- Railway
- Watercourse

- Parks and recreation
- Environmental protection



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GDA2020 MGA Zone 55
Data sources: Jacobs 2025, DCS 2025
Basemap: Metromaps, ESRI Imagery 2025

Figure A-2: Blamey Barracks Kapooka, PFAS Sources and Management Areas

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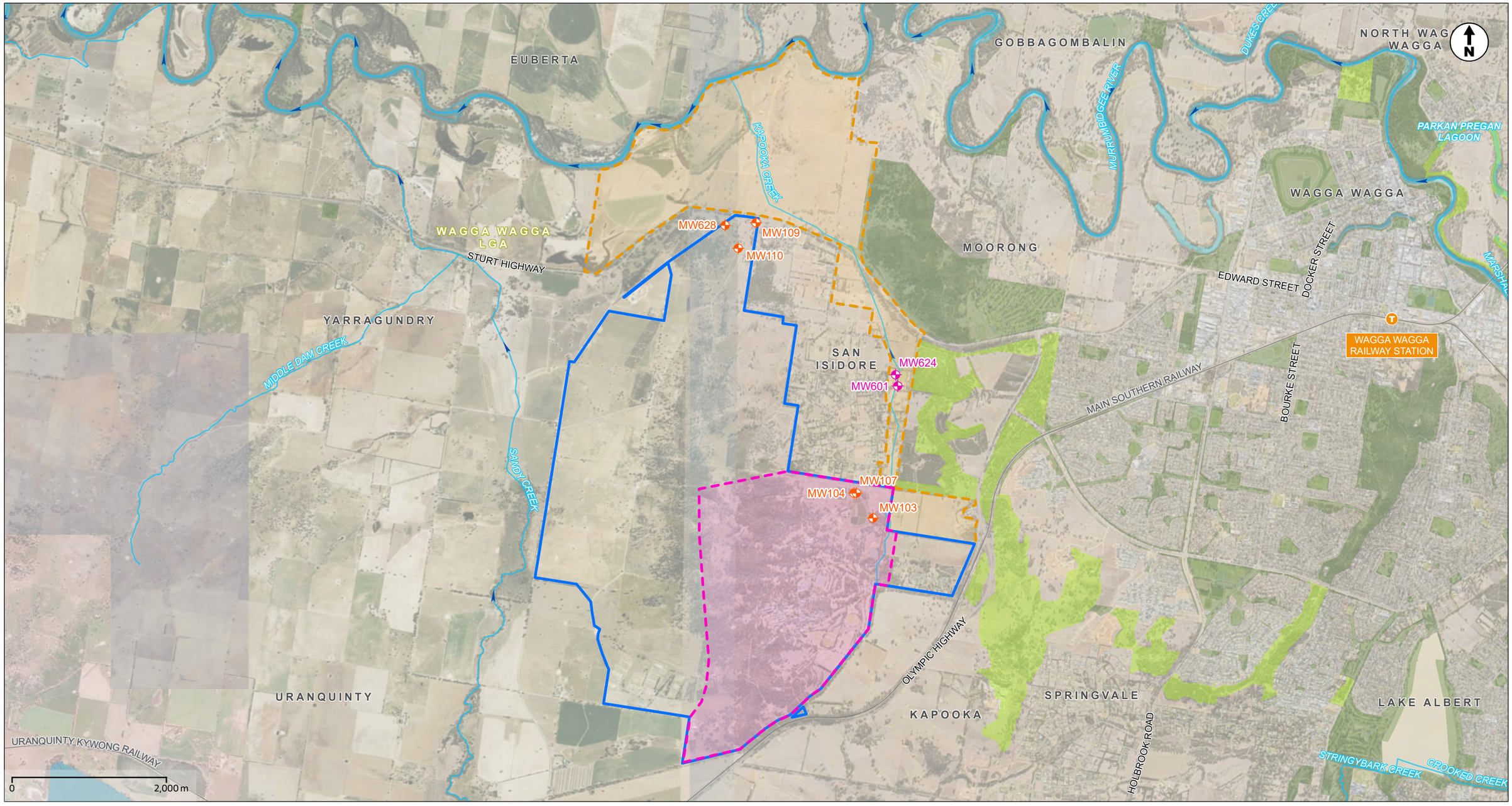


Legend

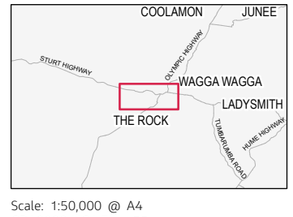
- Site Boundary
- On-Base Management Area
- Off-Base Management Area

Location type

- On-Site Groundwater Monitoring Well
- Off-Site Groundwater Monitoring Well

- Railway
- Watercourse

- Parks and recreation
- Environmental protection



Scale: 1:50,000 @ A4
GDA2020 MGA Zone 55

Data sources: Jacobs 2025, DCS 2025
Basemap: Metromaps, ESRI Imagery 2025

Figure A-3: Blamey Barracks Kapooka, Groundwater Monitoring Network

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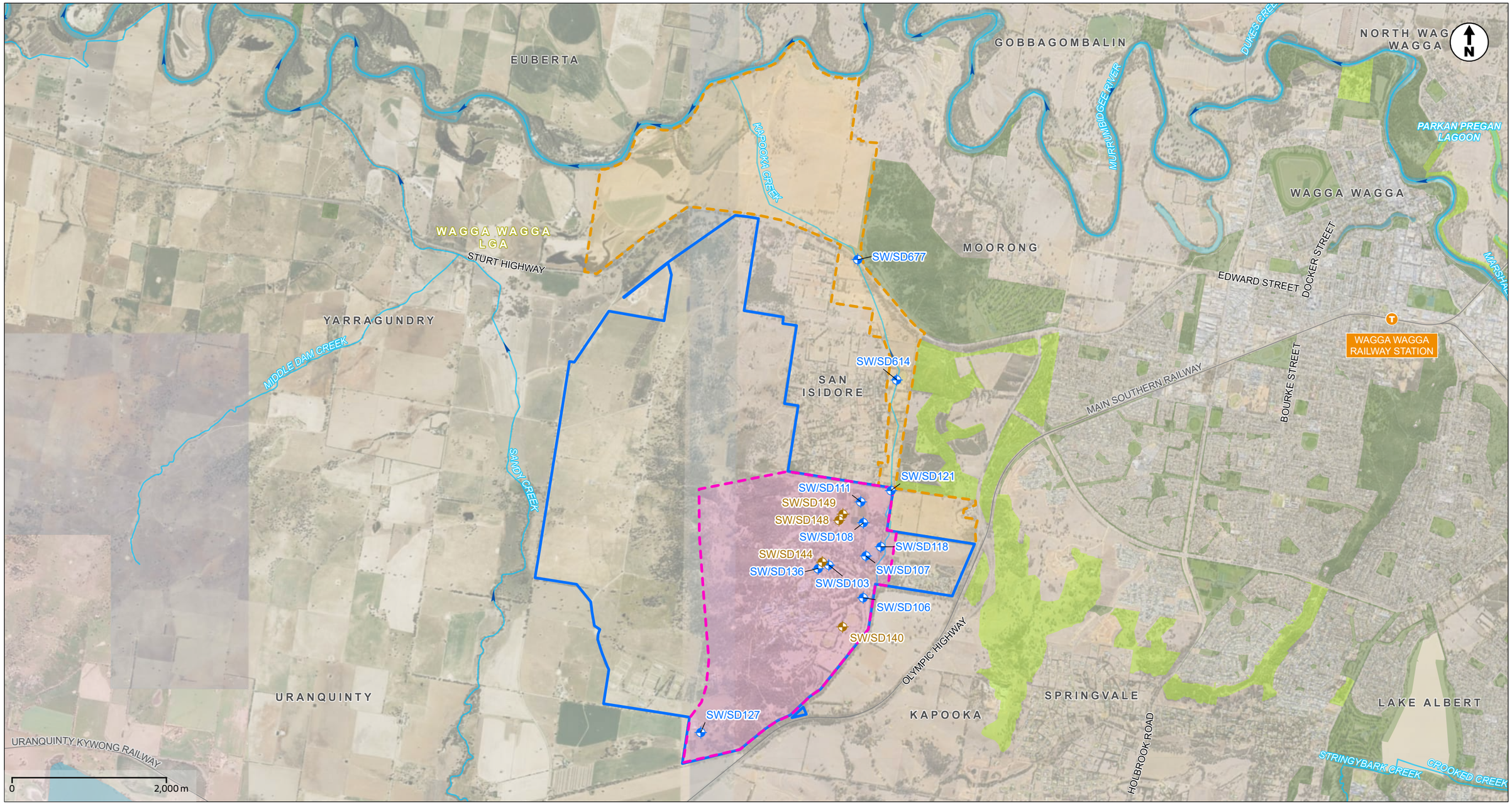


Legend

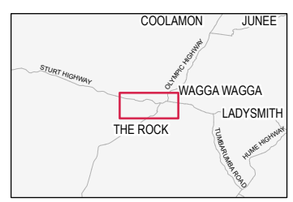
- Site Boundary
- On-Base Management Area
- Off-Base Management Area

Location Code

- Surface Water and Sediment Sampling
- Sewer Sampling

- Railway
- Watercourse

- Parks and recreation
- Environmental protection



Scale: 1:50,000 @ A4
GDA2020 MGA Zone 55

Data sources: Jacobs 2025, DCS 2025
Basemap: Metromaps, ESRI Imagery 2025

Figure A-4: Blamey Barracks Kapooka, Surface Water/Sediment Monitoring Network

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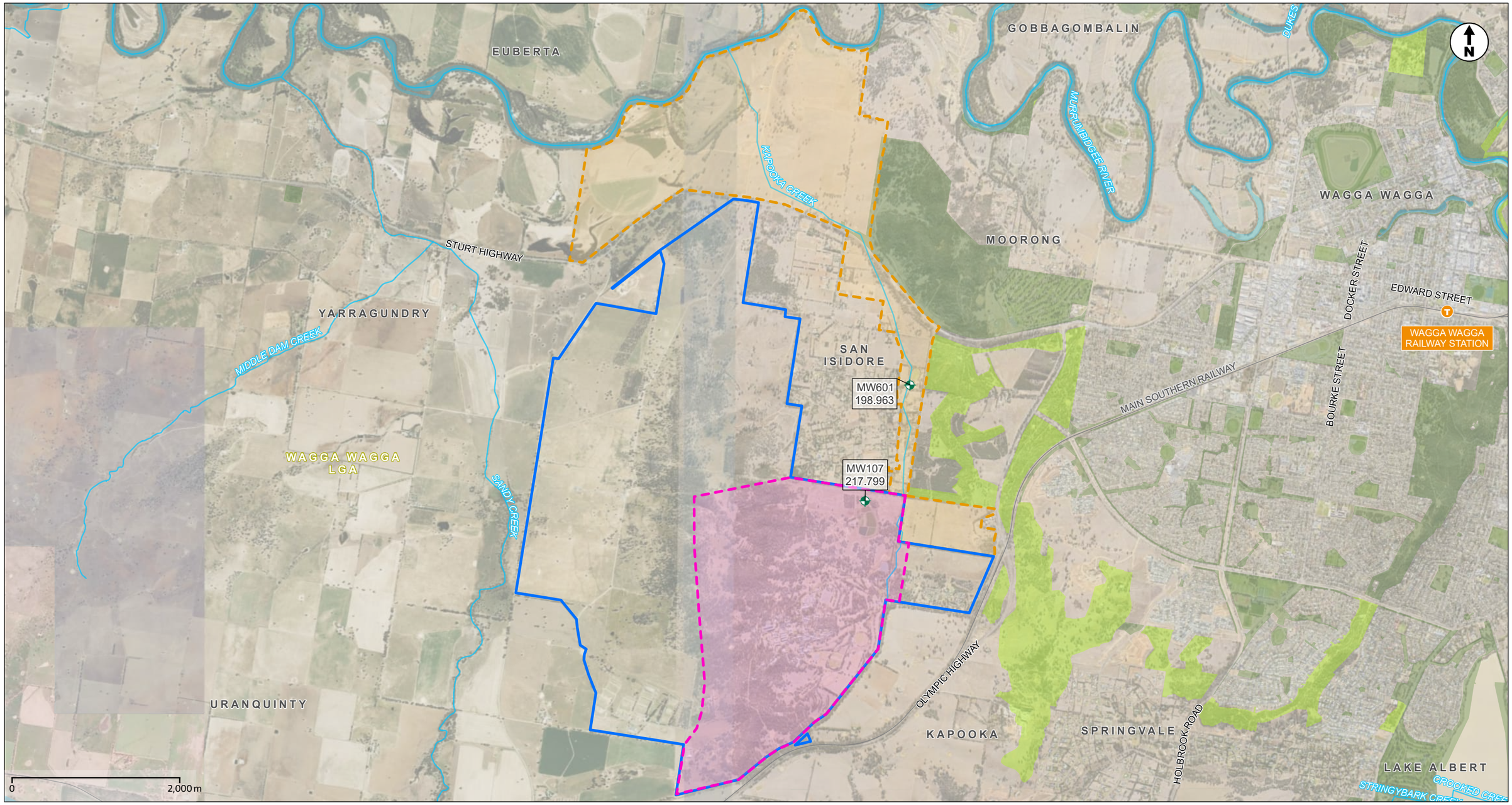
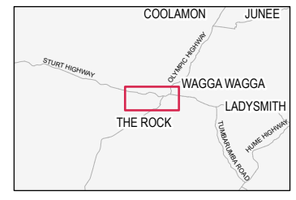


Legend

- Site Boundary
- On-Base Management Area
- Off-Base Management Area
- Perched wells

Groundwater contours have been developed based on static water levels (mAHD) in the regional groundwater aquifer. Insufficient data points exist to develop contours for the perched aquifer.

- Railway
- Watercourse
- Parks and recreation
- Environmental protection



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GDA2020 MGA Zone 55

Data sources: Jacobs 2025, DCS 2025
Basemap: Metromaps, ESRI Imagery 2025

Figure A-5: Inferred Groundwater Contours (March 2025): Perched wells

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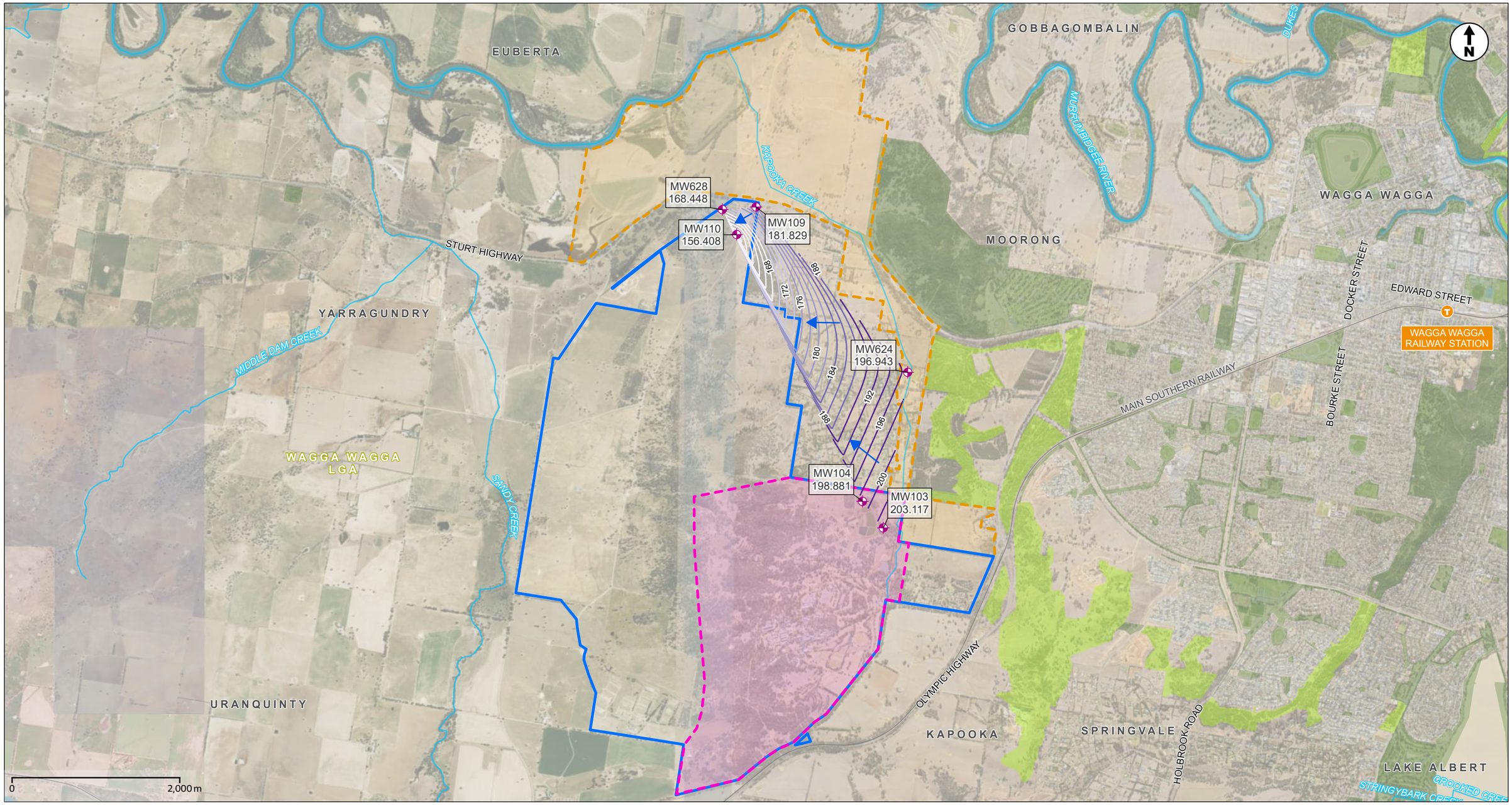


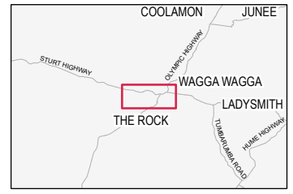
Legend

- Site Boundary
- On-Base Management Area
- Off-Base Management Area
- Regional wells

Groundwater contours have been developed based on static water levels (mAHD) in the regional groundwater aquifer.

Groundwater contours (mAHD)

- 157 - 168
- 169 - 174
- 175 - 182
- 183 - 189
- 190 - 203
- Groundwater flow direction
- Railway
- Watercourse
- Parks and recreation
- Environmental protection



Scale: 1:46,000 @ A4
GDA2020 MGA Zone 55

Data sources: Jacobs 2025, DCS 2025
Basemap: Metromaps, ESRI Imagery 2025

Figure A-6: Inferred Groundwater Contours (March 2025): Regional wells

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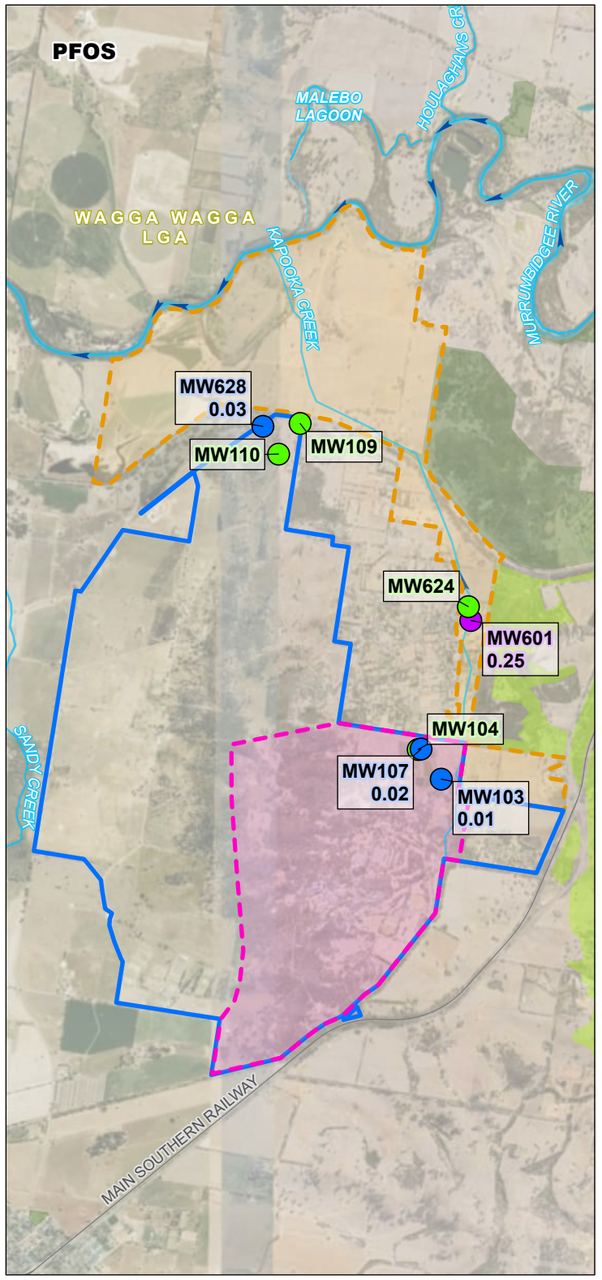
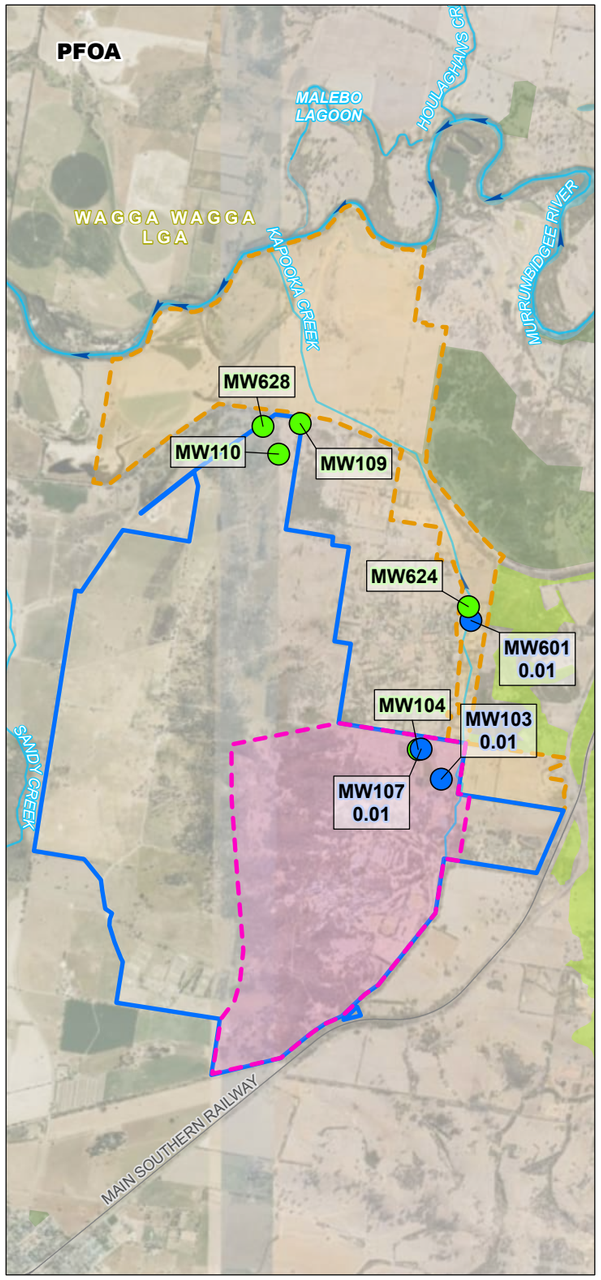
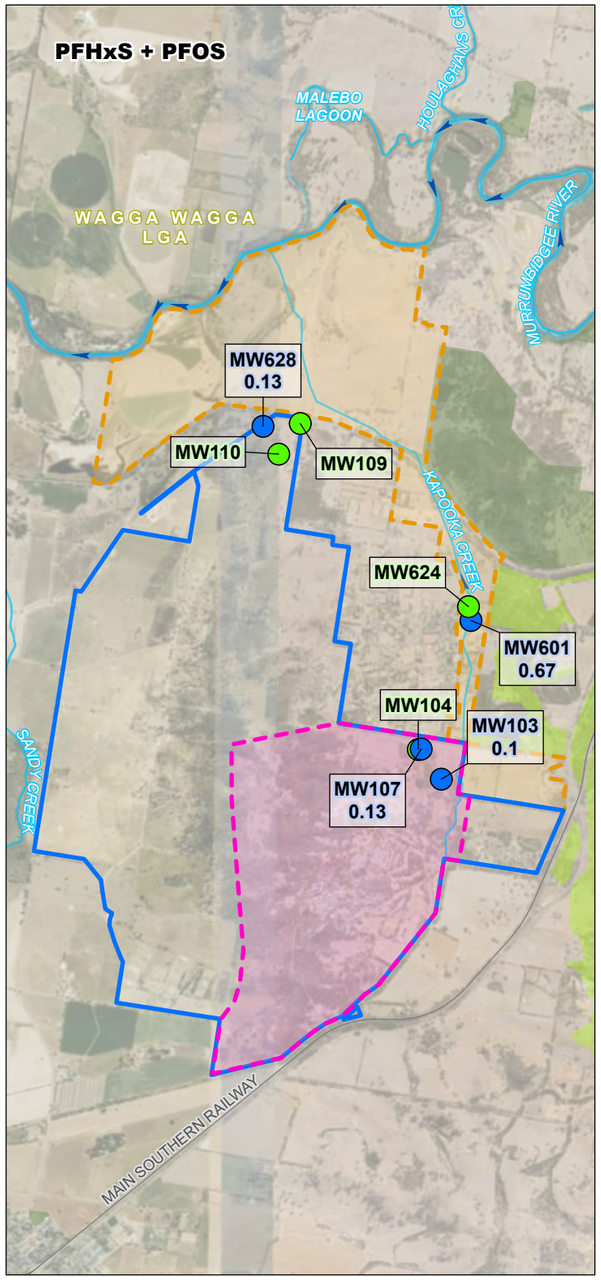
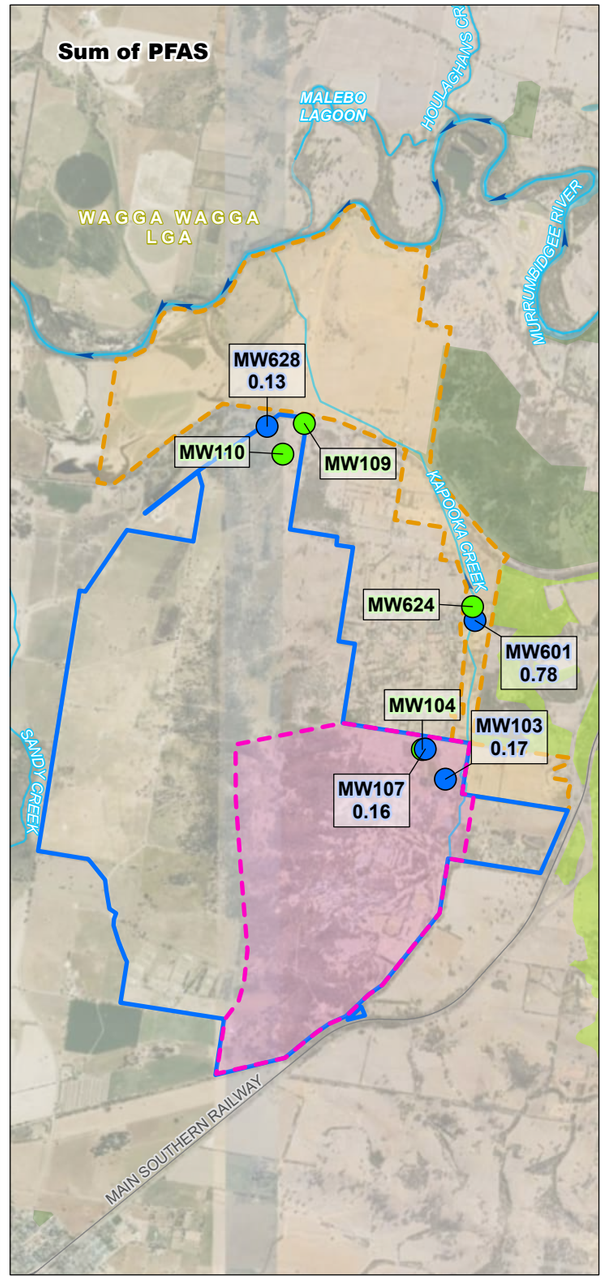








Legend

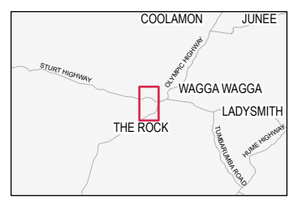
- Site Boundary
- On-Base Management Area
- Off-Base Management Area

Groundwater samples (result units are in µg/L)

- Not sampled
- <LOR
- ≥LOR & < Screening Criteria
- ≥Ecology Screening Criteria (Freshwater - 95% Species Protection)

- Railway
- Watercourse
- Parks and recreation
- Environmental protection

	PFOS	PFOA	PFOS+PFHxS	Sum of PFAS
<LOR	<0.01	<0.01	<0.01	<0.01
≥LOR & < Screening Criteria	≥0.01 - <0.13	≥0.01 - <220	≥0.01	≥0.01
≥ Ecology Screening Criteria (Freshwater - 95%	≥0.13	≥220	NA	NA



N

0 2,000 m

Scale: 1:66,000 @ A4
GDA2020 MGA Zone 55

Data sources: Jacobs 2025, DCS 2025
Basemap: Metromaps, ESRI Imagery 2025

Figure A-7: PFAS Concentration Distribution - Groundwater (March 2025)

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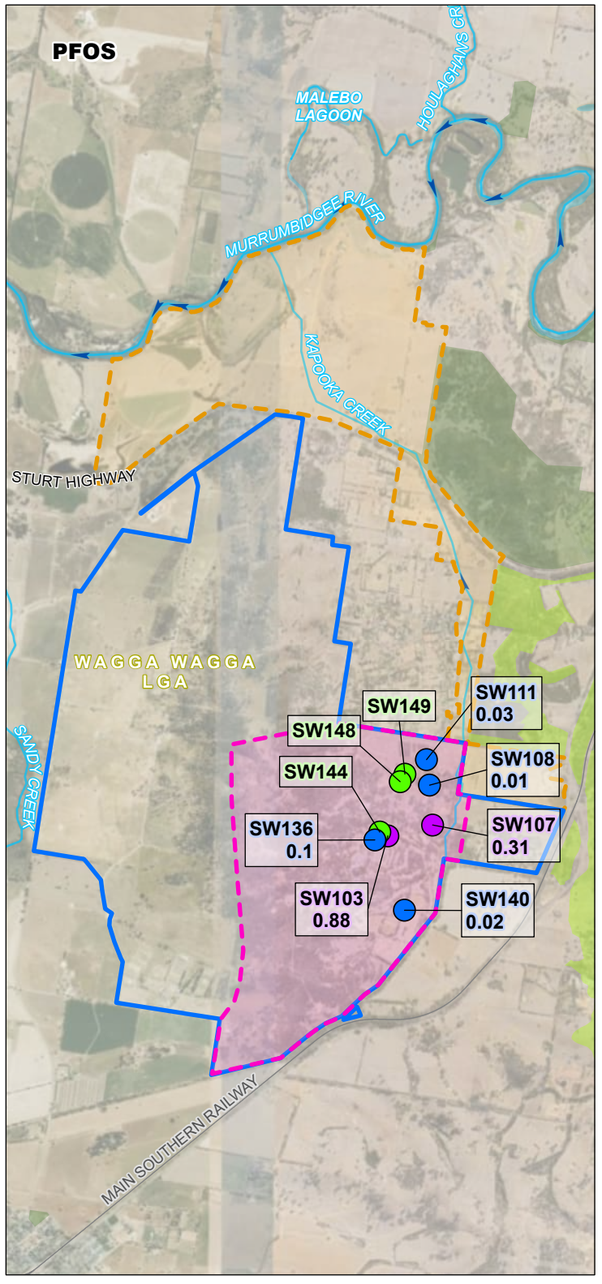
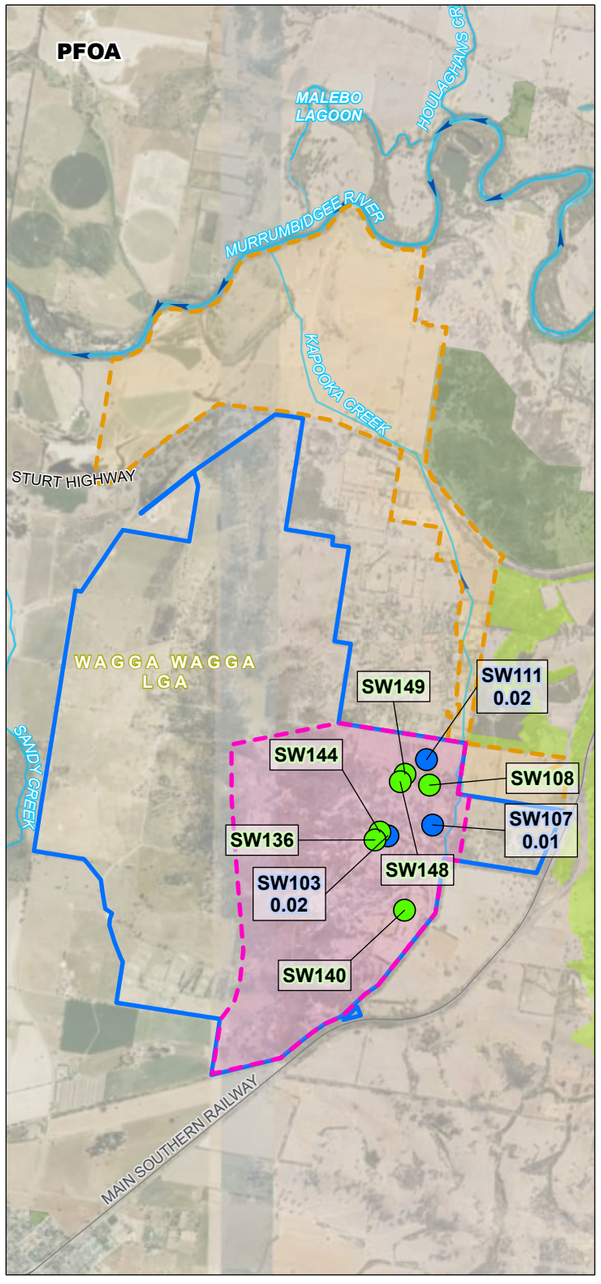
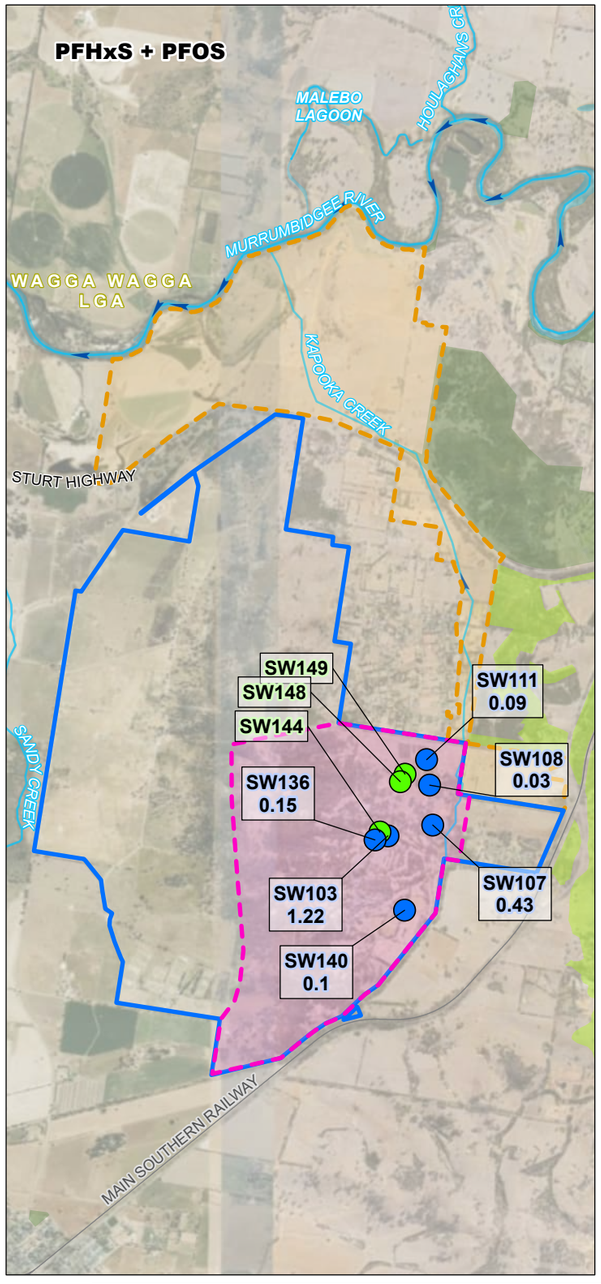
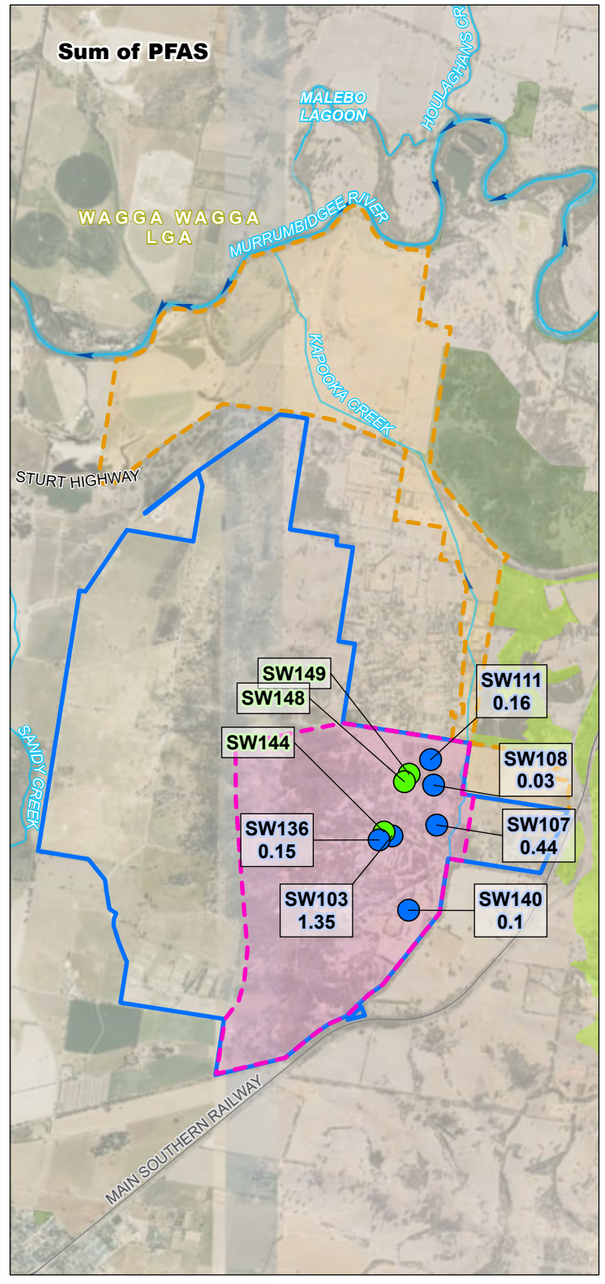








Legend

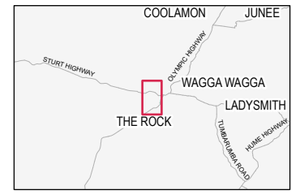
- Site Boundary
- On-Base Management Area
- Off-Base Management Area

Surface water samples (result units are in µg/L)

- Not sampled
- <LOR
- ≥LOR & < Screening Criteria
- ≥Recreational Screening Criteria (Human Health)
- ≥Ecology Screening Criteria (Freshwater - 95% Species Protection)

- Railway
- Watercourse
- Parks and recreation
- Environmental protection

	PFOS	PFOA	PFOS+PFHxS	Sum of PFAS
<LOR	<0.01	<0.01	<0.01	<0.01
≥LOR & < Screening Criteria	≥0.01 - <0.13	≥0.01 - <220	≥0.01	≥0.01
≥Recreational Screening Criteria (Human Health)	NA	≥10 - <220	≥2	NA
≥Ecology Screening Criteria (Freshwater - 95% Species Protection)	≥0.13	≥220	NA	NA



Scale: 1:66,000 @ A4
GDA2020 MGA Zone 55

Data sources: Jacobs 2025, DCS 2025
Basemap: Metromaps, ESRI Imagery 2025

N

0 2,000 m

Figure A-8: PFAS Concentration Distribution - Surface Water (March 2025)

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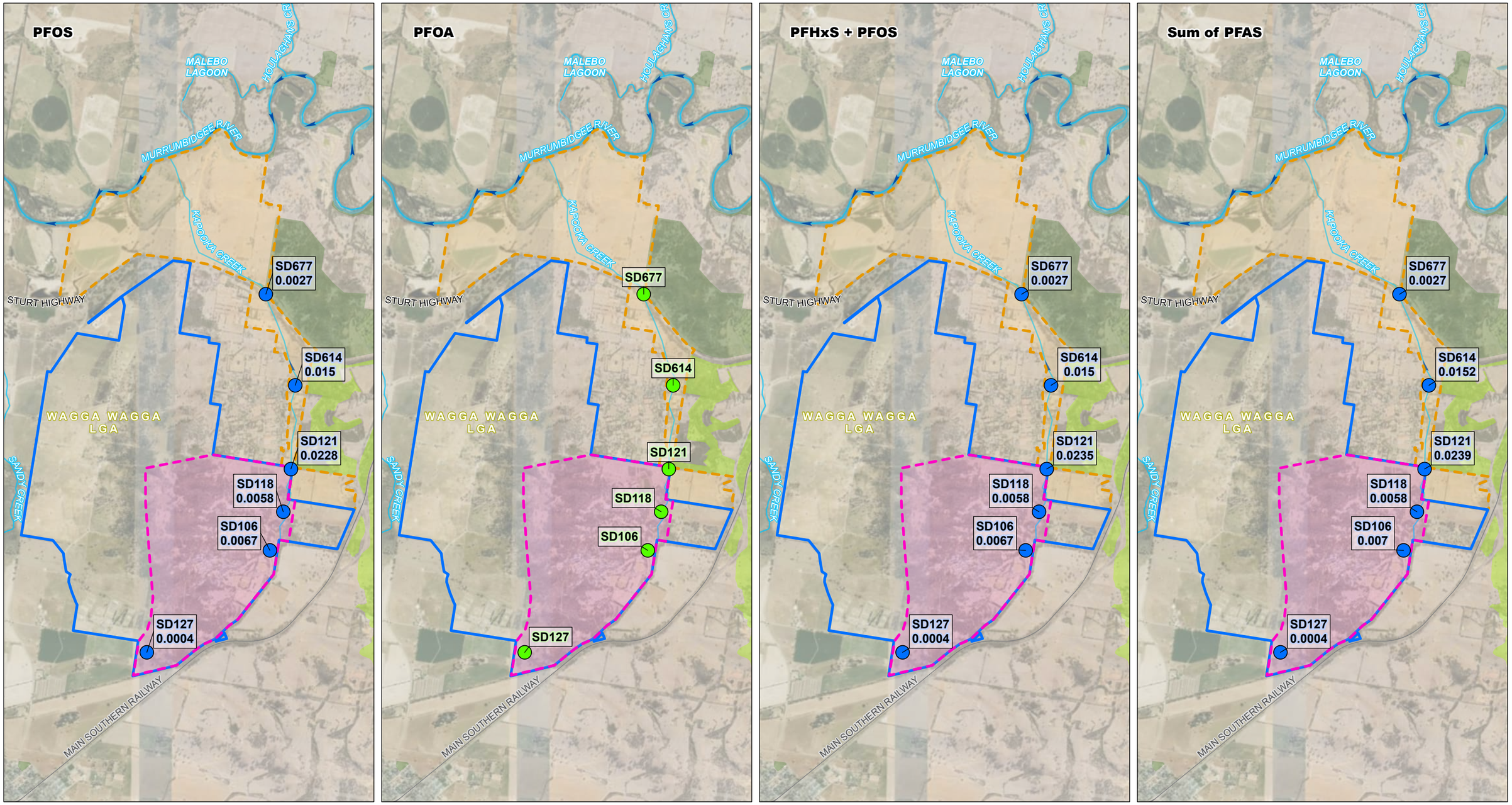


Legend

- Site Boundary
- On-Base Management Area
- Off-Base Management Area

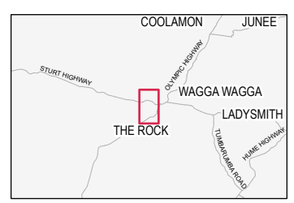
Sediment samples (result units are in mg/kg)

- Not sampled
- <LOR
- ≥LOR

- Railway
- Watercourse
- Parks and recreation
- Environmental protection

	PFOS	PFOA	PFOS+PFHxS	Sum of PFAS
<LOR	<0.01	<0.01	<0.01	<0.01
≥LOR	≥0.01	≥0.01	≥0.01	≥0.01

Note: Given the absence of PFAS NEMP 3.0 Sediment Screening Criteria, concentrations of PFAS in sediment have been used to assess trends rather than comparing to screening criteria.



N

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Scale: 1:66,000 @ A4
GDA2020 MGA Zone 55
Data sources: Jacobs 2025, DCS 2025
Basemap: Metromaps, ESRI Imagery 2025

Figure A-9: PFAS Concentration Distribution - Sediments (March 2025)

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Appendix B. Tables

Table B-1. Groundwater Gauging and Field Parameters

Table B-2. Surface Water Field Parameters

Table B-3. Groundwater Analytical Results

Table B-4. Surface Water Analytical Results

Table B-5. Sediment Field Parameters

Table B-6. Sediment Analytical Results

Location	Date/Time	Monitoring Area	Gauging Date	Hydrasleeve Deployment Date	SWL (mAHD)	Water Depth (mbTOC)	Well Depth (mbTOC)	Dry	Hydrasleeve Depth (mBTOC)	Sample Comments	Sampled Date	DO (Field) mg/L	Temperature (Field) °C	Redox Potential (Field) mV	Electrical Conductivity (field) µS/cm	pH (Field) pH Units
On-base																
MW008	12 Oct 2023 02:11AM	Former Commandants House	12 October 2023	N/A				Y	N/A	No monitoring well present for water and well depth measurements	12 October 2023	4.13	16.7	89.1	1271	7.23
MW008	16 Apr 2024 01:27AM	Former Commandants House	16 April 2024	N/A		7.26	13.5	N	N/A	Clear	16 April 2024	1.86	18.6	111.3	1857	7.54
MW103	11 Oct 2023 11:35PM	Wastewater treatment plant	11 October 2023	13 April 2023	203.186	22.614	52	N	50.5	-	11 October 2023	3.31	20	75.5	2158	6.87
MW103	16 Apr 2024 12:47AM	Wastewater treatment plant	16 April 2024	11 October 2023	202.985	22.815	52.1	N	52	Clear	16 April 2024	4.97	19.7	174.7	2166	7.01
MW103	24 Feb 2025 04:45PM	Wastewater treatment plant	24 February 2025	24 February 2025	203.117	22.683	52.135	N	50.5	Cloudy, grey, some suspended solids. No odour.	4 March 2025	2.32	22.3	77.6	2799	6.4
MW104	11 Oct 2023 10:43PM	Wastewater treatment plant	11 October 2023	15 April 2023	198.329	33.541	54	N	45.6	Clear at top of sleeve, slightly brown at bottom of sleeve	11 October 2023	2.12	18.7	90.9	5100	6.02
MW104	15 Apr 2024 11:55PM	Wastewater treatment plant	15 April 2024	11 October 2023	198.518	33.352	54.12	N	53	Clear slight brown. Thick red sediment at bottom of sleeve, no sheen, no odour	15 April 2024	3.77	17.9	191.7	4321	6.37
MW104	24 Feb 2025 05:30PM	Wastewater treatment plant	24 February 2025	24 February 2025	198.881	32.989	53.103	N	45	Cloudy to turbid at base of hydrasleeve, brown-orange, suspended solids towards base of Hydrasleeve. No odour.	4 March 2025	3.23	21.1	101.3	5244	6.37
MW107	11 Oct 2023 11:11PM	Wastewater treatment plant	11 October 2023	13 April 2023	220.1	10.44	15.5	N	14.5	-	11 October 2023	1.66	18.6	-8	1858	6.66
MW107	16 Apr 2024 12:14AM	Wastewater treatment plant	16 April 2024	11 October 2023	219.297	11.243	15.5	N	15.5	Clear. Red sediment at bottom of sleeve, no odour, no sheen	16 April 2024	2.47	17.3	156	1626	7.16
MW107	24 Feb 2025 05:50PM	Wastewater treatment plant	24 February 2025	24 February 2025	217.799	12.741	16.185	N	14.2	Slightly cloudy, no odour, brown/orange tinge, some suspended solids towards at the base of Hydrasleeve.	4 March 2025	2.96	20.2	-58.4	2066	7.1
MW109	12 Oct 2023 12:38AM	Former Commandants House	12 October 2023	13 April 2023	158.267	22.023	33.5	N	28.2	-	12 October 2023	0	22.1	-7.9	631	6.81
MW109	16 Apr 2024 02:13AM	Former Commandants House	16 April 2024	12 October 2023	157.49	22.8	35	N	33.4	Clear, with some suspended particles	16 April 2024	2.04	20.7	115.9	1085	6.82
MW109	24 Feb 2025 01:30PM	Former Commandants House	24 February 2025	24 February 2025	156.408	23.882	34.695	N	30	Clear to cloudy at base of hydrasleeve, slight grey-orange colour. No odour.	6 March 2025	2.4	22.6	119.3	1210	6.95
MW110	12 Oct 2023 01:04AM	Former Commandants House	12 October 2023	13 April 2023	184.247	9.373	22.3	N	17.1	-	12 October 2023	5.48	20.9	42.4	1186	6.64
MW110	16 Apr 2024 12:51AM	Former Commandants House	16 April 2024	12 October 2023	183.19	10.43	21.9	N	20.9	Slightly cloudy	16 April 2024	0.85	19	101.4	2085	6.56
MW110	24 Feb 2025 02:20PM	Former Commandants House	24 February 2025	6 March 2025	181.829	11.791	21.89	N	17.2	Clear, no odour.	9 April 2025	1.53	20.9	122	2462	6.73
Off-base																
MW601	11 Oct 2023 05:16AM	Kapooka Creek	11 October 2023	13 April 2023	200.333	4.967	17	N	12.1	Minor suspended solids present	11 October 2023	2.33	20	80.4	724	6.98
MW601	16 Apr 2024 03:18AM	Kapooka Creek	16 April 2024	11 October 2023	198.66	6.64	17.1	N	16	Slightly cloudy	16 April 2024	3.72	19.6	136.2	640	7.05
MW601	25 Feb 2025 08:45AM	Kapooka Creek	25 February 2025	25 February 2025	198.963	6.337	16.805	N	13	No field observation recorded	6 March 2025	2.71	19	3.6	746	7.44
MW624	12 Oct 2023 01:52AM	Kapooka Creek	12 October 2023	13 April 2023	197.586	8.334	53	N	45.2	Minor suspended solids present	12 October 2023	0.68	19.9	-82.4	4755	6.69
MW624	16 Apr 2024 02:43AM	Kapooka Creek	16 April 2024	12 October 2023	197.456	8.464	52	N	51	Clear. Slight amount of sediment at bottom of sleeve	16 April 2024	1.14	19.4	-62.3	4177	6.91
MW624	25 Feb 2025 08:00AM	Kapooka Creek	25 February 2025	25 February 2025	196.943	8.977	53.094	N	39	Slight sulfuric odour, clear to slightly cloudy, minimal sediment at base of Hydrasleeve.	6 March 2025	1.91	18.2	-111.9	4731	6.97
MW625	12 Oct 2023 12:08AM	Former Commandants House	12 October 2023	13 April 2023	169.655	4.917	22.25	N	17.7	-	12 October 2023	0.99	20.1	-7.4	820	6.32
MW625	16 Apr 2024 11:01PM	Former Commandants House	16 April 2024	12 October 2023	168.522	6.05	22	N	21.5	Cloudy with suspended particles.	16 April 2024	1.83	15.7	-30.5	1387	6.41
MW625	24 Feb 2025 03:30PM	Former Commandants House	24 February 2025	24 February 2025	167.627	6.945	21.88	N	18.6	Slightly cloudy to cloudy, brown/orange. No odour.	6 March 2025	1.52	19.9	-59.5	2025	6.38
MW628	24 Feb 2025 03:00PM	Former Commandants House	24 February 2025	24 February 2025	-	9.14	21.094	N	18	Slightly cloudy to turbid - orange/brown colour. No odour.	6 March 2025	2.32	20	101	1666	7.02

Location	Monitoring Area	Sampling Date	DO mg/L	Temp. °C	ORP mV	EC µS/cm	pH pH Units	Sample Comments
On-base								
SW103	Overland drainage pathways	12 October 2023	3.45	16.4	43	267.3	6.94	Slightly cloudy. No foaming, no microorganisms, no algae, sheen, no odour
SW103	Overland drainage pathways	15 April 2024	5.94	20.1	176.2	216.4	6.47	Clear. No foaming, no microorganisms, no algae, sheen, no odour
SW103	Overland drainage pathways	6 March 2025	3.2	25.1	68.7	267.7	7.64	Slightly cloudy, brown tinge, no flow in creek, no sheen, no odour
SW106	Overland drainage pathways	12 October 2023			dry			
SW106	Overland drainage pathways	15 April 2024			dry			
SW106	Overland drainage pathways	20 February 2025			insufficient water for sampling			
SW107	Overland drainage pathways	12 October 2023	4.49	24.7	93.5	525	7.15	Clear. No foaming, no microorganisms, no algae, no sheen, slight organic odour
SW107	Overland drainage pathways	15 April 2024	4.54	22.8	153.5	250.4	6.74	Cloudy, slightly brown. No foaming, no microorganisms, no algae, no sheen, no odour
SW107	Overland drainage pathways	6 March 2025	8.01	31.2	38.5	183.9	7.76	Turbid, brown suspended solids, no flow, no odour, no sheen
SW118	Overland drainage pathways	12 October 2023	4.66	17.6	56.4	540	7.52	Slightly cloudy. No foaming, no microorganisms, no algae, sheen, no odour
SW118	Overland drainage pathways	15 April 2024			dry			
SW118	Overland drainage pathways	20 February 2025			insufficient water for sampling			
SW136	Overland drainage pathways	12 October 2023	4.01	16.4	90.1	236.1	6.68	Cloudy. No foaming, no microorganisms, no algae, sheen, slight organic odour
SW136	Overland drainage pathways	15 April 2024	0.67	21.1	-31.6	308	6.56	Cloudy. No foaming, no microorganisms, no algae, organic sheen, no odour
SW136	Overland drainage pathways	4 March 2025	1.75	24.4	-7.3	184	7.23	Clear to slightly cloudy, brown tinge, no flow, no odour, no sheen
SW108	Wastewater treatment plant ponds	11 October 2023	5.08	18.4	35.6	449.2	8.51	Clear. No foaming, no microorganisms, no algae, no sheen, slight sewage odour
SW108	Wastewater treatment plant ponds	15 April 2024	7.38	17.5	24.4	1037	9.64	Clear, with yellow tinge. No foaming, no microorganisms, no algae, slight sheen, no odour
SW108	Wastewater treatment plant ponds	7 March 2025	3.48	22.8	50.6	888	9.65	Cloudy, green-brown tinge, no odour, no sheen
SW111	Wastewater treatment plant ponds	11 October 2023	4.29	18.5	27.4	318.5	8.09	Clear. No foaming, no microorganisms, algae, no sheen, no odour
SW111	Wastewater treatment plant ponds	15 April 2024	2.6	15.4	-0.5	793	7.95	Clear. No foaming, no microorganisms, algae, no sheen, no odour
SW111	Wastewater treatment plant ponds	7 March 2025	1.6	20.8	33.4	1287	8.37	Slightly cloudy, brown tinge, slight organic odour, no sheen
SW127	Former Quarry	11 October 2023	4.51	17.4	48.1	62.6	6.93	Brown. No foaming, microorganisms, no algae, no sheen, no odour
SW127	Former Quarry	15 April 2024			dry			
SW127	Former Quarry	20 February 2025			insufficient water for sampling			
SW140	Sewer	12 October 2023	5.13	16.6	104.7	328.6	7.25	Clear. No foaming, no microorganisms, no algae, no sheen, slight organic odour
SW140	Sewer	16 April 2024	5.09	21.4	181.6	610	7.53	Clear with suspended particles. No foaming, no microorganisms, no algae, no sheen, slight sewer odour
SW140	Sewer	20 February 2025	N/A	N/A	N/A	N/A	N/A	Stagnant, pit opens to tank. Roots growing. Clear, no suspended solids, odour, sheen.
SW144	Sewer	12 October 2023	1.28	17.8	-100.7	906	8.39	Slightly cloudy. No foaming, no microorganisms, no algae, no sheen, sewage odour.
SW144	Sewer	15 April 2024	1.04	22	29.2	704	8.13	Brown. No foaming, no microorganisms, no algae, no sheen, sewage odour
SW144	Sewer	20 February 2025	N/A	N/A	N/A	N/A	N/A	Clear to grey. Organic suspended solids, strong organic odour. Raw sewage.
SW148	Sewer	12 October 2023	1.53	21	-55.3	386.3	7.54	Clear with organic particles. No foaming, no microorganisms, no algae, no sheen, sewage odour
SW148	Sewer	15 April 2024	0.82	21.1	28.6	864	8.55	Cloudy with a yellow tinge. No foaming, no microorganisms, no algae, no sheen, sewage odour
SW148	Sewer	20 February 2025	N/A	N/A	N/A	N/A	N/A	Algae on sides, raw sewerage. Grey/orange, cloudy, organic suspended solids, strong organic odour, no sheen. Strong flow towards the WWTP.
SW149	Sewer	11 October 2023	4.03	16.5	39.8	706	8	Pale yellow. No foaming, no microorganisms, no algae, no sheen, sewage odour
SW149	Sewer	15 April 2024			dry			
SW149	Sewer	20 February 2025	N/A	N/A	N/A	N/A	N/A	Pit filled with crusted solids, informed by site operator that holding tank next to pit also contained same water. Sample from holding tank. Moderate flow up to pipes. Clear grey, organic suspended solids, strong organic odour. Raw sewage.
SW121	Kapooka Creek	13 October 2023	2.82	15.4	64.1	293.4	7.49	Muddy brown.No foaming, microorganisms, no algae, no sheen, no odour.
SW121	Kapooka Creek	15 April 2024			dry			
SW121	Kapooka Creek	20 February 2025			insufficient water for sampling			
Off-base								
SW614	Kapooka Creek	13 October 2023	5.29	16.2	77.1	100.4	6.64	Cloudy brown. No foaming, no microorganisms, no algae, no sheen, no odour
SW614	Kapooka Creek	15 April 2024			dry			
SW614	Kapooka Creek	20 February 2025			insufficient water for sampling			
SW677	Kapooka Creek	13 October 2023			dry			
SW677	Kapooka Creek	15 April 2024			dry			
SW677	Kapooka Creek	20 February 2025			insufficient water for sampling			
SW680	Kapooka Creek	13 October 2023	5.33	18.5	35.2	104.8	7.18	Light brown. No foaming, no microorganisms, algae, no sheen, no odour, minor vegetation present
SW680	Kapooka Creek	16 April 2024	5.7	25.3	92	171.5	7.43	Cloudy, slightly yellow. No foaming, no microorganisms, algae,no sheen, no odour
SW680	Kapooka Creek	6 March 2025	2.08	23.7	119.5	193.3	7.1	Clear to slightly cloudy, brown tinge, no flow, no odour, no sheen

Jacobs

Table B 3. Groundwater Analytical Results

Blamey Barracks Kapooka OMR

					PFAS - Perfluoroalkyl Sulfonic Acids								PFAS - Perfluoroalkyl Carboxylic Acids							
					Perfluoropropane sulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
					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
EQL					0.01	0.0005	0.0005	0.0005	0.0005	0.01	0.0005	0.0003	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
PFAS NEMP 2025 Freshwater 95%												**0.13**	**220**							
Location Code	**Field ID**	**Date**	**Sample Type**	**Lab Report Number**																
MW008	0315_MW008_170316	16 Mar 2017	Normal	ES1706394	-	**0.0145**	**0.0088**	**0.0855**	**0.0034**	-	<0.0005	**0.0252**	<0.0005	**0.023**	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
MW008	0315_MW008_S_181218	18 Dec 2018	Normal	ES1838696	-	<0.02	<0.02	**0.10**	<0.02	-	<0.02	**0.04**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW008	0315_QC102_181218	18 Dec 2018	Field_D	ES1838696	-	<0.02	<0.02	**0.10**	<0.02	-	<0.02	**0.04**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW008	0315_QC104_181218	18 Dec 2018	Field_D	ES1838696	-	<0.02	<0.02	**0.11**	<0.02	-	<0.02	**0.04**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW008	0315_QC202_181218	18 Dec 2018	Interlab_D	635075	-	**0.01**	**0.01**	**0.14**	<0.01	-	<0.01	**0.09**	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW008	0315_MW008_S_200309	09 Mar 2020	Normal	ES2008982	-	<0.02	<0.02	**0.17**	<0.02	-	<0.02	**0.06**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW008	0315_QC101_200309	09 Mar 2020	Field_D	ES2008982	-	<0.02	<0.02	**0.17**	<0.02	-	<0.02	**0.06**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW008	0315_QC201_200309	09 Mar 2020	Interlab_D	239048	-	**0.01**	<0.01	**0.13**	<0.01	-	<0.02	**0.05**	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.02	<0.02
MW008	0315_MW008_20211028	28 Oct 2021	Normal	ES2139229	-	<0.02	<0.02	**0.08**	<0.02	-	<0.02	**0.03**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW008	0315_MW008_20220428	28 Apr 2022	Normal	EM2208205	-	<0.02	<0.02	**0.08**	<0.02	-	<0.02	**0.02**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW008	0315_MW008_221103	03 Nov 2022	Normal	EM2222407	-	<0.02	<0.02	**0.09**	<0.02	-	<0.02	**0.04**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW008	0315_MW008_230412	12 Apr 2023	Normal	EM2306946	-	<0.02	<0.02	**0.09**	<0.02	-	<0.02	**0.02**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW008	0315_MW008_231012	12 Oct 2023	Normal	EM2318619	-	<0.02	<0.02	**0.09**	<0.02	-	<0.02	**0.02**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW008	0315_MW008_240416	16 Apr 2024	Normal	EM2406739	-	<0.02	<0.02	**0.08**	<0.02	-	<0.02	**0.01**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW103	0315_MW103_S_190220	20 Feb 2019	Normal	ES1905450	-	<0.02	<0.02	<0.02	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW103	0315_MW103_20211028	28 Oct 2021	Normal	ES2139229	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW103	0315_MW103_20220429	29 Apr 2022	Normal	EM2208205	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW103	0315_MW103_221103	03 Nov 2022	Normal	EM2222407	-	<0.02	<0.02	**0.06**	<0.02	-	<0.02	<0.01	**0.02**	<0.1	<0.02	**0.03**	<0.02	<0.02	<0.02	<0.02
MW103	0315_MW103_230413	13 Apr 2023	Normal	EM2306946	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW103	0315_QC105_230413	13 Apr 2023	Field_D	EM2306946	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW103	0315_QC205_230413	13 Apr 2023	Interlab_D	982794	<0.01	<0.01	<0.01	<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
MW103	0315_MW103_231012	12 Oct 2023	Normal	EM2318619	-	**0.03**	<0.02	**0.12**	<0.02	-	<0.02	**0.02**	**0.04**	<0.1	**0.02**	**0.06**	**0.03**	<0.02	<0.02	<0.02
MW103	0315_MW103_231220	20 Dec 2023	Normal	EM2322883	-	<0.02	<0.02	**0.02**	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW103	0315_QC101_231220	20 Dec 2023	Field_D	EM2322883	-	<0.02	-	**0.02**	-	-	-	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	-	-	-
MW103	0315_MW103_240416	16 Apr 2024	Normal	EM2406739	-	**0.07**	**0.04**	**0.28**	<0.02	-	<0.02	**0.04**	**0.06**	<0.1	**0.05**	**0.13**	**0.05**	<0.02	<0.02	<0.02
MW103	0315_MW103_250304	04 Mar 2025	Normal	ES2506877	<0.02	<0.02	<0.02	**0.04**	<0.02	<0.02	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW104	0315_MW104_S_190220	20 Feb 2019	Normal	ES1905450	-	<0.02	<0.02	<0.02	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW104	0315_MW104_20211028	28 Oct 2021	Normal	ES2139229	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW104	0315_MW104_20220428	28 Apr 2022	Normal	EM2208205	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW104	0315_MW104_221103	03 Nov 2022	Normal	EM2222407	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW104	0315_MW104_230415	15 Apr 2023	Normal	EM2306946	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW104	0315_MW104_231012	12 Oct 2023	Normal	EM2318619	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW104	0315_QC104_231012	12 Oct 2023	Field_D	EM2318619	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW104	0315_QC204_230413	12 Oct 2023	Interlab_D	1036476	<0.01	<0.01	<0.01	<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
MW104	0315_MW104_240416	16 Apr 2024	Normal	EM2406739	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW104	0315_MW104_250304	04 Mar 2025	Normal	ES2506877	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW107	0315_MW107_P_190130	30 Jan 2019	Normal	ES1902996	-	<0.02	<0.02	**0.10**	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW107	0315_MW107_P_190307	07 Mar 2019	Normal	ES1907492	-	<0.02	<0.02	**0.05**	<0.02	-	<0.02	**0.02**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW107	0315_MW107_20220429	29 Apr 2022	Normal	EM2208205	-	**0.02**	**0.02**	**0.12**	<0.02	-	<0.02	**0.02**	**0.02**	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW107	0315_MW107_221103	03 Nov 2022	Normal	EM2222407	-	**0.03**	<0.02	**0.08**	<0.02	-	<0.02	**0.01**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW107	0315_MW107_230413	13 Apr 2023	Normal	EM2306946	-	**0.03**	<0.02	**0.08**	<0.02	-	<0.02	**0.01**	**0.01**	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW107	0315_MW107_231012	12 Oct 2023	Normal	EM2318619	-	<0.02	<0.02	**0.08**	<0.02	-	<0.02	**0.02**	**0.02**	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW107	0315_MW107_240416	16 Apr 2024	Normal	EM2406739	-	**0.03**	<0.02	**0.08**	<0.02	-	<0.02	**0.02**	**0.01**	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW107	0315_MW107_250304	04 Mar 2025	Normal	ES2506877	<0.02	**0.02**	<0.02	**0.11**	<0.02	<0.02	<0.02	**0.02**	**0.01**	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW109	0315_MW109_S_200310	10 Mar 2020	Normal	ES2008982	-	<0.02	<0.02	<0.02	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW109	0315_MW109_20211027	27 Oct 2021	Normal	ES2139229	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW109	0315_QC105_211027	27 Oct 2021	Field_D	ES2139230	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW109	0315_QC205_20211027	27 Oct 2021	Interlab_D	837707	<0.01	<0.01	<0.01	<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
MW109	0315_MW109_20220427	27 Apr 2022	Normal	EM2208205	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW109	0315_QC101_20220427	27 Apr 2022	Field_D	EM2208205	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW109	0315_QC201_20220427	27 Apr 2022	Interlab_D	889626	<0.01	<0.01	<0.01	<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
MW109	0315_MW109_221103	03 Nov 2022	Normal	EM2222407	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW109	0315_QC104_221103	03 Nov 2022	Field_D	EM2222407	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW109	0315_QC204_221103	03 Nov 2022	Interlab_D	940511	<0.01	<0.01	<0.01	<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

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Table B 3. Groundwater Analytical Results

					PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides							PFAS		
					Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	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 (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorohexadecanoic acid (PFHxDA)
					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
EQL					0.0005	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0005	0.001	0.0005	0.001	0.001	0.0005	0.001	0.0003	0.0003	0.05
PFAS NEMP 2025 Freshwater 95%																					
Location Code	**Field ID**	**Date**	**Sample Type**	**Lab Report Number**																	
MW008	0315_MW008_170316	16 Mar 2017	Normal	ES1706394	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.0005	<0.001	<0.001	<0.0005	<0.001	**0.111**	**0.16**	-
MW008	0315_MW008_S_181218	18 Dec 2018	Normal	ES1838696	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.14**	**0.14**	-
MW008	0315_QC102_181218	18 Dec 2018	Field_D	ES1838696	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.14**	**0.14**	-
MW008	0315_QC104_181218	18 Dec 2018	Field_D	ES1838696	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.15**	**0.15**	-
MW008	0315_QC202_181218	18 Dec 2018	Interlab_D	635075	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**0.23**	**0.25**	-
MW008	0315_MW008_S_200309	09 Mar 2020	Normal	ES2008982	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.23**	**0.23**	-
MW008	0315_QC101_200309	09 Mar 2020	Field_D	ES2008982	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.23**	**0.23**	-
MW008	0315_QC201_200309	09 Mar 2020	Interlab_D	239048	<0.05	<0.1	<0.5	<0.01	<0.01	<0.01	<0.01	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5	**0.18**	**0.19**	-
MW008	0315_MW008_20211028	28 Oct 2021	Normal	ES2139229	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.11**	**0.11**	-
MW008	0315_MW008_20220428	28 Apr 2022	Normal	EM2208205	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.10**	**0.10**	-
MW008	0315_MW008_221103	03 Nov 2022	Normal	EM2222407	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.13**	**0.13**	-
MW008	0315_MW008_230412	12 Apr 2023	Normal	EM2306946	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.11**	**0.11**	-
MW008	0315_MW008_231012	12 Oct 2023	Normal	EM2318619	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.11**	**0.11**	-
MW008	0315_MW008_240416	16 Apr 2024	Normal	EM2406739	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.09**	**0.09**	-
MW103	0315_MW103_S_190220	20 Feb 2019	Normal	ES1905450	<0.02	<0.02	<0.05	<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	-
MW103	0315_MW103_20211028	28 Oct 2021	Normal	ES2139229	<0.02	<0.02	<0.05	<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	-
MW103	0315_MW103_20220429	29 Apr 2022	Normal	EM2208205	<0.02	<0.02	<0.05	<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	-
MW103	0315_MW103_221103	03 Nov 2022	Normal	EM2222407	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.06**	**0.11**	-
MW103	0315_MW103_230413	13 Apr 2023	Normal	EM2306946	<0.02	<0.02	<0.05	<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	-
MW103	0315_QC105_230413	13 Apr 2023	Field_D	EM2306946	<0.02	<0.02	<0.05	<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	-
MW103	0315_QC205_230413	13 Apr 2023	Interlab_D	982794	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	-
MW103	0315_MW103_231012	12 Oct 2023	Normal	EM2318619	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.14**	**0.32**	-
MW103	0315_MW103_231220	20 Dec 2023	Normal	EM2322883	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.02**	**0.02**	-
MW103	0315_QC101_231220	20 Dec 2023	Field_D	EM2322883	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-	-	-	-	-	**0.02**	-	-
MW103	0315_MW103_240416	16 Apr 2024	Normal	EM2406739	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.32**	**0.76**	-
MW103	0315_MW103_250304	04 Mar 2025	Normal	ES2506877	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.04**	**0.04**	<0.05
MW104	0315_MW104_S_190220	20 Feb 2019	Normal	ES1905450	<0.02	<0.02	<0.05	<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	-
MW104	0315_MW104_20211028	28 Oct 2021	Normal	ES2139229	<0.02	<0.02	<0.05	<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	-
MW104	0315_MW104_20220428	28 Apr 2022	Normal	EM2208205	<0.02	<0.02	<0.05	<0.05	**0.18**	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01	**0.18**	-
MW104	0315_MW104_221103	03 Nov 2022	Normal	EM2222407	<0.02	<0.02	<0.05	<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	-
MW104	0315_MW104_230415	15 Apr 2023	Normal	EM2306946	<0.02	<0.02	<0.05	<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	-
MW104	0315_MW104_231012	12 Oct 2023	Normal	EM2318619	<0.02	<0.02	<0.05	<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	-
MW104	0315_QC104_231012	12 Oct 2023	Field_D	EM2318619	<0.02	<0.02	<0.05	<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	-
MW104	0315_QC204_230413	12 Oct 2023	Interlab_D	1036476	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	-
MW104	0315_MW104_240416	16 Apr 2024	Normal	EM2406739	<0.02	<0.02	<0.05	<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	-
MW104	0315_MW104_250304	04 Mar 2025	Normal	ES2506877	<0.02	<0.02	<0.05	<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	<0.05
MW107	0315_MW107_P_190130	30 Jan 2019	Normal	ES1902996	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.10**	**0.10**	-
MW107	0315_MW107_P_190307	07 Mar 2019	Normal	ES1907492	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.07**	**0.07**	-
MW107	0315_MW107_20220429	29 Apr 2022	Normal	EM2208205	<0.02	<0.02	<0.05	<0.05	**0.07**	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.14**	**0.27**	-
MW107	0315_MW107_221103	03 Nov 2022	Normal	EM2222407	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.09**	**0.12**	-
MW107	0315_MW107_230413	13 Apr 2023	Normal	EM2306946	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.09**	**0.13**	-
MW107	0315_MW107_231012	12 Oct 2023	Normal	EM2318619	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.10**	**0.12**	-
MW107	0315_MW107_240416	16 Apr 2024	Normal	EM2406739	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.10**	**0.14**	-
MW107	0315_MW107_250304	04 Mar 2025	Normal	ES2506877	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.13**	**0.16**	<0.05
MW109	0315_MW109_S_200310	10 Mar 2020	Normal	ES2008982	<0.02	<0.02	<0.05	<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	-
MW109	0315_MW109_20211027	27 Oct 2021	Normal	ES2139229	<0.02	<0.02	<0.05	<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	-
MW109	0315_QC105_211027	27 Oct 2021	Field_D	ES2139230	<0.02	<0.02	<0.05	<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	-
MW109	0315_QC205_20211027	27 Oct 2021	Interlab_D	837707	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	-
MW109	0315_MW109_20220427	27 Apr 2022	Normal	EM2208205	<0.02	<0.02	<0.05	<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	-
MW109	0315_QC101_20220427	27 Apr 2022	Field_D	EM2208205	<0.02	<0.02	<0.05	<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	-
MW109	0315_QC201_20220427	27 Apr 2022	Interlab_D	889626	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	-
MW109	0315_MW109_221103	03 Nov 2022	Normal	EM2222407	<0.02	<0.02	<0.05	<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	-
MW109	0315_QC104_221103	03 Nov 2022	Field_D	EM2222407	<0.02	<0.02	<0.05	<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	-
MW109	0315_QC204_221103	03 Nov 2022	Interlab_D	940511	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	-

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Table B 3. Groundwater Analytical Results

					PFAS - Perfluoroalkyl Sulfonic Acids								PFAS - Perfluoroalkyl Carboxylic Acids							
					Perfluoropropane sulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
					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
EQL					0.01	0.0005	0.0005	0.0005	0.0005	0.01	0.0005	0.0003	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
PFAS NEMP 2025 Freshwater 95%												**0.13**	**220**							
Location Code	**Field ID**	**Date**	**Sample Type**	**Lab Report Number**																
MW109	0315_MW109_230413	13 Apr 2023	Normal	EM2306946	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW109	0315_MW109_231012	12 Oct 2023	Normal	EM2318619	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW109	0315_MW109_240416	16 Apr 2024	Normal	EM2406739	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW109	0315_MW109_250306	06 Mar 2025	Normal	ES2506877	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW110	0315_MW110_S_200310	10 Mar 2020	Normal	ES2008982	-	<0.02	<0.02	<0.02	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW110	0315_MW110_20211027	28 Oct 2021	Normal	ES2139229	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW110	0315_MW110_20220427	27 Apr 2022	Normal	EM2208205	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW110	0315_MW110_221103	03 Nov 2022	Normal	EM2222407	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW110	0315_MW110_230413	13 Apr 2023	Normal	EM2306946	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW110	0315_MW110_231012	12 Oct 2023	Normal	EM2318619	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW110	0315_MW110_240416	16 Apr 2024	Normal	EM2406739	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW110	0315_QC102_240416	16 Apr 2024	Field_D	EM2406739	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW110	0315_QC202_240416	16 Apr 2024	Interlab_D	1090100_0315	<0.01	<0.01	<0.01	<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
MW110	0315_MW110_250306	06 Mar 2025	Normal	ES2506877	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW601	0315_MW601_S_190129	29 Jan 2019	Normal	ES1902996	-	<0.02	<0.02	**0.14**	<0.02	-	<0.02	**0.01**	<0.01	<0.1	<0.02	<0.02	**0.03**	<0.02	<0.02	<0.02
MW601	0315_QC101_190129	29 Jan 2019	Field_D	ES1902996	-	<0.02	<0.02	**0.14**	<0.02	-	<0.02	**0.01**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW601	0315_QC201_190129	29 Jan 2019	Interlab_D	638493	-	**0.01**	**0.01**	**0.09**	<0.01	-	<0.01	**0.01**	<0.01	<0.05	<0.01	**0.01**	**0.01**	<0.01	<0.01	<0.01
MW601	0315_MW601_S_190218	18 Feb 2019	Normal	ES1905450	-	<0.02	<0.02	**0.23**	<0.02	-	<0.02	**0.02**	<0.01	<0.1	**0.02**	**0.02**	<0.02	<0.02	<0.02	<0.02
MW601	0315_MW601_P_200312	12 Mar 2020	Normal	ES2008982	-	**0.06**	**0.08**	**0.73**	**0.03**	-	<0.02	**0.16**	**0.01**	<0.1	<0.02	**0.04**	<0.02	<0.02	<0.02	<0.02
MW601	0315_MW601_20211027	27 Oct 2021	Normal	ES2139235	-	**0.03**	**0.03**	**0.42**	<0.02	-	<0.02	**0.17**	<0.01	<0.1	<0.02	**0.03**	<0.02	<0.02	<0.02	<0.02
MW601	0315_MW601_20220428	28 Apr 2022	Normal	EM2208229	-	**0.03**	**0.04**	**0.45**	**0.02**	-	<0.02	**0.20**	**0.01**	<0.1	<0.02	**0.03**	<0.02	<0.02	<0.02	<0.02
MW601	0315_MW601_221104	04 Nov 2022	Normal	EM2222368	-	**0.04**	**0.03**	**0.43**	**0.03**	-	<0.02	**0.34**	<0.01	<0.1	<0.02	**0.02**	<0.02	<0.02	<0.02	<0.02
MW601	0315_MW601_230413	13 Apr 2023	Normal	EM2306926	-	**0.02**	**0.04**	**0.36**	**0.02**	-	<0.02	**0.21**	<0.01	<0.1	<0.02	**0.03**	<0.02	<0.02	<0.02	<0.02
MW601	0315_MW601_231012	12 Oct 2023	Normal	EM2318605	-	**0.03**	**0.03**	**0.42**	**0.04**	-	<0.02	**0.37**	<0.01	<0.1	<0.02	**0.02**	<0.02	<0.02	<0.02	<0.02
MW601	0315_MW601_240416	16 Apr 2024	Normal	EM2406741	-	**0.02**	<0.02	**0.29**	<0.02	-	<0.02	**0.27**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW601	0315_MW601_250306	06 Mar 2025	Normal	ES2506716	<0.02	**0.03**	<0.02	**0.34**	<0.02	<0.02	<0.02	**0.23**	<0.01	<0.1	<0.02	**0.03**	<0.02	<0.02	<0.02	<0.02
MW624	0315_MW624_S_200311	11 Mar 2020	Normal	ES2008982	-	<0.02	<0.02	<0.02	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW624	0315_MW624_20211027	27 Oct 2021	Normal	ES2139235	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW624	MW624	20 Dec 2021	Normal	EM2125953	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW624	0315_MW624_20220428	28 Apr 2022	Normal	EM2208229	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW624	0315_MW624_221104	04 Nov 2022	Normal	EM2222368	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW624	0315_MW624_230413	13 Apr 2023	Normal	EM2306926	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW624	0315_MW624_231012	12 Oct 2023	Normal	EM2318605	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW624	0315_MW624_240416	16 Apr 2024	Normal	EM2406741	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	**0.02**	<0.02	<0.02	<0.02
MW624	0315_MW624_250306	06 Mar 2025	Normal	ES2506716	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW625	0315_MW625_S_200521	21 May 2020	Normal	ES2017986	-	<0.02	<0.02	<0.02	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW625	0315_MW625_20211026	26 Oct 2021	Normal	ES2139232	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW625	0315_MW625_20220427	27 Apr 2022	Normal	EM2208223	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW625	0315_MW625_221103	03 Nov 2022	Normal	EM2222366	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW625	0315_MW625_ 230413	13 Apr 2023	Normal	EM2306925	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW625	0315_MW625_231012	12 Oct 2023	Normal	EM2318601	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW625	0315_MW625_240417	17 Apr 2024	Normal	EM2406721	-	<0.02	<0.02	<0.01	<0.02	-	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW625	0315_MW625_250306	06 Mar 2025	Normal	ES2506882	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW628	0315_MW628_250306	06 Mar 2025	Normal	ES2506877	<0.02	<0.02	<0.02	**0.10**	<0.02	<0.02	<0.02	**0.03**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Jacobs

Table B 3. Groundwater Analytical Results

Blamey Barracks Kapooka OMR

					PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides							PFAS		
					Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	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 (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorohexadecanoic acid (PFHxDA)
					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
EQL					0.0005	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0005	0.001	0.0005	0.001	0.001	0.0005	0.001	0.0003	0.0003	0.05
PFAS NEMP 2025 Freshwater 95%																					
Location Code	**Field ID**	**Date**	**Sample Type**	**Lab Report Number**																	
MW109	0315_MW109_230413	13 Apr 2023	Normal	EM2306946	<0.02	<0.02	<0.05	<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	-
MW109	0315_MW109_231012	12 Oct 2023	Normal	EM2318619	<0.02	<0.02	<0.05	<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	-
MW109	0315_MW109_240416	16 Apr 2024	Normal	EM2406739	<0.02	<0.02	<0.05	<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	-
MW109	0315_MW109_250306	06 Mar 2025	Normal	ES2506877	<0.02	<0.02	<0.05	<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	<0.05
MW110	0315_MW110_S_200310	10 Mar 2020	Normal	ES2008982	<0.02	<0.02	<0.05	<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	-
MW110	0315_MW110_20211027	28 Oct 2021	Normal	ES2139229	<0.02	<0.02	<0.05	<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	-
MW110	0315_MW110_20220427	27 Apr 2022	Normal	EM2208205	<0.02	<0.02	<0.05	<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	-
MW110	0315_MW110_221103	03 Nov 2022	Normal	EM2222407	<0.02	<0.02	<0.05	<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	-
MW110	0315_MW110_230413	13 Apr 2023	Normal	EM2306946	<0.02	<0.02	<0.05	<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	-
MW110	0315_MW110_231012	12 Oct 2023	Normal	EM2318619	<0.02	<0.02	<0.05	<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	-
MW110	0315_MW110_240416	16 Apr 2024	Normal	EM2406739	<0.02	<0.02	<0.05	<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	-
MW110	0315_QC102_240416	16 Apr 2024	Field_D	EM2406739	<0.02	<0.02	<0.05	<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	-
MW110	0315_QC202_240416	16 Apr 2024	Interlab_D	1090100_0315	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	-
MW110	0315_MW110_250306	06 Mar 2025	Normal	ES2506877	<0.02	<0.02	<0.05	<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	<0.05
MW601	0315_MW601_S_190129	29 Jan 2019	Normal	ES1902996	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.15**	**0.18**	-
MW601	0315_QC101_190129	29 Jan 2019	Field_D	ES1902996	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.15**	**0.15**	-
MW601	0315_QC201_190129	29 Jan 2019	Interlab_D	638493	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**0.1**	**0.14**	-
MW601	0315_MW601_S_190218	18 Feb 2019	Normal	ES1905450	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.25**	**0.29**	-
MW601	0315_MW601_P_200312	12 Mar 2020	Normal	ES2008982	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.89**	**1.11**	-
MW601	0315_MW601_20211027	27 Oct 2021	Normal	ES2139235	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.59**	**0.68**	-
MW601	0315_MW601_20220428	28 Apr 2022	Normal	EM2208229	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.65**	**0.78**	-
MW601	0315_MW601_221104	04 Nov 2022	Normal	EM2222368	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.77**	**0.89**	-
MW601	0315_MW601_230413	13 Apr 2023	Normal	EM2306926	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.57**	**0.68**	-
MW601	0315_MW601_231012	12 Oct 2023	Normal	EM2318605	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.79**	**0.91**	-
MW601	0315_MW601_240416	16 Apr 2024	Normal	EM2406741	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.56**	**0.58**	-
MW601	0315_MW601_250306	06 Mar 2025	Normal	ES2506716	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.57**	**0.63**	<0.05
MW624	0315_MW624_S_200311	11 Mar 2020	Normal	ES2008982	<0.02	<0.02	<0.05	<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	-
MW624	0315_MW624_20211027	27 Oct 2021	Normal	ES2139235	<0.02	<0.02	<0.05	<0.05	**0.05**	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01	**0.05**	-
MW624	MW624	20 Dec 2021	Normal	EM2125953	<0.02	<0.02	<0.05	<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	-
MW624	0315_MW624_20220428	28 Apr 2022	Normal	EM2208229	<0.02	<0.02	<0.05	<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	-
MW624	0315_MW624_221104	04 Nov 2022	Normal	EM2222368	<0.02	<0.02	<0.05	<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	-
MW624	0315_MW624_230413	13 Apr 2023	Normal	EM2306926	<0.02	<0.02	<0.05	<0.05	**0.23**	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01	**0.23**	-
MW624	0315_MW624_231012	12 Oct 2023	Normal	EM2318605	<0.02	<0.02	<0.05	<0.05	**0.49**	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01	**0.49**	-
MW624	0315_MW624_240416	16 Apr 2024	Normal	EM2406741	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01	**0.02**	-
MW624	0315_MW624_250306	06 Mar 2025	Normal	ES2506716	<0.02	<0.02	<0.05	<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	<0.05
MW625	0315_MW625_S_200521	21 May 2020	Normal	ES2017986	<0.02	<0.02	<0.05	<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	-
MW625	0315_MW625_20211026	26 Oct 2021	Normal	ES2139232	<0.02	<0.02	<0.05	<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	-
MW625	0315_MW625_20220427	27 Apr 2022	Normal	EM2208223	<0.02	<0.02	<0.05	<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	-
MW625	0315_MW625_221103	03 Nov 2022	Normal	EM2222366	<0.02	<0.02	<0.05	<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	-
MW625	0315_MW625_ 230413	13 Apr 2023	Normal	EM2306925	<0.02	<0.02	<0.05	<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	-
MW625	0315_MW625_231012	12 Oct 2023	Normal	EM2318601	<0.02	<0.02	<0.05	<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	-
MW625	0315_MW625_240417	17 Apr 2024	Normal	EM2406721	<0.02	<0.02	<0.05	<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	-
MW625	0315_MW625_250306	06 Mar 2025	Normal	ES2506882	<0.02	<0.02	<0.05	<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	<0.05
MW628	0315_MW628_250306	06 Mar 2025	Normal	ES2506877	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.13**	**0.13**	<0.05

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Table B 4. Surface Water Analytical Results

					PFAS - Perfluoroalkyl Sulfonic Acids								PFAS - Perfluoroalkyl Carboxylic Acids						
					Perfluoropropane sulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)
					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
EQL					0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2025 Freshwater 95%												**0.13**	**220**						
PFAS NEMP 2025 Recreational water quality guideline											**2**	**2**	**10**						
Location Code	**Field ID**	**Date**	**Sample Type**	**Lab Report Number**															
SW103	0315_SW103_181210	10 Dec 2018	Normal	ES1837611	-	0.10	0.06	0.02	-	<0.02	0.64	0.67	0.05	<0.1	0.13	0.18	0.04	<0.02	<0.02
SW103	0315_QC103_211026	26 Oct 2021	Field_D	ES2139230	-	0.02	<0.02	<0.02	-	<0.02	0.25	0.74	0.03	<0.1	0.06	0.07	<0.02	<0.02	<0.02
SW103	0315_QC203_20211026	26 Oct 2021	Interlab_D	837707	<0.01	0.02	0.02	0.02	<0.01	<0.01	0.31	1.0	0.03	<0.05	0.06	0.07	0.02	<0.01	<0.01
SW103	0315_SW103_20211026	26 Oct 2021	Normal	ES2139229	-	<0.02	<0.02	<0.02	-	<0.02	0.22	0.60	0.02	<0.1	0.06	0.06	<0.02	<0.02	<0.02
SW103	0315_SW103_20220428	28 Apr 2022	Normal	EM2208205	-	<0.02	<0.02	<0.02	-	<0.02	0.09	0.19	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW103	0315_SW103_221103	03 Nov 2022	Normal	EM2222407	-	<0.02	<0.02	<0.02	-	<0.02	0.14	0.22	0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02
SW103	0315_QC104_230412	12 Apr 2023	Field_D	EM2306946	-	<0.02	<0.02	<0.02	-	<0.02	0.08	0.16	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW103	0315_QC204_230412	12 Apr 2023	Interlab_D	982794	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.09	0.23	<0.01	<0.05	0.02	0.02	<0.01	<0.01	<0.01
SW103	0315_SW103_230412	12 Apr 2023	Normal	EM2306946	-	<0.02	<0.02	<0.02	-	<0.02	0.08	0.16	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW103	SW103	04 Oct 2023	Normal	EM2317784	-	<0.02	0.02	<0.02	-	<0.02	0.29	1.17	0.03	<0.1	0.05	0.07	0.02	<0.02	<0.02
SW103	0315_SW103_231012	12 Oct 2023	Normal	EM2318619	-	<0.02	<0.02	<0.02	-	<0.02	0.28	0.88	0.02	<0.1	0.02	0.05	<0.02	<0.02	<0.02
SW103	0315_SW103_240415	15 Apr 2024	Normal	EM2406739	-	0.02	0.03	<0.02	-	<0.02	0.39	0.53	0.02	<0.1	0.04	0.08	0.02	<0.02	<0.02
SW103	0315_SW103_250306	06 Mar 2025	Normal	ES2506877	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	0.34	0.88	0.02	<0.1	0.03	0.06	<0.02	<0.02	<0.02
SW106	0315_SW106_181216	16 Dec 2018	Normal	ES1838218	-	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW106	0315_SW106_221103	03 Nov 2022	Normal	EM2222407	-	<0.02	<0.02	<0.02	-	<0.02	0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW106	0315_SW106_230412	12 Apr 2023	Normal	EM2306946	-	<0.02	<0.02	<0.02	-	<0.02	0.02	0.02	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW106	0315_SW106_230412	12 Apr 2023	Normal	EM2307788	-	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.10	<0.02	<0.02	<0.02	<0.02	<0.02
SW107	0315_SW107_181210	10 Dec 2018	Normal	ES1837611	-	0.02	<0.02	<0.02	-	<0.02	0.22	0.43	0.03	<0.1	0.03	0.04	<0.02	<0.02	<0.02
SW107	0315_SW107_20211026	26 Oct 2021	Normal	ES2139229	-	<0.02	<0.02	<0.02	-	<0.02	0.07	0.18	0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW107	0315_SW107_20220502	02 May 2022	Normal	EM2208205	-	<0.02	<0.02	<0.02	-	<0.02	0.05	0.15	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW107	0315_SW107_221103	03 Nov 2022	Normal	EM2222407	-	<0.02	<0.02	<0.02	-	<0.02	0.11	0.14	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW107	0315_SW107_230412	12 Apr 2023	Normal	EM2306946	-	<0.02	<0.02	<0.02	-	<0.02	0.07	0.13	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW107	0315_SW107_231012	12 Oct 2023	Normal	EM2318619	-	<0.02	<0.02	<0.02	-	<0.02	0.07	0.20	0.01	<0.1	<0.02	0.03	<0.02	<0.02	<0.02
SW107	0315_SW107_240415	15 Apr 2024	Normal	EM2406739	-	<0.02	<0.02	<0.02	-	<0.02	0.10	0.16	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW107	0315_SW107_250306	06 Mar 2025	Normal	ES2506877	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.12	0.31	0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW108	0315_SW108_181215	15 Dec 2018	Normal	ES1838218	-	0.02	<0.02	<0.02	-	<0.02	0.04	0.02	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW108	0315_SW108_20211026	26 Oct 2021	Normal	ES2139229	-	<0.02	<0.02	<0.02	-	<0.02	0.01	0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW108	0315_SW108_20220502	02 May 2022	Normal	EM2208205	-	<0.02	<0.02	<0.02	-	<0.02	0.02	0.02	0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW108	0315_SW108_221103	03 Nov 2022	Normal	EM2222407	-	<0.02	<0.02	<0.02	-	<0.02	0.02	0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW108	0315_SW108_ 230413	13 Apr 2023	Normal	EM2306946	-	<0.02	<0.02	<0.02	-	<0.02	0.02	0.01	<0.01	<0.1	0.02	<0.02	<0.02	<0.02	<0.02
SW108	0315_QC103_231012	12 Oct 2023	Field_D	EM2318619	-	<0.02	<0.02	<0.02	-	<0.02	0.01	0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW108	0315_QC203_230412	12 Oct 2023	Interlab_D	1036476	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.02	0.01	<0.05	0.03	0.01	<0.01	<0.01	<0.01
SW108	0315_SW108_231012	12 Oct 2023	Normal	EM2318619	-	<0.02	<0.02	<0.02	-	<0.02	0.01	0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW108	0315_QC100_240416	16 Apr 2024	Field_D	EM2406739	-	0.03	<0.02	<0.02	-	<0.02	0.02	0.02	0.01	<0.1	0.02	0.02	<0.02	<0.02	<0.02
SW108	0315_QC200_240416	16 Apr 2024	Interlab_D	1090100_0315	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	0.03	0.02	0.02	<0.05	0.03	0.03	<0.01	<0.01	<0.01
SW108	0315_SW108_240416	16 Apr 2024	Normal	EM2406739	-	0.02	<0.02	<0.02	-	<0.02	0.02	0.02	0.02	<0.1	0.02	0.02	<0.02	<0.02	<0.02
SW108	0315_SW108_250307	07 Mar 2025	Normal	ES2506877	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW111	0315_SW111_181215	15 Dec 2018	Normal	ES1838218	-	0.02	<0.02	<0.02	-	<0.02	0.08	0.03	0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02
SW111	0315_SW111_20211026	26 Oct 2021	Normal	ES2139229	-	<0.02	<0.02	<0.02	-	<0.02	0.02	0.02	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW111	0315_SW111_20220427	27 Apr 2022	Normal	EM2208205	-	<0.02	<0.02	<0.02	-	<0.02	0.02	0.02	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW111	0315_SW111_221103	03 Nov 2022	Normal	EM2222407	-	<0.02	<0.02	<0.02	-	<0.02	0.02	0.02	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW111	0315_SW111_ 230413	13 Apr 2023	Normal	EM2306946	-	<0.02	<0.02	<0.02	-	<0.02	0.03	0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW111	0315_QC201_230411	11 Oct 2023	Interlab_D	1036476	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.02	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01
SW111	0315_QC101_231012	12 Oct 2023	Field_D	EM2318619	-	<0.02	<0.02	<0.02	-	<0.02	0.02	0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW111	0315_SW111_231012	12 Oct 2023	Normal	EM2318619	-	<0.02	<0.02	<0.02	-	<0.02	0.02	0.02	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW111	0315_SW111_240416	16 Apr 2024	Normal	EM2406739	-	<0.02	<0.02	<0.02	-	<0.02	0.02	0.02	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW111	0315_SW111_250307	07 Mar 2025	Normal	ES2506877	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.03	0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02
SW118	0315_SW118_181130	30 Nov 2018	Normal	ES1836659	-	<0.02	<0.02	<0.02	-	<0.02	0.15	0.52	0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02
SW118	0315_SW118_181213	13 Dec 2018	Normal	ES1837950	-	<0.02	<0.02	<0.02	-	<0.02	<0.02	0.07	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW118	0315_SW118_20220428	28 Apr 2022	Normal	EM2208205	-	<0.02	<0.02	<0.02	-	<0.02	0.06	0.18	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW118	0315_SW118_221103	03 Nov 2022	Normal	EM2222407	-	<0.02	<0.02	<0.02	-	<0.02	0.10	0.13	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW118	0315_SW118_230412	12 Apr 2023	Normal	EM2306946	-	<0.02	<0.02	<0.02	-	<0.02	<0.01	0.02	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW118	0315_SW118_231012	12 Oct 2023	Normal	EM2318619	-	<0.02	<0.02	<0.02	-	<0.02	0.09	0.38	0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02
SW121	0315_SW121_181130	30 Nov 2018	Normal	ES1836659	-	<0.02	<0.02	<0.02	-	<0.02	0.11	0.28	0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02
SW121	0315_SW121_20211026	28 Oct 2021	Normal	ES2139229	-	<0.02	<0.02	<0.02	-	<0.02	0.09	0.22	0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW121	0315_SW121_20220428	28 Apr 2022	Normal	EM2208205	-	<0.02	<0.02	<0.02	-	<0.02	0.05	0.16	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW121	0315_QC101_220804	04 Aug 2022	Field_D	EM2215108	-	<0.02	-	-	-	-	0.05	0.13	<0.01	<0.1	<0.02	<0.02	<0.02	-	-
SW121	0315_QC201_220804	04 Aug 2022	Interlab_D	913001	-	-	-	-	-	-	0.06	0.15	<0.01	-	-	-	-	-	-
SW121	0315_SW121_220804	04 Aug 2022	Normal	EM2215108	-	<0.02	<0.02	<0.02	-	<0.02	0.05	0.16	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02

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Table B 4. Surface Water Analytical Results

Blamey Barracks Kapooka OMR

					PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides							PFAS		
					Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	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 (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorohexadecanoic acid (PFHxDA)
					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
EQL					0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.02	0.05	0.02	0.05	0.05	0.02	0.05	0.01	0.01	0.05
PFAS NEMP 2025 Freshwater 95%																						
PFAS NEMP 2025 Recreational water quality guideline																				2		
Location Code	Field ID	Date	Sample Type	Lab Report Number																		
SW103	0315_SW103_181210	10 Dec 2018	Normal	ES1837611	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	1.31	1.89	-
SW103	0315_QC103_211026	26 Oct 2021	Field_D	ES2139230	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.99	1.17	-
SW103	0315_QC203_20211026	26 Oct 2021	Interlab_D	837707	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1.31	1.55	-
SW103	0315_SW103_20211026	26 Oct 2021	Normal	ES2139229	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.82	0.96	-
SW103	0315_SW103_20220428	28 Apr 2022	Normal	EM2208205	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.28	0.28	-
SW103	0315_SW103_221103	03 Nov 2022	Normal	EM2222407	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.36	0.41	-
SW103	0315_QC104_230412	12 Apr 2023	Field_D	EM2306946	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.24	0.24	-
SW103	0315_QC204_230412	12 Apr 2023	Interlab_D	982794	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.32	0.36	-
SW103	0315_SW103_230412	12 Apr 2023	Normal	EM2306946	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.24	0.24	-
SW103	SW103	04 Oct 2023	Normal	EM2317784	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	1.46	1.65	-
SW103	0315_SW103_231012	12 Oct 2023	Normal	EM2318619	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	1.16	1.25	-
SW103	0315_SW103_240415	15 Apr 2024	Normal	EM2406739	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.92	1.13	-
SW103	0315_SW103_250306	06 Mar 2025	Normal	ES2506877	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	1.22	1.35	<0.05
SW106	0315_SW106_181216	16 Dec 2018	Normal	ES1838218	<0.02	<0.02	<0.02	<0.05	<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	-
SW106	0315_SW106_221103	03 Nov 2022	Normal	EM2222407	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.02	0.02	-
SW106	0315_SW106_230412	12 Apr 2023	Normal	EM2306946	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.04	0.04	-
SW106	0315_SW106_230412	12 Apr 2023	Normal	EM2307788	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.02	-
SW107	0315_SW107_181210	10 Dec 2018	Normal	ES1837611	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.65	0.77	-
SW107	0315_SW107_20211026	26 Oct 2021	Normal	ES2139229	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.25	0.26	-
SW107	0315_SW107_20220502	02 May 2022	Normal	EM2208205	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.20	0.20	-
SW107	0315_SW107_221103	03 Nov 2022	Normal	EM2222407	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.25	0.25	-
SW107	0315_SW107_230412	12 Apr 2023	Normal	EM2306946	<0.02	<0.02	<0.02	<0.05	<0.05	0.17	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.20	0.37	-
SW107	0315_SW107_231012	12 Oct 2023	Normal	EM2318619	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.27	0.31	-
SW107	0315_SW107_240415	15 Apr 2024	Normal	EM2406739	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.26	0.26	-
SW107	0315_SW107_250306	06 Mar 2025	Normal	ES2506877	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.43	0.44	<0.05
SW108	0315_SW108_181215	15 Dec 2018	Normal	ES1838218	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.06	0.10	-
SW108	0315_SW108_20211026	26 Oct 2021	Normal	ES2139229	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.02	0.02	-
SW108	0315_SW108_20220502	02 May 2022	Normal	EM2208205	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.04	0.05	-
SW108	0315_SW108_221103	03 Nov 2022	Normal	EM2222407	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.03	0.03	-
SW108	0315_SW108_ 230413	13 Apr 2023	Normal	EM2306946	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.03	0.05	-
SW108	0315_QC103_231012	12 Oct 2023	Field_D	EM2318619	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.02	0.02	-
SW108	0315_QC203_230412	12 Oct 2023	Interlab_D	1036476	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.04	0.1	-
SW108	0315_SW108_231012	12 Oct 2023	Normal	EM2318619	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.02	0.02	-
SW108	0315_QC100_240416	16 Apr 2024	Field_D	EM2406739	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.04	0.12	-
SW108	0315_QC200_240416	16 Apr 2024	Interlab_D	1090100_0315	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	0.15	-
SW108	0315_SW108_240416	16 Apr 2024	Normal	EM2406739	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.04	0.12	-
SW108	0315_SW108_250307	07 Mar 2025	Normal	ES2506877	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.03	0.03	<0.05
SW111	0315_SW111_181215	15 Dec 2018	Normal	ES1838218	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.11	0.18	-
SW111	0315_SW111_20211026	26 Oct 2021	Normal	ES2139229	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.04	0.04	-
SW111	0315_SW111_20220427	27 Apr 2022	Normal	EM2208205	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.04	0.04	-
SW111	0315_SW111_221103	03 Nov 2022	Normal	EM2222407	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.04	0.04	-
SW111	0315_SW111_ 230413	13 Apr 2023	Normal	EM2306946	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.04	0.04	-
SW111	0315_QC201_230411	11 Oct 2023	Interlab_D	1036476	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.04	<0.1	-
SW111	0315_QC101_231012	12 Oct 2023	Field_D	EM2318619	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.03	0.03	-
SW111	0315_SW111_231012	12 Oct 2023	Normal	EM2318619	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.04	0.04	-
SW111	0315_SW111_240416	16 Apr 2024	Normal	EM2406739	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.04	0.04	-
SW111	0315_SW111_250307	07 Mar 2025	Normal	ES2506877	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.09	0.15	<0.05
SW118	0315_SW118_181130	30 Nov 2018	Normal	ES1836659	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.67	0.72	-
SW118	0315_SW118_181213	13 Dec 2018	Normal	ES1837950	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.07	0.07	-
SW118	0315_SW118_20220428	28 Apr 2022	Normal	EM2208205	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.24	0.24	-
SW118	0315_SW118_221103	03 Nov 2022	Normal	EM2222407	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.23	0.23	-
SW118	0315_SW118_230412	12 Apr 2023	Normal	EM2306946	<0.02	<0.02	<0.02	<0.05	<0.05	0.09	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.02	0.11	-
SW118	0315_SW118_231012	12 Oct 2023	Normal	EM2318619	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.47	0.52	-
SW121	0315_SW121_181130	30 Nov 2018	Normal	ES1836659	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.39	0.44	-
SW121	0315_SW121_20211026	28 Oct 2021	Normal	ES2139229	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.31	0.32	-
SW121	0315_SW121_20220428	28 Apr 2022	Normal	EM2208205	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.21	0.21	-
SW121	0315_QC101_220804	04 Aug 2022	Field_D	EM2215108	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-	-	-	-	-	0.18	-	-
SW121	0315_QC201_220804	04 Aug 2022	Interlab_D	913001	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	0.21	-	-
SW121	0315_SW121_220804	04 Aug 2022	Normal	EM2215108	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.21	0.21	-

Jacobs

Table B 4. Surface Water Analytical Results

					PFAS - Perfluoroalkyl Sulfonic Acids								PFAS - Perfluoroalkyl Carboxylic Acids						
					Perfluoropropane sulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)
					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
EQL					0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2025 Freshwater 95%												**0.13**	**220**						
PFAS NEMP 2025 Recreational water quality guideline											**2**	**2**	**10**						
Location Code	**Field ID**	**Date**	**Sample Type**	**Lab Report Number**															
SW121	0315_SW121_221104	04 Nov 2022	Normal	EM2222407	-	<0.02	<0.02	<0.02	-	<0.02	**0.04**	**0.09**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW121	0315_QC102_230411	11 Apr 2023	Field_D	EM2306946	-	<0.02	<0.02	<0.02	-	<0.02	**0.06**	**0.16**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW121	0315_QC202_230411	11 Apr 2023	Interlab_D	982794	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	**0.06**	**0.22**	<0.01	<0.05	<0.01	**0.01**	<0.01	<0.01	<0.01
SW121	0315_SW121_230411	11 Apr 2023	Normal	EM2306946	-	**0.02**	<0.02	<0.02	-	<0.02	**0.06**	**0.17**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW121	0315_SW121_231014	14 Oct 2023	Normal	EM2318619	-	<0.02	<0.02	<0.02	-	<0.02	**0.10**	**0.31**	**0.01**	<0.1	<0.02	**0.03**	<0.02	<0.02	<0.02
SW121	0315_SW121_231129	29 Nov 2023	Normal	EM2321501	-	<0.02	<0.02	<0.02	-	<0.02	**0.04**	**0.13**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW127	0315_SW127_181214	14 Dec 2018	Normal	ES1838218	-	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW127	0315_QC101_211025	25 Oct 2021	Field_D	ES2139230	-	<0.02	<0.02	<0.02	-	<0.02	<0.01	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW127	0315_QC201_20211025	25 Oct 2021	Interlab_D	837707	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01
SW127	0315_SW127_20211025	25 Oct 2021	Normal	ES2139229	-	<0.02	<0.02	<0.02	-	<0.02	<0.01	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW127	0315_SW127_20220427	27 Apr 2022	Normal	EM2208205	-	<0.02	<0.02	<0.02	-	<0.02	<0.01	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW127	0315_QC101_221103	03 Nov 2022	Field_D	EM2222407	-	<0.02	<0.02	<0.02	-	<0.02	<0.01	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW127	0315_QC201_221103	03 Nov 2022	Interlab_D	940511	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01
SW127	0315_SW127_221103	03 Nov 2022	Normal	EM2222407	-	<0.02	<0.02	<0.02	-	<0.02	<0.01	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW127	0315_SW127_230412	12 Apr 2023	Normal	EM2306946	-	<0.02	<0.02	<0.02	-	<0.02	<0.01	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW127	0315_SW127_231012	12 Oct 2023	Normal	EM2318619	-	<0.02	<0.02	<0.02	-	<0.02	<0.01	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW136	0315_SW136_190129	29 Jan 2019	Normal	ES1902996	-	**0.26**	**0.24**	**0.04**	-	<0.02	**2.67**	**1.48**	**0.11**	<0.1	**0.17**	**0.44**	**0.16**	<0.02	<0.02
SW136	0315_SW136_20211026	26 Oct 2021	Normal	ES2139229	-	**0.06**	**0.06**	**0.03**	-	<0.02	**0.73**	**1.20**	**0.04**	<0.1	**0.11**	**0.19**	**0.03**	<0.02	<0.02
SW136	0315_QC102_20220427	27 Apr 2022	Field_D	EM2208205	-	<0.02	<0.02	<0.02	-	<0.02	**0.02**	**0.05**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW136	0315_QC202_20220427	27 Apr 2022	Interlab_D	889626	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	**0.02**	**0.06**	<0.01	<0.05	**0.02**	**0.01**	<0.01	<0.01	<0.01
SW136	0315_SW136_20220427	27 Apr 2022	Normal	EM2208205	-	<0.02	<0.02	<0.02	-	<0.02	**0.01**	**0.04**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW136	0315_SW136_221103	03 Nov 2022	Normal	EM2222407	-	**0.03**	<0.02	<0.02	-	<0.02	**0.13**	**0.17**	**0.02**	<0.1	<0.02	**0.03**	<0.02	<0.02	<0.02
SW136	0315_SW136_230412	12 Apr 2023	Normal	EM2306946	-	<0.02	<0.02	<0.02	-	<0.02	**0.02**	**0.04**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW136	SW136	04 Oct 2023	Normal	EM2317784	-	<0.02	<0.02	<0.02	-	<0.02	**0.21**	**0.54**	**0.02**	<0.1	**0.02**	**0.03**	<0.02	<0.02	<0.02
SW136	0315_SW136_231012	12 Oct 2023	Normal	EM2318619	-	**0.04**	**0.05**	**0.02**	-	<0.02	**0.70**	**1.21**	**0.04**	<0.1	**0.04**	**0.12**	**0.02**	<0.02	<0.02
SW136	0315_SW136_231129	29 Nov 2023	Normal	EM2321501	-	<0.02	<0.02	<0.02	-	<0.02	**0.12**	**0.22**	<0.01	<0.1	**0.03**	**0.03**	<0.02	<0.02	<0.02
SW136	0315_SW136_240415	15 Apr 2024	Normal	EM2406739	-	**0.03**	**0.04**	<0.02	-	<0.02	**0.60**	**0.78**	**0.03**	<0.1	**0.04**	**0.06**	<0.02	<0.02	<0.02
SW136	0315_SW136_250304	04 Mar 2025	Normal	ES2506877	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**0.05**	**0.10**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW140	0315_SW140_190129	29 Jan 2019	Normal	ES1902996	-	**0.04**	**0.03**	<0.02	-	<0.02	**0.22**	**0.03**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW140	0315_SW140_20211026	26 Oct 2021	Normal	ES2139229	-	<0.02	<0.02	<0.02	-	<0.02	**0.02**	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW140	0315_QC103_20220428	28 Apr 2022	Field_D	EM2208205	-	<0.02	<0.02	<0.02	-	<0.02	**0.01**	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW140	0315_QC203_20220428	28 Apr 2022	Interlab_D	889626	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	**0.02**	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01
SW140	0315_SW140_20220428	28 Apr 2022	Normal	EM2208205	-	<0.02	<0.02	<0.02	-	<0.02	**0.02**	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW140	0315_QC102_221103	03 Nov 2022	Field_D	EM2222407	-	<0.02	<0.02	<0.02	-	<0.02	**0.04**	**0.01**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW140	0315_QC202_221103	03 Nov 2022	Interlab_D	940511	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	**0.03**	**0.01**	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01
SW140	0315_SW140_221103	03 Nov 2022	Normal	EM2222407	-	<0.02	<0.02	<0.02	-	<0.02	**0.03**	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW140	0315_SW140_230412	12 Apr 2023	Normal	EM2306946	-	<0.02	<0.02	<0.02	-	<0.02	**0.02**	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW140	0315_SW140_231012	12 Oct 2023	Normal	EM2318619	-	<0.02	<0.02	<0.02	-	<0.02	**0.02**	**0.01**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW140	0315_SW140_240416	16 Apr 2024	Normal	EM2406739	-	<0.02	<0.02	<0.02	-	<0.02	**0.02**	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW140	0315_SW140_250220	20 Feb 2025	Normal	ES2505157	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**0.08**	**0.02**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW144	0315_SW144_190129	29 Jan 2019	Normal	ES1902996	-	<0.02	<0.02	<0.02	-	<0.02	**0.02**	**0.01**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW144	0315_SW144_20211027	27 Oct 2021	Normal	ES2139229	-	<0.02	<0.02	<0.02	-	<0.02	<0.01	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW144	0315_SW144_20220429	29 Apr 2022	Normal	EM2208205	-	<0.02	<0.02	<0.02	-	<0.02	<0.01	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW144	0315_SW144_221103	03 Nov 2022	Normal	EM2222407	-	<0.02	<0.02	<0.02	-	<0.02	**0.05**	**0.12**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW144	0315_SW144_230412	12 Apr 2023	Normal	EM2306946	-	<0.02	<0.02	<0.02	-	<0.02	<0.01	**0.02**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW144	0315_SW144_231012	12 Oct 2023	Normal	EM2318619	-	<0.02	<0.02	<0.02	-	<0.02	<0.01	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW144	0315_SW144_240415	15 Apr 2024	Normal	EM2406739	-	<0.02	<0.02	<0.02	-	<0.02	<0.01	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW144	0315_SW144_250220	20 Feb 2025	Normal	ES2505157	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW148	0315_SW148_190129	29 Jan 2019	Normal	ES1902996	-	**0.02**	<0.02	<0.02	-	<0.02	**0.14**	**0.47**	**0.01**	<0.1	<0.02	**0.02**	<0.02	<0.02	<0.02
SW148	0315_SW148_20211027	27 Oct 2021	Normal	ES2139229	-	<0.02	<0.02	<0.02	-	<0.02	<0.01	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW148	0315_SW148_20220428	28 Apr 2022	Normal	EM2208205	-	<0.02	<0.02	<0.02	-	<0.02	<0.01	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW148	0315_SW148_221103	03 Nov 2022	Normal	EM2222407	-	<0.02	<0.02	<0.02	-	<0.02	<0.01	**0.16**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW148	0315_SW148_230412	12 Apr 2023	Normal	EM2306946	-	<0.02	<0.02	<0.02	-	<0.02	<0.01	**0.01**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW148	0315_SW148_231012	12 Oct 2023	Normal	EM2318619	-	<0.02	<0.02	<0.02	-	<0.02	<0.01	**0.02**	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW148	0315_SW148_240416	16 Apr 2024	Normal	EM2406739	-	<0.02	<0.02	<0.02	-	<0.02	<0.01	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW148	0315_QC101_250220	20 Feb 2025	Field_D	ES2505157	-	<0.02	-	-	-	-	<0.01	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	-	-
SW148	0315_QC201_250220	20 Feb 2025	Interlab_D	1192086	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01
SW148	0315_SW148_250220	20 Feb 2025	Normal	ES2505157	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW149	0315_SW149_190129	29 Jan 2019	Normal	ES1902996	-	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02
SW149	0315_SW149_20211027	28 Oct 2021	Normal	ES2139229	-	<0.02	<0.02	<0.02	-	<0.02	<0.01	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02

Jacobs

Table B 4. Surface Water Analytical Results

Blamey Barracks Kapooka OMR

					PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides							PFAS		
					Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	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 (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorohexadecanoic acid (PFHxDA)
					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
EQL					0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.02	0.05	0.02	0.05	0.05	0.02	0.05	0.01	0.01	0.05
PFAS NEMP 2025 Freshwater 95%																						
PFAS NEMP 2025 Recreational water quality guideline																				2		
Location Code	Field ID	Date	Sample Type	Lab Report Number																		
SW121	0315_SW121_221104	04 Nov 2022	Normal	EM2222407	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.13	0.13	-
SW121	0315_QC102_230411	11 Apr 2023	Field_D	EM2306946	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.22	0.22	-
SW121	0315_QC202_230411	11 Apr 2023	Interlab_D	982794	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.28	0.29	-
SW121	0315_SW121_230411	11 Apr 2023	Normal	EM2306946	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.23	0.25	-
SW121	0315_SW121_231014	14 Oct 2023	Normal	EM2318619	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.41	0.45	-
SW121	0315_SW121_231129	29 Nov 2023	Normal	EM2321501	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.17	0.17	-
SW127	0315_SW127_181214	14 Dec 2018	Normal	ES1838218	<0.02	<0.02	<0.02	<0.05	<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	-
SW127	0315_QC101_211025	25 Oct 2021	Field_D	ES2139230	<0.02	<0.02	<0.02	<0.05	<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	-
SW127	0315_QC201_20211025	25 Oct 2021	Interlab_D	837707	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	-
SW127	0315_SW127_20211025	25 Oct 2021	Normal	ES2139229	<0.02	<0.02	<0.02	<0.05	<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	-
SW127	0315_SW127_20220427	27 Apr 2022	Normal	EM2208205	<0.02	<0.02	<0.02	<0.05	<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	-
SW127	0315_QC101_221103	03 Nov 2022	Field_D	EM2222407	<0.02	<0.02	<0.02	<0.05	<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	-
SW127	0315_QC201_221103	03 Nov 2022	Interlab_D	940511	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	-
SW127	0315_SW127_221103	03 Nov 2022	Normal	EM2222407	<0.02	<0.02	<0.02	<0.05	<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	-
SW127	0315_SW127_230412	12 Apr 2023	Normal	EM2306946	<0.02	<0.02	<0.02	<0.05	<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	-
SW127	0315_SW127_231012	12 Oct 2023	Normal	EM2318619	<0.02	<0.02	<0.02	<0.05	<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	-
SW136	0315_SW136_190129	29 Jan 2019	Normal	ES1902996	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	4.15	5.57	-
SW136	0315_SW136_20211026	26 Oct 2021	Normal	ES2139229	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	1.93	2.45	-
SW136	0315_QC102_20220427	27 Apr 2022	Field_D	EM2208205	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.07	0.07	-
SW136	0315_QC202_20220427	27 Apr 2022	Interlab_D	889626	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.08	0.11	-
SW136	0315_SW136_20220427	27 Apr 2022	Normal	EM2208205	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.05	0.05	-
SW136	0315_SW136_221103	03 Nov 2022	Normal	EM2222407	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.30	0.38	-
SW136	0315_SW136_230412	12 Apr 2023	Normal	EM2306946	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.06	0.06	-
SW136	SW136	04 Oct 2023	Normal	EM2317784	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.75	0.82	-
SW136	0315_SW136_231012	12 Oct 2023	Normal	EM2318619	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	1.91	2.24	-
SW136	0315_SW136_231129	29 Nov 2023	Normal	EM2321501	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.34	0.40	-
SW136	0315_SW136_240415	15 Apr 2024	Normal	EM2406739	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	1.38	1.58	-
SW136	0315_SW136_250304	04 Mar 2025	Normal	ES2506877	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.15	0.15	<0.05
SW140	0315_SW140_190129	29 Jan 2019	Normal	ES1902996	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.25	0.32	-
SW140	0315_SW140_20211026	26 Oct 2021	Normal	ES2139229	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.02	0.02	-
SW140	0315_QC103_20220428	28 Apr 2022	Field_D	EM2208205	<0.02	<0.02	<0.02	<0.05	<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	-
SW140	0315_QC203_20220428	28 Apr 2022	Interlab_D	889626	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.02	<0.1	-
SW140	0315_SW140_20220428	28 Apr 2022	Normal	EM2208205	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.02	0.02	-
SW140	0315_QC102_221103	03 Nov 2022	Field_D	EM2222407	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.05	0.05	-
SW140	0315_QC202_221103	03 Nov 2022	Interlab_D	940511	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.04	<0.1	-
SW140	0315_SW140_221103	03 Nov 2022	Normal	EM2222407	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.03	0.03	-
SW140	0315_SW140_230412	12 Apr 2023	Normal	EM2306946	<0.02	<0.02	<0.02	<0.05	<0.05	0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.02	0.07	-
SW140	0315_SW140_231012	12 Oct 2023	Normal	EM2318619	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.03	0.03	-
SW140	0315_SW140_240416	16 Apr 2024	Normal	EM2406739	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.02	0.02	-
SW140	0315_SW140_250220	20 Feb 2025	Normal	ES2505157	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.10	0.10	<0.05
SW144	0315_SW144_190129	29 Jan 2019	Normal	ES1902996	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.03	0.03	-
SW144	0315_SW144_20211027	27 Oct 2021	Normal	ES2139229	<0.02	<0.02	<0.02	<0.05	<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	-
SW144	0315_SW144_20220429	29 Apr 2022	Normal	EM2208205	<0.02	<0.02	<0.02	<0.05	<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	-
SW144	0315_SW144_221103	03 Nov 2022	Normal	EM2222407	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.17	0.17	-
SW144	0315_SW144_230412	12 Apr 2023	Normal	EM2306946	<0.02	<0.02	<0.02	<0.05	<0.05	0.11	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.02	0.13	-
SW144	0315_SW144_231012	12 Oct 2023	Normal	EM2318619	<0.02	<0.02	<0.02	<0.05	<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	-
SW144	0315_SW144_240415	15 Apr 2024	Normal	EM2406739	<0.02	<0.02	<0.02	<0.05	<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	-
SW144	0315_SW144_250220	20 Feb 2025	Normal	ES2505157	<0.02	<0.02	<0.02	<0.05	<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	<0.05
SW148	0315_SW148_190129	29 Jan 2019	Normal	ES1902996	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.61	0.66	-
SW148	0315_SW148_20211027	27 Oct 2021	Normal	ES2139229	<0.02	<0.02	<0.02	<0.05	<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	-
SW148	0315_SW148_20220428	28 Apr 2022	Normal	EM2208205	<0.02	<0.02	<0.02	<0.05	<0.05	0.06	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.01	0.06	-
SW148	0315_SW148_221103	03 Nov 2022	Normal	EM2222407	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.16	0.16	-
SW148	0315_SW148_230412	12 Apr 2023	Normal	EM2306946	<0.02	<0.02	<0.02	<0.05	<0.05	0.13	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.01	0.14	-
SW148	0315_SW148_231012	12 Oct 2023	Normal	EM2318619	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	0.02	0.02	-
SW148	0315_SW148_240416	16 Apr 2024	Normal	EM2406739	<0.02	<0.02	<0.02	<0.05	<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	-
SW148	0315_QC101_250220	20 Feb 2025	Field_D	ES2505157	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-	-	-	-	-	<0.01	-	-
SW148	0315_QC201_250220	20 Feb 2025	Interlab_D	1192086	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	-
SW148	0315_SW148_250220	20 Feb 2025	Normal	ES2505157	<0.02	<0.02	<0.02	<0.05	<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	<0.05
SW149	0315_SW149_190129	29 Jan 2019	Normal	ES1902996	<0.02	<0.02	<0.02	<0.05	<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	-
SW149	0315_SW149_20211027	28 Oct 2021	Normal	ES2139229	<0.02	<0.02	<0.02	<0.05	<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	-

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Table B 4. Surface Water Analytical Results

					PFAS - Perfluoroalkyl Sulfonic Acids								PFAS - Perfluoroalkyl Carboxylic Acids						
					Perfluoropropane sulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)
					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
EQL					0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2025 Freshwater 95%												**0.13**	**220**						
PFAS NEMP 2025 Recreational water quality guideline											**2**	**2**	**10**						
Location Code	**Field ID**	**Date**	**Sample Type**	**Lab Report Number**															
SW149	**0315_SW149_20220429**	**29 Apr 2022**	**Normal**	**EM2208205**	-	*<0.02*	*<0.02*	*<0.02*	-	*<0.02*	*<0.01*	**0.02**	*<0.01*	*<0.1*	*<0.02*	*<0.02*	*<0.02*	*<0.02*	*<0.02*
SW149	**0315_SW149_221103**	**03 Nov 2022**	**Normal**	**EM2222407**	-	*<0.02*	*<0.02*	*<0.02*	-	*<0.02*	*<0.01*	**0.16**	**0.01**	*<0.1*	*<0.02*	**0.02**	*<0.02*	*<0.02*	*<0.02*
SW149	**0315_SW149_230412**	**12 Apr 2023**	**Normal**	**EM2306946**	-	*<0.02*	*<0.02*	*<0.02*	-	*<0.02*	*<0.01*	*<0.01*	*<0.01*	*<0.1*	*<0.02*	*<0.02*	*<0.02*	*<0.02*	*<0.02*
SW149	**0315_SW149_231012**	**12 Oct 2023**	**Normal**	**EM2318619**	-	*<0.02*	*<0.02*	*<0.02*	-	*<0.02*	**0.01**	**0.01**	*<0.01*	*<0.1*	*<0.02*	*<0.02*	*<0.02*	*<0.02*	*<0.02*
SW149	**0315_SW149_250220**	**20 Feb 2025**	**Normal**	**ES2505157**	*<0.02*	*<0.02*	*<0.02*	*<0.02*	*<0.02*	*<0.02*	*<0.01*	*<0.01*	*<0.01*	*<0.1*	*<0.02*	*<0.02*	*<0.02*	*<0.02*	*<0.02*
SW614	**0315_SW614_181213**	**13 Dec 2018**	**Normal**	**ES1837950**	-	*<0.02*	*<0.02*	*<0.02*	-	*<0.02*	*<0.02*	**0.03**	*<0.01*	*<0.1*	*<0.02*	*<0.02*	*<0.02*	*<0.02*	*<0.02*
SW614	**0315_SW614_20211027**	**27 Oct 2021**	**Normal**	**ES2139235**	-	*<0.02*	*<0.02*	*<0.02*	-	*<0.02*	**0.08**	**0.27**	*<0.01*	*<0.1*	*<0.02*	*<0.02*	*<0.02*	*<0.02*	*<0.02*
SW614	**0315_SW614_221104**	**04 Nov 2022**	**Normal**	**EM2222368**	-	*<0.02*	*<0.02*	*<0.02*	-	*<0.02*	**0.02**	**0.05**	*<0.01*	*<0.1*	*<0.02*	*<0.02*	*<0.02*	*<0.02*	*<0.02*
SW614	**0315_SW614_230416**	**16 Apr 2023**	**Normal**	**EM2306926**	-	*<0.02*	*<0.02*	*<0.02*	-	*<0.02*	*<0.01*	**0.07**	*<0.01*	*<0.1*	*<0.02*	*<0.02*	*<0.02*	*<0.02*	*<0.02*
SW614	**0315_SW614_231016**	**16 Oct 2023**	**Normal**	**EM2318605**	-	*<0.02*	*<0.02*	*<0.02*	-	*<0.02*	**0.01**	**0.07**	*<0.01*	*<0.1*	*<0.02*	*<0.02*	*<0.02*	*<0.02*	*<0.02*
SW677	**0315_SW677_221104**	**04 Nov 2022**	**Normal**	**EM2222368**	-	*<0.02*	*<0.02*	*<0.02*	-	*<0.02*	**0.02**	**0.04**	*<0.01*	*<0.1*	*<0.02*	*<0.02*	*<0.02*	*<0.02*	*<0.02*
SW680	**0315_SW680_191210**	**10 Dec 2019**	**Normal**	**ES1941493**	-	*<0.02*	*<0.02*	*<0.02*	-	*<0.02*	**0.04**	**0.08**	*<0.01*	*<0.1*	*<0.02*	*<0.02*	*<0.02*	*<0.02*	*<0.02*
SW680	**0315_SW680_220804**	**04 Aug 2022**	**Normal**	**EM2215105**	-	*<0.02*	*<0.02*	*<0.02*	-	*<0.02*	**0.04**	**0.13**	*<0.01*	*<0.1*	*<0.02*	*<0.02*	*<0.02*	*<0.02*	*<0.02*
SW680	**0315_SW680_221104**	**04 Nov 2022**	**Normal**	**EM2222365**	-	*<0.02*	*<0.02*	*<0.02*	-	*<0.02*	**0.03**	**0.04**	*<0.01*	*<0.1*	*<0.02*	*<0.02*	*<0.02*	*<0.02*	*<0.02*
SW680	**0315_SW680_ 230413**	**13 Apr 2023**	**Normal**	**EM2306924**	-	*<0.02*	*<0.02*	*<0.02*	-	*<0.02*	**0.03**	**0.10**	*<0.01*	*<0.1*	*<0.02*	*<0.02*	*<0.02*	*<0.02*	*<0.02*
SW680	**0315_SW680_231013**	**13 Oct 2023**	**Normal**	**EM2318603**	-	*<0.02*	*<0.02*	*<0.02*	-	*<0.02*	**0.05**	**0.13**	*<0.01*	*<0.1*	*<0.02*	*<0.02*	*<0.02*	*<0.02*	*<0.02*
SW680	**0315_SW680_240416**	**16 Apr 2024**	**Normal**	**EM2406722**	-	*<0.02*	*<0.02*	*<0.02*	-	*<0.02*	**0.05**	**0.18**	*<0.01*	*<0.1*	*<0.02*	*<0.02*	*<0.02*	*<0.02*	*<0.02*
SW680	**0315_SW680_250306**	**06 Mar 2025**	**Normal**	**ES2506881**	*<0.02*	*<0.02*	*<0.02*	*<0.02*	*<0.02*	*<0.02*	**0.08**	**0.22**	*<0.01*	*<0.1*	*<0.02*	*<0.02*	*<0.02*	*<0.02*	*<0.02*

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Table B 4. Surface Water Analytical Results

							PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides							PFAS		
					Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	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 (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorohexadecanoic acid (PFHxDA)
					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
EQL					0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.02	0.05	0.02	0.05	0.05	0.02	0.05	0.01	0.01	0.05
PFAS NEMP 2025 Freshwater 95%																						
PFAS NEMP 2025 Recreational water quality guideline																				2		
Location Code	Field ID	Date	Sample Type	Lab Report Number																		
SW149	0315_SW149_20220429	29 Apr 2022	Normal	EM2208205	<0.02	<0.02	<0.02	<0.05	<0.05	**0.07**	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.02**	**0.09**	-
SW149	0315_SW149_221103	03 Nov 2022	Normal	EM2222407	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.16**	**0.19**	-
SW149	0315_SW149_230412	12 Apr 2023	Normal	EM2306946	<0.02	<0.02	<0.02	<0.05	<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	-
SW149	0315_SW149_231012	12 Oct 2023	Normal	EM2318619	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.02**	**0.02**	-
SW149	0315_SW149_250220	20 Feb 2025	Normal	ES2505157	<0.02	<0.02	<0.02	<0.05	<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	<0.05
SW614	0315_SW614_181213	13 Dec 2018	Normal	ES1837950	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.03**	**0.03**	-
SW614	0315_SW614_20211027	27 Oct 2021	Normal	ES2139235	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.35**	**0.35**	-
SW614	0315_SW614_221104	04 Nov 2022	Normal	EM2222368	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.07**	**0.07**	-
SW614	0315_SW614_230416	16 Apr 2023	Normal	EM2306926	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.07**	**0.07**	-
SW614	0315_SW614_231016	16 Oct 2023	Normal	EM2318605	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.08**	**0.08**	-
SW677	0315_SW677_221104	04 Nov 2022	Normal	EM2222368	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.06**	**0.06**	-
SW680	0315_SW680_191210	10 Dec 2019	Normal	ES1941493	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.12**	**0.12**	-
SW680	0315_SW680_220804	04 Aug 2022	Normal	EM2215105	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.17**	**0.17**	-
SW680	0315_SW680_221104	04 Nov 2022	Normal	EM2222365	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.07**	**0.07**	-
SW680	0315_SW680_ 230413	13 Apr 2023	Normal	EM2306924	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.13**	**0.13**	-
SW680	0315_SW680_231013	13 Oct 2023	Normal	EM2318603	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.18**	**0.18**	-
SW680	0315_SW680_240416	16 Apr 2024	Normal	EM2406722	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.23**	**0.23**	-
SW680	0315_SW680_250306	06 Mar 2025	Normal	ES2506881	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	**0.30**	**0.30**	<0.05

Location	Monitoring Area	Sampling Date	Observations
On-base			
SD103	Overland drainage pathways	12 October 2023	Light brown gravelly sandy clay, organic matter present, roots present, no odour, medium coarse grained, low plasticity.
SD103	Overland drainage pathways	15 April 2024	Gravelly sand, light brown slight orange, fine gravels, loose, wet, no odour, firm
SD103	Overland drainage pathways	6 March 2025	
SD106	Overland drainage pathways	12 October 2023	Dark brown silty Clay, dark brown, fine to medium grained, moist, organic matter present, no odour, soft, roots present.
SD106	Overland drainage pathways	15 April 2024	Silty clay, soft, loose, low plastic, dark brown, organic, moist, no odour
SD106	Overland drainage pathways	20 February 2025	
SD107	Overland drainage pathways	12 October 2023	Brown silty sandy Clay, mottled with red brown, fine to medium grained, low to medium plasticity, trace gravels, root material present.
SD107	Overland drainage pathways	15 April 2024	Silty clay, light brown, wet, low plastic, soft, no odour, organic roots and reeds
SD107	Overland drainage pathways	6 March 2025	
SD118	Overland drainage pathways	12 October 2023	Light red-brown silty sandy Clay, soft, medium plasticity, fine to medium grained, organic matter present, root matter, sampled at 0.2m.
SD118	Overland drainage pathways	15 April 2024	Silty sandy clay, light brown slight orange, soft, dry, organic, no odour
SD118	Overland drainage pathways	20 February 2025	
SD136	Overland drainage pathways	12 October 2023	Brown sandy Silt, high volume of organic matter, roots and reeds, brown, soft, medium grained, low plasticity, moist to wet.
SD136	Overland drainage pathways	15 April 2024	Clayey silt, moist fine-grained browned Roots matter present poorly graded loose no odor
SD136	Overland drainage pathways	4 March 2025	
SD108	Wastewater treatment plant ponds	11 October 2023	Light brown silty sandy Clay, organic material, light brown, med plasticity, fine medium grained, slight orange mottle.
SD108	Wastewater treatment plant ponds	15 April 2024	Silty clay, light brown, poorly graded, trace gravel, slightly firm, moist, slight organic odour
SD108	Wastewater treatment plant ponds	7 March 2025	
SD111	Wastewater treatment plant ponds	11 October 2023	Light brown silty sandy clay, no odour, organic material present, plant roots, low to moderate plasticity, moist to wet, trace gravel present, fine to medium grained.
SD111	Wastewater treatment plant ponds	15 April 2024	Silty clay brown Brown moist organic material present fine grains poorly graded trace gravel
SD111	Wastewater treatment plant ponds	7 March 2025	
SD127	Former Quarry	11 October 2023	Pale brown silty Clay, high plasticity, trace organic matter (roots), no odour, minor orange mottle. Sediment sampled using sediment sampler.
SD127	Former Quarry	15 April 2024	Silty clay slightly moist to dry medium grained poorly graded some root material. present Brown mottled with orange no odor
SD127	Former Quarry	20 February 2025	
SD121	Kapooka Creek	13 October 2023	Orangey brown silty Clay, high plasticity, no odour, moist, no organic material.
SD121	Kapooka Creek	15 April 2024	Silty clay slightly firm, dark brown slightly moist. some organic material presence fine to medium grained well graded trace gravels
SD121	Kapooka Creek	20 February 2025	
Off-base			
SD614	Kapooka Creek	13 October 2023	Brown sandy silty Clay, fine, with orange mottle, organic plant roots, dry, no odour.
SD614	Kapooka Creek	15 April 2024	Silty clay, brown dark grey, slightly moist, low plastic, no odour
SD614	Kapooka Creek	20 February 2025	
SD677	Kapooka Creek	13 October 2023	Light brown silty Clay, moderate to high plasticity, dry, no odour, roots present.
SD677	Kapooka Creek	15 April 2024	Silty clay, firm, brown mottled orange, organic, dry, no odour
SD677	Kapooka Creek	20 February 2025	

Jacobs

Table B 6. Sediment Analytical Results

Blamey Barracks Kapooka OMR

					PFAS - Perfluoroalkyl Sulfonic Acids								PFAS - Perfluoroalkyl Carboxylic Acids							
					Perfluoropropane sulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Location Code	**Field ID**	**Date**	**Sample Type**	**Lab Report Number**																
SD103	0315_SD103_181210	10 Dec 2018	Normal	ES1837611	-	<0.0002	<0.0002	<0.0002	-	**0.0003**	**0.0010**	**0.0086**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD103	0315_SD103_181210	10 Dec 2018	Normal	ES1900789	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SD103	0315_QC104_211026	26 Oct 2021	Field_D	ES2139230	-	<0.0002	<0.0002	<0.0002	-	**0.0006**	**0.0006**	**0.0126**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD103	0315_SD103_20211026	26 Oct 2021	Normal	ES2139229	-	<0.0002	<0.0002	<0.0002	-	**0.0004**	**0.0006**	**0.0140**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD103	0315_QC105_20220428	28 Apr 2022	Field_D	EM2208205	-	<0.0002	<0.0002	<0.0002	-	**0.0005**	**0.0010**	**0.0163**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	**0.0004**	**0.0002**
SD103	0315_QC205_20220428	28 Apr 2022	Interlab_D	889626	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	**0.013**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
SD103	0315_SD103_20220428	28 Apr 2022	Normal	EM2208205	-	<0.0002	<0.0002	<0.0002	-	**0.0007**	**0.0012**	**0.0163**	<0.0002	<0.001	<0.0002	**0.0002**	<0.0002	<0.0002	**0.0003**	**0.0002**
SD103	0315_SD103_221103	03 Nov 2022	Normal	EM2222407	-	<0.0002	<0.0002	<0.0002	-	**0.0004**	**0.0003**	**0.0063**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD103	0315_QC103_230412	12 Apr 2023	Field_D	EM2306946	-	<0.0002	<0.0002	<0.0002	-	**0.0005**	**0.0004**	**0.0089**	**0.0002**	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	**0.0002**	<0.0002
SD103	0315_QC203_230412	12 Apr 2023	Interlab_D	982794	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	**0.014**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
SD103	0315_SD103_230412	12 Apr 2023	Normal	EM2306946	-	<0.0002	<0.0002	<0.0002	-	**0.0006**	**0.0007**	**0.0130**	**0.0002**	<0.001	**0.0003**	**0.0002**	<0.0002	<0.0002	**0.0003**	**0.0002**
SD103	0315_SD103_230412	12 Apr 2023	Normal	EM2307788	-	<0.0002	<0.0002	<0.0002	-	**0.0006**	**0.0007**	**0.0106**	**0.0002**	<0.001	**0.0002**	**0.0002**	<0.0002	<0.0002	**0.0003**	**0.0003**
SD103	0315_SD103_231012	12 Oct 2023	Normal	EM2318619	-	<0.0002	<0.0002	<0.0002	-	**0.0011**	**0.0004**	**0.0132**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD103	0315_SD103_240415	15 Apr 2024	Normal	EM2406739	-	<0.0002	<0.0002	<0.0002	-	**0.0002**	**0.0007**	**0.0085**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD106	0315_SD106_181216	16 Dec 2018	Normal	ES1838218	-	<0.0002	<0.0002	<0.0002	-	<0.0002	**0.0004**	**0.0076**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD106	0315_SD106_181216	16 Dec 2018	Normal	ES1902216	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SD106	0315_SD106_20211026	26 Oct 2021	Normal	ES2139229	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0042**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD106	0315_SD106_20220428	28 Apr 2022	Normal	EM2208205	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0042**	**0.0002**	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	**0.0012**	<0.0002
SD106	0315_SD106_221103	03 Nov 2022	Normal	EM2222407	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0040**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD106	0315_SD106_230412	12 Apr 2023	Normal	EM2306946	-	<0.0002	<0.0002	<0.0002	-	<0.0002	**0.0002**	**0.0053**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD106	0315_SD106_231012	12 Oct 2023	Normal	EM2318619	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0036**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD106	0315_SD106_240415	15 Apr 2024	Normal	EM2406739	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0052**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD106	0315_SD106_250306	05 Mar 2025	Normal	ES2506809	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**0.0067**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	**0.0003**	<0.0002
SD107	0315_SD107_181210	10 Dec 2018	Normal	ES1837611	-	<0.0002	<0.0002	<0.0002	-	<0.0002	**0.0007**	**0.0142**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD107	0315_SD107_20211026	26 Oct 2021	Normal	ES2139229	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0051**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD107	0315_SD107_20220502	02 May 2022	Normal	EM2208205	-	<0.0002	<0.0002	<0.0002	-	<0.0002	**0.0005**	**0.0037**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD107	0315_SD107_221103	03 Nov 2022	Normal	EM2222407	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0027**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD107	0315_SD107_230412	12 Apr 2023	Normal	EM2306946	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0033**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD107	0315_SD107_231012	12 Oct 2023	Normal	EM2318619	-	<0.0002	<0.0002	<0.0002	-	**0.0002**	<0.0002	**0.0064**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD107	0315_SD107_240415	15 Apr 2024	Normal	EM2406739	-	<0.0002	<0.0002	<0.0002	-	<0.0002	**0.0004**	**0.0095**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD108	0315_SD108_181215	15 Dec 2018	Normal	ES1838218	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0004**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD108	0315_SD108_20211026	26 Oct 2021	Normal	ES2139229	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD108	0315_SD108_20220502	02 May 2022	Normal	EM2208205	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD108	0315_SD108_221103	03 Nov 2022	Normal	EM2222407	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0006**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD108	0315_SD108_ 230413	13 Apr 2023	Normal	EM2306946	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0005**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD108	0315_QC102_231012	12 Oct 2023	Field_D	EM2318619	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0004**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD108	0315_QC202_230412	12 Oct 2023	Interlab_D	1036476	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
SD108	0315_SD108_231012	12 Oct 2023	Normal	EM2318619	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0005**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD108	0315_SD108_240416	16 Apr 2024	Normal	EM2406739	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0023**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**0.0002**
SD111	0315_SD111_181215	15 Dec 2018	Normal	ES1838218	-	<0.0002	<0.0002	<0.0002	-	<0.0002	**0.0004**	**0.0041**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	**0.0003**	<0.0002	<0.0002
SD111	0315_SD111_20211026	26 Oct 2021	Normal	ES2139229	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0008**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD111	0315_SD111_20220427	27 Apr 2022	Normal	EM2208205	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0005**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD111	0315_SD111_221103	03 Nov 2022	Normal	EM2222407	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0004**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD111	0315_SD111_ 230413	13 Apr 2023	Normal	EM2306946	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0008**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD111	0315_QC200_230411	11 Oct 2023	Interlab_D	1036476	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
SD111	0315_QC100_231012	12 Oct 2023	Field_D	EM2318619	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0012**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD111	0315_SD111_231012	12 Oct 2023	Normal	EM2318619	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0012**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD111	0315_QC101_240416	16 Apr 2024	Field_D	EM2406739	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0009**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD111	0315_QC201_240416	16 Apr 2024	Interlab_D	1090100_0315	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
SD111	0315_SD111_240416	16 Apr 2024	Normal	EM2406739	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0017**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD118	0315_SD118_181130	30 Nov 2018	Normal	ES1836659	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0037**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD118	0315_SD118_20211026	26 Oct 2021	Normal	ES2139229	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0045**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD118	0315_SD118_20220428	28 Apr 2022	Normal	EM2208205	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0077**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD118	0315_SD118_221103	03 Nov 2022	Normal	EM2222407	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0025**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD118	0315_SD118_230412	12 Apr 2023	Normal	EM2306946	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0058**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD118	0315_SD118_231012	12 Oct 2023	Normal	EM2318619	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0016**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD118	0315_SD118_240416	16 Apr 2024	Normal	EM2406739	-	<0.0002	<0.0002	<0.0002	-	<0.0002	**0.0004**	**0.0207**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

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Table B 6. Sediment Analytical Results

Blamey Barracks Kapooka OMR

					PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides							PFAS	
					Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	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 (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFHxS and PFOS	Sum of PFAS
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	0.0005	0.0002	0.0005	0.0005	0.0002	0.0005	0.0002	0.0002
Location Code	**Field ID**	**Date**	**Sample Type**	**Lab Report Number**																
SD103	0315_SD103_181210	10 Dec 2018	Normal	ES1837611	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	**0.0003**	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0096**	**0.0102**
SD103	0315_SD103_181210	10 Dec 2018	Normal	ES1900789	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SD103	0315_QC104_211026	26 Oct 2021	Field_D	ES2139230	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	**0.0004**	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0132**	**0.0142**
SD103	0315_SD103_20211026	26 Oct 2021	Normal	ES2139229	**0.0003**	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	**0.0003**	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0146**	**0.0156**
SD103	0315_QC105_20220428	28 Apr 2022	Field_D	EM2208205	**0.0003**	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0173**	**0.0187**
SD103	0315_QC205_20220428	28 Apr 2022	Interlab_D	889626	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	**0.013**	<0.05
SD103	0315_SD103_20220428	28 Apr 2022	Normal	EM2208205	**0.0002**	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0175**	**0.0191**
SD103	0315_SD103_221103	03 Nov 2022	Normal	EM2222407	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0066**	**0.0070**
SD103	0315_QC103_230412	12 Apr 2023	Field_D	EM2306946	**0.0003**	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0093**	**0.0105**
SD103	0315_QC203_230412	12 Apr 2023	Interlab_D	982794	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	**0.014**	<0.05
SD103	0315_SD103_230412	12 Apr 2023	Normal	EM2306946	**0.0004**	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0137**	**0.0159**
SD103	0315_SD103_230412	12 Apr 2023	Normal	EM2307788	**0.0004**	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0113**	**0.0135**
SD103	0315_SD103_231012	12 Oct 2023	Normal	EM2318619	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	**0.0005**	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0136**	**0.0152**
SD103	0315_SD103_240415	15 Apr 2024	Normal	EM2406739	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	**0.0002**	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0092**	**0.0096**
SD106	0315_SD106_181216	16 Dec 2018	Normal	ES1838218	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0080**	**0.0080**
SD106	0315_SD106_181216	16 Dec 2018	Normal	ES1902216	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SD106	0315_SD106_20211026	26 Oct 2021	Normal	ES2139229	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0042**	**0.0042**
SD106	0315_SD106_20220428	28 Apr 2022	Normal	EM2208205	**0.0004**	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	**0.0004**	<0.0005	**0.0042**	**0.0064**
SD106	0315_SD106_221103	03 Nov 2022	Normal	EM2222407	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0040**	**0.0040**
SD106	0315_SD106_230412	12 Apr 2023	Normal	EM2306946	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0055**	**0.0055**
SD106	0315_SD106_231012	12 Oct 2023	Normal	EM2318619	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0036**	**0.0036**
SD106	0315_SD106_240415	15 Apr 2024	Normal	EM2406739	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0052**	**0.0054**
SD106	0315_SD106_250306	05 Mar 2025	Normal	ES2506809	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0067**	**0.0070**
SD107	0315_SD107_181210	10 Dec 2018	Normal	ES1837611	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0149**	**0.0149**
SD107	0315_SD107_20211026	26 Oct 2021	Normal	ES2139229	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0051**	**0.0051**
SD107	0315_SD107_20220502	02 May 2022	Normal	EM2208205	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0042**	**0.0042**
SD107	0315_SD107_221103	03 Nov 2022	Normal	EM2222407	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0027**	**0.0027**
SD107	0315_SD107_230412	12 Apr 2023	Normal	EM2306946	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0033**	**0.0033**
SD107	0315_SD107_231012	12 Oct 2023	Normal	EM2318619	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0064**	**0.0066**
SD107	0315_SD107_240415	15 Apr 2024	Normal	EM2406739	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0099**	**0.0099**
SD108	0315_SD108_181215	15 Dec 2018	Normal	ES1838218	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0004**	**0.0004**
SD108	0315_SD108_20211026	26 Oct 2021	Normal	ES2139229	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002
SD108	0315_SD108_20220502	02 May 2022	Normal	EM2208205	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002
SD108	0315_SD108_221103	03 Nov 2022	Normal	EM2222407	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0006**	**0.0006**
SD108	0315_SD108_ 230413	13 Apr 2023	Normal	EM2306946	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0005**	**0.0005**
SD108	0315_QC102_231012	12 Oct 2023	Field_D	EM2318619	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0004**	**0.0004**
SD108	0315_QC202_230412	12 Oct 2023	Interlab_D	1036476	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<0.005	<0.05
SD108	0315_SD108_231012	12 Oct 2023	Normal	EM2318619	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0005**	**0.0005**
SD108	0315_SD108_240416	16 Apr 2024	Normal	EM2406739	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0023**	**0.0025**
SD111	0315_SD111_181215	15 Dec 2018	Normal	ES1838218	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0045**	**0.0048**
SD111	0315_SD111_20211026	26 Oct 2021	Normal	ES2139229	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0008**	**0.0008**
SD111	0315_SD111_20220427	27 Apr 2022	Normal	EM2208205	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0005**	**0.0005**
SD111	0315_SD111_221103	03 Nov 2022	Normal	EM2222407	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0004**	**0.0004**
SD111	0315_SD111_ 230413	13 Apr 2023	Normal	EM2306946	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0008**	**0.0008**
SD111	0315_QC200_230411	11 Oct 2023	Interlab_D	1036476	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<0.005	<0.05
SD111	0315_QC100_231012	12 Oct 2023	Field_D	EM2318619	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0012**	**0.0012**
SD111	0315_SD111_231012	12 Oct 2023	Normal	EM2318619	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0012**	**0.0012**
SD111	0315_QC101_240416	16 Apr 2024	Field_D	EM2406739	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0009**	**0.0009**
SD111	0315_QC201_240416	16 Apr 2024	Interlab_D	1090100_0315	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<0.005	<0.05
SD111	0315_SD111_240416	16 Apr 2024	Normal	EM2406739	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0017**	**0.0017**
SD118	0315_SD118_181130	30 Nov 2018	Normal	ES1836659	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0037**	**0.0037**
SD118	0315_SD118_20211026	26 Oct 2021	Normal	ES2139229	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0045**	**0.0045**
SD118	0315_SD118_20220428	28 Apr 2022	Normal	EM2208205	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0077**	**0.0077**
SD118	0315_SD118_221103	03 Nov 2022	Normal	EM2222407	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0025**	**0.0025**
SD118	0315_SD118_230412	12 Apr 2023	Normal	EM2306946	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0058**	**0.0058**
SD118	0315_SD118_231012	12 Oct 2023	Normal	EM2318619	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0016**	**0.0016**
SD118	0315_SD118_240416	16 Apr 2024	Normal	EM2406739	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0211**	**0.0211**

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Table B 6. Sediment Analytical Results

Blamey Barracks Kapooka OMR

					PFAS - Perfluoroalkyl Sulfonic Acids								PFAS - Perfluoroalkyl Carboxylic Acids							
					Perfluoropropane sulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Location Code	**Field ID**	**Date**	**Sample Type**	**Lab Report Number**																
SD118	0315_SD118_250306	06 Mar 2025	Normal	ES2506877	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**0.0058**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD121	0315_SD121_181130	30 Nov 2018	Normal	ES1836659	-	<0.0002	<0.0002	<0.0002	-	<0.0002	**0.0008**	**0.0238**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD121	0315_SD121_20211026	26 Oct 2021	Normal	ES2139229	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0016**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD121	QC101_211221	21 Dec 2021	Interlab_D	EM2125953	-	<0.0002	-	-	-	-	**0.0003**	**0.0194**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	-
SD121	SD121	21 Dec 2021	Normal	EM2125953	-	<0.0002	<0.0002	<0.0002	-	<0.0002	**0.0004**	**0.0184**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD121	0315_SD121_20220428	28 Apr 2022	Normal	EM2208205	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0009**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD121	0315_SD121_221104	04 Nov 2022	Normal	EM2222407	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0017**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD121	0315_QC101_230411	11 Apr 2023	Field_D	EM2306946	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0039**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD121	0315_QC201_230411	11 Apr 2023	Interlab_D	982794	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
SD121	0315_SD121_230411	11 Apr 2023	Normal	EM2306946	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0017**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD121	0315_SD121_231014	14 Oct 2023	Normal	EM2318619	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0010**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD121	0315_SD121_240416	16 Apr 2024	Normal	EM2406739	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0028**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD121	0315_SD121_250304	04 Mar 2025	Normal	ES2506877	<0.0005	<0.0002	<0.0002	<0.0002	**0.0004**	<0.0002	**0.0007**	**0.0228**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD127	0315_SD127_181214	14 Dec 2018	Normal	ES1838218	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0007**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD127	0315_QC102_211025	25 Oct 2021	Field_D	ES2139230	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0003**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD127	0315_SD127_20211026	25 Oct 2021	Normal	ES2139229	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0005**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD127	0315_SD127_20220427	27 Apr 2022	Normal	EM2208205	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD127	0315_QC103_221103	03 Nov 2022	Field_D	EM2222407	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0014**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD127	0315_QC203_221103	03 Nov 2022	Interlab_D	940511	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
SD127	0315_SD127_221103	03 Nov 2022	Normal	EM2222407	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0009**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD127	0315_SD127_230412	12 Apr 2023	Normal	EM2306946	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD127	0315_SD127_231012	12 Oct 2023	Normal	EM2318619	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD127	0315_SD127_240416	16 Apr 2024	Normal	EM2406739	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0005**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD127	0315_SD127_250306	06 Mar 2025	Normal	ES2506877	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**0.0004**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD136	0315_SD136_20211026	26 Oct 2021	Normal	ES2139229	-	<0.0002	<0.0002	<0.0002	-	<0.0002	**0.0004**	**0.0046**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD136	0315_QC104_20220427	27 Apr 2022	Field_D	EM2208205	-	<0.0002	<0.0002	**0.0002**	-	**0.0005**	**0.0025**	**0.0606**	<0.0002	<0.001	<0.0002	**0.0004**	<0.0002	<0.0002	<0.0002	<0.0002
SD136	0315_QC204_20220427	27 Apr 2022	Interlab_D	889626	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	**0.052**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
SD136	0315_SD136_20220427	27 Apr 2022	Normal	EM2208205	-	<0.0002	<0.0002	<0.0002	-	**0.0004**	**0.0018**	**0.0393**	<0.0002	<0.001	<0.0002	**0.0003**	<0.0002	<0.0002	<0.0002	<0.0002
SD136	0315_QC105_221103	03 Nov 2022	Field_D	EM2222407	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0029**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD136	0315_QC205_221103	03 Nov 2022	Interlab_D	940511	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
SD136	0315_SD136_221103	03 Nov 2022	Normal	EM2222407	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0030**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD136	0315_SD136_230412	12 Apr 2023	Normal	EM2306946	-	<0.0002	<0.0002	**0.0003**	-	**0.0009**	**0.0036**	**0.0246**	**0.0003**	<0.001	**0.0003**	**0.0008**	**0.0002**	**0.0002**	**0.0004**	**0.0005**
SD136	0315_SD136_230412	12 Apr 2023	Normal	EM2307788	-	<0.0002	<0.0002	**0.0002**	-	**0.0007**	**0.0025**	**0.0179**	<0.0002	<0.001	<0.0002	**0.0005**	<0.0002	<0.0002	**0.0002**	**0.0003**
SD136	0315_SD136_231012	12 Oct 2023	Normal	EM2318619	-	<0.0002	<0.0002	<0.0002	-	**0.0004**	**0.0005**	**0.0131**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD136	0315_SD136_240415	15 Apr 2024	Normal	EM2406739	-	<0.0002	<0.0002	**0.0003**	-	**0.0004**	**0.0020**	**0.0234**	**0.0005**	<0.001	<0.0002	**0.0004**	**0.0004**	**0.0002**	**0.0003**	**0.0003**
SD614	0315_SD614_181218	18 Dec 2018	Normal	ES1838696	-	<0.0002	<0.0002	<0.0002	-	<0.0002	**0.0003**	**0.0094**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD614	0315_SD614_20211027	27 Oct 2021	Normal	ES2139235	-	<0.0002	<0.0002	<0.0002	-	<0.0002	**0.0004**	**0.0110**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD614	SD614	20 Dec 2021	Normal	EM2125953	-	<0.0002	<0.0002	<0.0002	-	<0.0002	**0.0002**	**0.0093**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD614	0315_SD614_20220428	28 Apr 2022	Normal	EM2208229	-	<0.0002	<0.0002	<0.0002	-	<0.0002	**0.0002**	**0.0075**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD614	0315_SD614_221104	04 Nov 2022	Normal	EM2222368	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0073**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD614	0315_SD614_230412	12 Apr 2023	Normal	EM2306926	-	<0.0002	<0.0002	<0.0002	-	<0.0002	**0.0002**	**0.0090**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD614	0315_SD614_231013	13 Oct 2023	Normal	EM2318605	-	<0.0002	<0.0002	<0.0002	-	<0.0002	**0.0004**	**0.0175**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD614	0315_SD614_240416	16 Apr 2024	Normal	EM2406741	-	<0.0002	<0.0002	<0.0002	-	<0.0002	**0.0003**	**0.0126**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD614	0315_SD614_250306	06 Mar 2025	Normal	ES2506716	<0.0005	<0.0002	<0.0002	<0.0002	**0.0002**	<0.0002	<0.0002	**0.0146**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD677	0315_SD677_20211026	26 Oct 2021	Normal	ES2139235	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0052**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD677	SD677	21 Dec 2021	Normal	EM2125953	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0075**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD677	0315_SD677_20220428	28 Apr 2022	Normal	EM2208229	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0068**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD677	0315_SD677_221104	04 Nov 2022	Normal	EM2222368	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0074**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD677	0315_SD677_230412	12 Apr 2023	Normal	EM2306926	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0066**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD677	0315_SD677_231014	14 Oct 2023	Normal	EM2318605	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0064**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD677	0315_SD677_240416	16 Apr 2024	Normal	EM2406741	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	**0.0074**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD677	0315_SD677_250306	06 Mar 2025	Normal	ES2506716	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**0.0027**	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Jacobs

Table B 6. Sediment Analytical Results

Blamey Barracks Kapooka OMR

					PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides							PFAS	
					Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	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 (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFHxS and PFOS	Sum of PFAS
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	0.0005	0.0002	0.0005	0.0005	0.0002	0.0005	0.0002	0.0002
Location Code	**Field ID**	**Date**	**Sample Type**	**Lab Report Number**																
SD118	0315_SD118_250306	06 Mar 2025	Normal	ES2506877	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0058**	**0.0058**
SD121	0315_SD121_181130	30 Nov 2018	Normal	ES1836659	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0246**	**0.0246**
SD121	0315_SD121_20211026	26 Oct 2021	Normal	ES2139229	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0016**	**0.0016**
SD121	QC101_211221	21 Dec 2021	Interlab_D	EM2125953	-	-	-	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	**0.0197**	-
SD121	SD121	21 Dec 2021	Normal	EM2125953	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0188**	**0.0188**
SD121	0315_SD121_20220428	28 Apr 2022	Normal	EM2208205	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0009**	**0.0009**
SD121	0315_SD121_221104	04 Nov 2022	Normal	EM2222407	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0017**	**0.0017**
SD121	0315_QC101_230411	11 Apr 2023	Field_D	EM2306946	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0039**	**0.0039**
SD121	0315_QC201_230411	11 Apr 2023	Interlab_D	982794	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<0.005	<0.05
SD121	0315_SD121_230411	11 Apr 2023	Normal	EM2306946	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0017**	**0.0017**
SD121	0315_SD121_231014	14 Oct 2023	Normal	EM2318619	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0010**	**0.0010**
SD121	0315_SD121_240416	16 Apr 2024	Normal	EM2406739	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0028**	**0.0028**
SD121	0315_SD121_250304	04 Mar 2025	Normal	ES2506877	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0235**	**0.0239**
SD127	0315_SD127_181214	14 Dec 2018	Normal	ES1838218	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0007**	**0.0007**
SD127	0315_QC102_211025	25 Oct 2021	Field_D	ES2139230	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0003**	**0.0003**
SD127	0315_SD127_20211026	25 Oct 2021	Normal	ES2139229	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0005**	**0.0005**
SD127	0315_SD127_20220427	27 Apr 2022	Normal	EM2208205	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002
SD127	0315_QC103_221103	03 Nov 2022	Field_D	EM2222407	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0014**	**0.0014**
SD127	0315_QC203_221103	03 Nov 2022	Interlab_D	940511	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<0.005	<0.05
SD127	0315_SD127_221103	03 Nov 2022	Normal	EM2222407	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0009**	**0.0009**
SD127	0315_SD127_230412	12 Apr 2023	Normal	EM2306946	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002
SD127	0315_SD127_231012	12 Oct 2023	Normal	EM2318619	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002
SD127	0315_SD127_240416	16 Apr 2024	Normal	EM2406739	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0005**	**0.0005**
SD127	0315_SD127_250306	06 Mar 2025	Normal	ES2506877	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0004**	**0.0004**
SD136	0315_SD136_20211026	26 Oct 2021	Normal	ES2139229	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0050**	**0.0050**
SD136	0315_QC104_20220427	27 Apr 2022	Field_D	EM2208205	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0631**	**0.0642**
SD136	0315_QC204_20220427	27 Apr 2022	Interlab_D	889626	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	**0.052**	**0.052**
SD136	0315_SD136_20220427	27 Apr 2022	Normal	EM2208205	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0411**	**0.0418**
SD136	0315_QC105_221103	03 Nov 2022	Field_D	EM2222407	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0029**	**0.0029**
SD136	0315_QC205_221103	03 Nov 2022	Interlab_D	940511	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<0.005	<0.05
SD136	0315_SD136_221103	03 Nov 2022	Normal	EM2222407	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0030**	**0.0030**
SD136	0315_SD136_230412	12 Apr 2023	Normal	EM2306946	**0.0004**	**0.0003**	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	**0.0002**	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0282**	**0.0330**
SD136	0315_SD136_230412	12 Apr 2023	Normal	EM2307788	**0.0002**	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	**0.0002**	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0204**	**0.0227**
SD136	0315_SD136_231012	12 Oct 2023	Normal	EM2318619	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	**0.0002**	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0136**	**0.0142**
SD136	0315_SD136_240415	15 Apr 2024	Normal	EM2406739	**0.0006**	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0254**	**0.0288**
SD614	0315_SD614_181218	18 Dec 2018	Normal	ES1838696	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0097**	**0.0097**
SD614	0315_SD614_20211027	27 Oct 2021	Normal	ES2139235	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0114**	**0.0114**
SD614	SD614	20 Dec 2021	Normal	EM2125953	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0095**	**0.0095**
SD614	0315_SD614_20220428	28 Apr 2022	Normal	EM2208229	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0077**	**0.0077**
SD614	0315_SD614_221104	04 Nov 2022	Normal	EM2222368	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0073**	**0.0073**
SD614	0315_SD614_230412	12 Apr 2023	Normal	EM2306926	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0092**	**0.0092**
SD614	0315_SD614_231013	13 Oct 2023	Normal	EM2318605	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0179**	**0.0179**
SD614	0315_SD614_240416	16 Apr 2024	Normal	EM2406741	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0129**	**0.0129**
SD614	0315_SD614_250306	06 Mar 2025	Normal	ES2506716	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0146**	**0.0148**
SD677	0315_SD677_20211026	26 Oct 2021	Normal	ES2139235	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0052**	**0.0052**
SD677	SD677	21 Dec 2021	Normal	EM2125953	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0075**	**0.0075**
SD677	0315_SD677_20220428	28 Apr 2022	Normal	EM2208229	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0068**	**0.0068**
SD677	0315_SD677_221104	04 Nov 2022	Normal	EM2222368	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0074**	**0.0074**
SD677	0315_SD677_230412	12 Apr 2023	Normal	EM2306926	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0066**	**0.0066**
SD677	0315_SD677_231014	14 Oct 2023	Normal	EM2318605	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0064**	**0.0064**
SD677	0315_SD677_240416	16 Apr 2024	Normal	EM2406741	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0074**	**0.0074**
SD677	0315_SD677_250306	06 Mar 2025	Normal	ES2506716	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	**0.0027**	**0.0027**

Appendix C. Sampling Analysis and Quality Plan

Blamey Barracks Kapooka, PFAS OMP - Sampling and Analysis Quality Plan (SAQP)

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PFAS 2021/22 – 194

Blamey Barracks Kapooka
22 January 2025

Blamey Barracks Kapooka, PFAS OMP - Sampling and Analysis Quality Plan (SAQP)

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1. Introduction

The Department of Defence (Defence) has engaged Jacobs Group (Australia) Pty Ltd (Jacobs) as the Lead Consultant for the delivery of the Per- and polyfluoroalkyl substances (PFAS) Management Area Plan (PMAP) at Blamey Barracks Kapooka, NSW (the base, Site ID 0315).

Jacobs has prepared this Sampling and Analysis Quality Plan (SAQP) for the implementation of the PFAS Ongoing Monitoring Plan (OMP) (Defence, 2021b) at the base and surrounding Management Area (refer to Figure 1, Appendix A).

The purpose of the OMP is to collect data that will enable Defence to maintain an up to date understanding of the distribution, and transport (migration pathways and rates) of PFAS at the base and in the Management Area (refer to Section 2.1.1).

The data 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, 2021c).

1.1 Scope & Objectives

The objectives of the ongoing monitoring program as set out in the OMP are to:

- Implement a program of surface water, groundwater and sediment monitoring to continue to assess changes in risk from PFAS within the environment, focusing on where there is an identified potential risk requiring management under the PFAS Management Area Plan (PMAP); and
- Assess the seasonal effects of PFAS concentrations in surface water, groundwater and sediment, including, during or immediately following extreme or high rainfall events.

The scope of the monitoring specified in the OMP includes:

- Evaluating any changes in risk from PFAS in groundwater, surface water and sediment associated with sources of PFAS derived from Defences historical use of aqueous film forming foam (AFFF).
- Measuring the seasonal effects of PFAS concentrations in surface water, groundwater and sediment, including, during or immediately following extreme or high rainfall events.
- Monitoring the migration of PFAS in groundwater, surface water and sediment from the base.
- Evaluating the nature and extent of PFAS impact in surface water, groundwater and sediment.
- Providing confirmation of the current understanding of risk.
- Providing supporting data for assessment of management actions, where relevant.

Monitoring locations, sample type and sample collection frequency as well as the rationale for these are all set out in the OMP.

The purpose of this SAQP is to present the specific sampling methodologies, quality assurance / quality control (QA/QC) measures and data management requirements for the monitoring.

1.2 Previous Reports

The following key reports prepared in relation to the Blamey Barracks Kapooka PFAS Investigation have been used as a basis to develop this SAQP:

- Golder Associates (2017), Preliminary Site Investigation for PFAS Blamey Barracks Kapooka (0315)(1669283_001_R_Rev1). Golder Associates.

- Cardno (2017), Base Engineering Assessment Program. Part 5 Wastewater and Part 6 Storm Water Kapooka Military Area Property ID: 0315 (No. 360517/100/5 and 360517/100/6). Cardno.
- Jacobs (2019), Blamey Barracks Comprehensive PFAS Investigation – Detailed Site Investigation (No IS253200-040-NP-RPT-0002 Rev4). Jacobs Group (Australia) Pty Ltd.
- Jacobs (2021), Blamey Barracks Comprehensive PFAS Investigation – Human Health and Ecological Risk Assessment (No. IS253200-040-NP-RPT-0006 Rev4 (23rd June 2021).
- Defence (2021b) PFAS Ongoing Monitoring Plan (OMP) - Blamey Barracks Kapooka, June 2021.
- Defence (2021c) PFAS Management Area Plan (PMAP) – Blamey Barracks Kapooka, June 2021.

1.3 Relevant Guidelines

This SAQP has been prepared in general accordance with the following standards and guidelines:

- Australian and New Zealand Guidelines, 2018. Australian and New Zealand Guidelines for Fresh and Marine Water Quality.
- Australian Standard (2005), AS 4482-2005, Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 – Non-volatile and semi-volatile compounds (withdrawn as pending revision, referred to for 'state of knowledge').
- Department of Defence (2021a), Contamination Management Manual (DCMM), Annex L – Data Management, August 2019, Amended June 2021.
- Department of Defence (2022), PFAS Investigation and Management, Guidance Document Standard PFAS Analytical Suite. June 2022.
- Department of Defence (2019a), Pollution Prevention Management Manual – Annex 1L: Pollution Prevention Guidance - Routine Water Quality Monitoring.
- Department of Defence (2024), PFAS OMP Ongoing Monitoring Program Reporting Guidance, Version 0. February 2024.
- NSW EPA (2004), Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales, Publication 1669.2, March 2004
- NSW EPA (2020), Contaminated Land Guidelines, Consultants Reporting on Contaminated Land, May 2020.
- NSW EPA (2022), Contaminated Land Guidelines - Sampling Design Part 1 – application.
- NSW EPA (2022), Contaminated Land Guidelines - Sampling Design Part 2 – interpretation.
- Heads of Environmental Protection Authority's Australia and New Zealand (HEPA) (2020), PFAS National Environmental Management Plan (NEMP) Version 2.0, January 2020.
- National Environment Protection Council (NEPC) (1999), National Environmental Protection (Assessment of Site Contamination) Measure (as amended 2013) (ASC NEPM).
- National Health and Medical Research Council (NHMRC) (2019), Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water, August 2019.
- USEPA (2006), Guidance for the Data Quality Objectives Process (EPA QA/G-4).
- USEPA (2002), Guidance on Environmental Data Verification and Data Validation (EPA QA/G-8).

2. Site Setting

2.1 Site Description

A detailed description of the base is provided in the OMP (Defence, 2021b), and is summarised below.

The base is located approximately 5.0 km to the west of Wagga Wagga and 160 km west of Canberra. The base is bound between the Sturt Highway to the north and the Olympic Highway to the east and south. Churches Plain Road runs along the western boundary.

The base is owned by the Commonwealth of Australia and comprises an area of approximately 1,990 hectares. The Army Recruit Training Centre (ARTC) is located on the base, providing training to 3,500 Army regular and 2,000 Army Reserve recruits annually (KBR, 2013), in addition to providing specialist training for the Army and other battalions. Recruits are housed on the base at Blamey Barracks, which comprises a range of functions and amenities. The base includes approximately 220 buildings and accommodation for up to 1,800 staff (Golder, 2017). A private lease has been held for stock agistment across grassed areas of the base for the purposes of fire vegetation management for approximately 20 years. The base comprises the following areas (as shown in Figure 1, Appendix A):

- Range Complex, which includes ranges and campsites.
- Field Training Areas, primarily used for movement exercises.
- Cantonment, including accommodation and administrative facilities, the Wastewater Treatment Plant (WTP) and Fire Station.
- Disused features, which include the Former Quarry, former informal Fire Training Areas and Fire Training Pad, Former Commandant's House, Former Incinerator, and Buried Waste Areas.

2.1.1 Management Area Description

The OMP includes sampling and analysis not only from the base, but also from the off-base locations situated on public land. The base and these surrounding areas which collectively encompass the network of OMP monitoring locations, is referred to as the "Monitoring Area", which is defined as the base and the surrounding off-base areas that collectively encompass the network of OMP monitoring locations.

The 'On-base Management Area' is defined as a portion of the base including the eastern built-up portion of the base from the Former Quarry in the south to the WTP in the north. It extends as far west as the natural ridgeline that runs north-south through the middle of the base and to the east to include the Kapooka Creek flow pathway.

The 'Off-base Management Area' includes the Kapooka Creek flow pathway on public land and all private properties which have some portion of the flow pathway passing through them. This area stretches from the base, north to the Murrumbidgee River.

The 'Management Area' is defined as comprising the On-base Management Area, and the Off-base Management Area. The Management Area boundaries are presented on Figure 2.

2.1.2 Site Definition and Planning

For the purposes of this SAQP report, "the base" is defined as comprising Blamey Barracks Kapooka. A detailed description of the base is provided in the OMP (Defence, 2021b). The base boundary is presented on Figure 1, Appendix A.

Key site identification details are presented in Table 1.

Table 1. Site Identification Details

Details	Description
Site Address	Blamey Barracks, Kapooka, NSW, 2661
Land Description	Blamey Barracks Kapooka
Owner	Department of Defence
Title Details	▪ Lots 1, 2, 6, 7, 9 & 10 in Deposited Plan (DP) 113507 (6.12 hectare [ha]) ▪ Lots 3, 8, 9, 10, 11 & 12 DP 205379 (153.72 ha) ▪ Lots 1, 2, 3, 4, 5, 6 & 8 DP 262372 (104.98 ha) ▪ Lot 1 DP 389778 (72.86 ha) ▪ Lots 1 & 2 DP 534820 (1279.25 ha) ▪ Lots 1 & 2 DP 627836 (18.26 ha) ▪ Lots 1 & 2 DP 725226 (16.99 ha) ▪ Lots 1, 2, 3 & 4 DP 725227 (42.97 ha) ▪ Lots 58, 59, 64, 65, 66, 85, 87, 88, 89, 90, 91, 92, 93, 113 & 163 DP 754567 (288.80 ha) ▪ Lot 1 DP 851602 (0.28 ha)
Planning Zone / Land use	Commonwealth Land Special Use, SP2 – Infrastructure (Defence)
Local Government Authority (LGA)	Wagga Wagga City Council
Source: Defence, June 2021, Blamey Barracks Kapooka PFAS Ongoing Monitoring Plan (Defence, 2021b)	

2.1.3 Surrounding Land Uses and Zoning

Land surrounding the base is zoned 'Primary Production (RU1)', 'General Residential (R5)', 'Conservation (E2)' and 'Public Recreation (RE1)' in the Wagga Wagga City Council municipality. The surrounding land uses are outlined in Table 2.

Table 2. Surrounding Land Uses

Direction	Land Use
North	▪ RU1 – Primary Production, around the base and north of the Sturt Highway, consisting of cleared grassland with intermittent houses and farm dams, with primary agricultural activities identified as cattle, sheep and grain farming. ▪ R5 – Large Lot Residential, including San Isidore which is immediately adjacent to the north-eastern boundary of the base. In addition to large, rural residential properties, it also contains a rural fire station, sporting field and church. ▪ RE1 – Public Recreation, at Pomingalarna Reserve to the north of Sturt Highway, north-east of the base.
West	▪ RU1 – Primary Production, west of the base towards Yarragundry, primarily consisting of cleared grassland with intermittent houses and farm dams, with primary agricultural activities identified as cattle, sheep and grain farming.

Direction	Land Use
East	▪ E2 – Conservation, a strip which aligns with forested areas on the ridge to the east of the base, between the base and the City of Wagga Wagga. ▪ R1 – General Residential, approximately 3.6km from the eastern boundary of the base, where the westernmost suburbs of the City of Wagga Wagga are located.
South	▪ Former quarry

2.1.4 Environmental Setting

Key details defining the site are summarised in Table 3.

Table 3. Key Site Details

Setting	Description (Adapted from Defence, 2021c)
Climate	Climate indicators have been recorded at nearby Wagga Wagga Aeronautical Meteorological Office (AMO) (072150) since 1941. Mean annual maximum and minimum temperatures ranged from 9.1 to 22.2°C. The annual mean rainfall is 574.2 mm and is spread evenly across the year, with slightly increased rainfall in from May to October. The prevailing wind direction in the morning (9 am) is towards the east while in the afternoon (3 pm) the prevailing winds are towards the west.
Topography	The regional topography comprises ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Locally, a ridgeline intersects the base through the middle from south to north, comprising rocky outcrops, small hills and valleys. Elevations across the base range from 190 m AHD at the northern extent to 370 m AHD at the peak towards the centre. To the east of the ridge, developed areas including the Barracks drop from approximately 270 m AHD to 230 m AHD from west to east.
Geology	Geology at the base and surrounding areas consists of four main units including basement Ordovician aged metamorphic and sedimentary rock and Silurian aged Collingullie Granite. These basement lithologies are overlain by colluvial soils On-base and to the south and alluvial sands and gravels interbedded with clay layers in the north associated with historical meanders of the Murrumbidgee River (Defence, 2021b).
Acid Sulfate Soil	A review of the Acid Sulfate Soils (ASS) risk mapping, available on the ASRIS online database indicates that the most central ridgeline and the southern section of the site is classified as having an extremely low probability of ASS occurrence and the rest of the site having a low probability of occurrence.
Hydrology	Watershed from rain is controlled by the central north-south trending ridgeline On-base. To the east of the ridge, surface water drains from west to east in localised channels that feed into Kapooka Creek. Kapooka Creek is ephemeral and begins in the south-eastern portion of the base as an unlined channel and runs in a northerly direction towards the Murrumbidgee River. Flow in the creek only occurs during heavy rain fall. Through San Isidore, Kapooka Creek transitions to a series of dams and low-lying areas. North of the Sturt Highway (near where the geology transitions from colluvial soils to alluvial deposits associated with the Murrumbidgee River), Kapooka Creek fans out and becomes discontinuous. Further to the east of Kapooka Creek is another north to south trending ridge line that forms the eastern extent of the valley in which the eastern portion of the base and San Isidore sit. Surface water from areas to the west of the central north-south trending ridge On-base, including the Former Quarry and Former

Setting	Description (Adapted from Defence, 2021c)
	Commandants House, drain west towards Sandy Creek. Sandy Creek is also ephemeral and comprises a flow channel with intermittent farm dams. During heavy rain fall, Sandy Creek flows northwards and drains into the Murrumbidgee River approximately 7.5 km downstream (i.e. to the west) of Kapooka Creek. The Murrumbidgee River is a major river in the area flowing year-round from east to west and is approximately 80 m in width.
Hydrogeology	Hydrogeological units at the base and surrounding areas can be grouped into the following: ▪ Perched water on-base surrounding the Wastewater Treatment Plant hosted in clay with some silt. Findings in the DSI indicate this perched water isn't laterally continuous and is likely related to the adjacent Wastewater Treatment Plant ponds. ▪ Perched water identified in MW601 along the Kapooka Creek flow path off-base. Water in MW601 is hosted in colluvial soils at 13.0 mBGL associated with Kapooka Creek. Below this is a consistent clay layer from 25.0 to 30.0 mBGL, which is sufficiently continuous to act as an aquiclude preventing migration of PFAS impacted perched water from Kapooka Creek downwards into regional groundwater. ▪ Regional groundwater is hosted in fractured rock aquifers to the south of the Management Area and on-base. Groundwater wells in this unit are hosted in granite, shale and siltstone. Regional groundwater is hosted in alluvial deposits in the north of the Management Area, where the geology transitions to interbedded alluvial sandy gravels and clays associated with the Murrumbidgee River.
Environmental Sensitive Areas	The sensitive receptors to the area include (but are not limited to): ▪ Mammals including the Eastern Bentwing-bat (Miniopterus schreibersii oceanensis), and the Squirrel Glider in the Wagga Wagga Local Government Area (Petaurus norfolcensis, endangered population) ▪ Birds including the Grey-crowned Babbler eastern subspecies (Pmatostomus temporalis temporalis), the Rainbow Bee-eater, the Magpie Goose, and the White-bellied Sea-Eagle ▪ Reptiles including the Southern Bell Frog (Litoria raniformis), and Sloane's Froglet (Crinia sloanei) ▪ Semi-aquatic & aquatic biota including Murray Cod (Maccullochella peelii) & Trout Cod (Maccullochella macquariensis) ▪ Grass, trees & other vegetation including the Lower Murray River aquatic ecological community, Grey Box (Eucalyptus microcarpa), Grassy Woodlands and Derived Native Grasslands of south-eastern Australia
Notes: 1. Bureau of Meteorology, 072150, 1941 to 2023 (BoM, 2024) http://www.bom.gov.au, accessed (15/03/2024) Further information can be found in the DSI report (Jacobs, 2019).	

2.2 Conceptual Site Model

A Conceptual Site Model (CSM) was developed from the findings of the DSI and HHERA and was included in the PMAP. A copy of the CSM diagram from the PMAP is provided as Figure 4 in Appendix A. The CSM identified major/minor sources, migration pathways, exposure routes and receptors (current and future).

2.2.1 Source Areas

Historical use of firefighting foam products occurred at the base until approximately 2008. The majority of primary source areas relate to storage or testing of firefighting foam equipment, including the Fire Station (RMV0059), Fire Training Pad, Fire Training Areas (RMV0050-3, RMV0122, RMV0058), the Parade Ground and the Former Quarry (RMV0117). Primary source areas also include several areas related to waste disposal including the Enhanced Land Force (ELF) Stockpiles and Buried Waste Areas (RMV0054). Two other primary source areas relate to singular or less frequent discharges of firefighting foam products including use for a waterslide at annual Christmas parties from 1995 and 2003, and in response to a fire at the Former Commandant's House in 2006.

Secondary source areas are related to the Wastewater Treatment Plant (WTP) (RMV0051) and grassy areas on-base irrigated with treated effluent (Reused Effluent Irrigation Areas). Primary and secondary source areas are shown in Figure 2, Appendix A.

2.2.2 Migration Pathways

Migration of PFAS from source areas occurs via several pathways. The most significant pathways for PFAS migration from source areas on-base include:

- PFAS leaching from impacted soil into surface water runoff which flows into Kapooka Creek.
- Accumulation of impacted surface water and sediment in drainage channels, sewer infrastructure, and dams on-base.
- Irrigation with treated effluent from the WTP in grassed areas on-base.
- Surface water migration into perched water surrounding the WTP and along Kapooka Creek.
- Direct exposure of receptors to PFAS impacted soils and surface water in on-base source areas and Off-base along Kapooka Creek.
- Use of PFAS impacted surface water along Kapooka Creek for watering of gardens and home grown produce (for home consumption).
- Surface water flow towards and discharge into Murrumbidgee River during heavy rain events.
- Bioaccumulation in higher order species from consumption of low order species which inhabit PFAS impacted environments (e.g. dams along Kapooka Creek).

2.2.3 Receptors

Receptors that exist in the Management Area, as identified in the DSI and HHERA, include:

On-base:

- Defence personnel and contractors.
- Maintenance and construction workers.
- Livestock with access to PFAS impacted water.
- Wild flora and fauna.

Off-base:

- Residents and recreational users of land and dam water along the Kapooka Creek flow pathway.
- Maintenance and construction workers within the Kapooka Creek flow pathway.
- Livestock with access to the Kapooka Creek flow pathway.
- Wild flora and fauna with access to the Kapooka Creek flow pathway and the Murrumbidgee River.

2.2.4 Summary of elevated risks to human health and the environment

The PMAP includes the following summary of elevated risks which were identified in the DSI and / or HHERA:

- Current risk to human health from consumption of home-reared duck eggs, fish and lamb grown or reared on properties along the Kapooka Creek flow pathway off-Base
- Possible future consumption of home reared and slaughtered livestock for meat on properties along the Kapooka Creek flow pathway.
- Possible future consumption of home reared milk from dairy cattle on properties along the Kapooka Creek flow pathway. Note, this activity does not currently occur.
- Cumulative risk to human health from consumption of multiple produce types (for example fruits, vegetables, poultry eggs and livestock) from properties along the Kapooka Creek flow pathway (both currently and in the future)
- Direct toxicity to lower order species which inhabit farm dams along Kapooka Creek and in some on-Base surface water pathways
- Direct toxicity to terrestrial organisms exposed to soils at the Fire Station source area on-Base
- Potential effects on terrestrial and aquatic higher order species due to bioaccumulation from consumption of lower order species that inhabit PFAS impacted areas on- and off-Base

3. Data Quality Objectives

3.1 DQO Process

This SAQP has been developed based on a set of Data Quality Objectives (DQO) in reference to the DQO presented in the OMP (Defence, 2021b), and based on guidance presented in the US Environmental Protection Agency (EPA, 2006), and ASC NEPM 2013 (Schedule B2). The DQO process comprises the following seven steps:

- Step 1: State the problem
- Step 2: Identify the Decision
- Step 3: Identify the Information Inputs
- Step 4: Define the Boundaries of the Study
- Step 5: Develop the Analytical Approach
- Step 6: Specify Performance or Acceptance Criteria
- Step 7: Develop the Plan for Obtaining the Data

The DQO are detailed in Table 4.

Table 4. Data Quality Objectives

Data Quality Step	Description
Step 1: State the Problem	Historic use of PFAS containing fire-fighting foams on-base in response to incidents (i.e. fires) and in training has caused PFAS contamination of soil. Contaminated soil source areas are contributing to PFAS discharge in surface water along surface drainage pathways off-base, primarily into Kapooka Creek. These discharges have led to potentially elevated risks to human health and the environment. Concerns have been raised by community members living within the Kapooka Management Area including concerns about PFAS in soil and surface water as well as concerns about erosion and flooding from runoff. Ongoing monitoring is needed to identify and assess potential changes in PFAS distribution and associated risk, to provide data for future risk management and to inform management decisions by Defence and relevant NSW government agencies. The investigation will be resourced by suitably qualified and experienced field staff who have completed Jacobs internal training.
Step 2: Identify the Decision	The principal objectives of the ongoing monitoring program are to: ▪ Further refine the understanding of PFAS variability and distribution within the Management Area over time. ▪ Monitor for changes in the levels of PFAS in the Management Area in response to management actions and other conditions (such as rainfall). ▪ Provide an early warning of potential future migration of PFAS into groundwater beyond the current known extents ▪ Collect additional data beyond the DSI and HHERA to help inform future management actions. ▪ Allow for identification of potential cases where PFAS levels in the Management Area change over time to the point where they trigger a need to review the HHERA. Either through increase or decrease in PFAS levels.

Data Quality Step	Description
Step 3: Identify the Information Inputs	The information inputs are: ▪ Existing data relevant to PFAS in soil, waters and biota obtained through the DSI, HHERA and other environmental investigations (including the preliminary site investigation). ▪ Understanding of surface water and groundwater flow pathways identified in the DSI and HHERA. ▪ Locations and types of human and environmental receptors as defined in the DSI and HHERA. ▪ New data collected as part of the OMP.
Step 4: Define the Boundaries of the Study	A Study Area was defined in the DSI. Based on outcomes from the HHERA, this has been further refined into a Management Area for use in the SAQP, OMP, and the PMAP. The Management Area is described in Section 2.1.1 and shown in Appendix A, Figure 2. The Study Area for the OMP includes: ▪ Surface water and sediment sampling will focus on areas of PFAS discharge away from source areas on the eastern side of the base into Kapooka Creek. Kapooka Creek and its' tributaries are ephemeral, meaning surface water may not be present and available at the time of sampling. In the absence of water at these locations, sediment sampling is also proposed to help provide continuity and ability to assess variability in the absence of water. ▪ Sampling of surface water and sediment is not proposed in the Murrumbidgee River. However, if the detected levels of PFAS increase in Kapooka Creek, this may trigger a need for sampling in the Murrumbidgee River. This will be monitored through the PMAP review process. ▪ Sampling in Sandy Creek is not proposed as no detections of PFAS above the LOR were reporting in the DSI. In addition, there is no unacceptable level of risk identified in Sandy Creek from the HHERA. ▪ The Former Commandants House in the north of the base had detections of PFAS above LOR in the DSI. However, these were localised and not leading to migration of PFAS into Sandy Creek. This source area has a low potential contribution to risk (as identified in the PMAP). Hence, sampling of surface water and sediment at this location is not proposed as part of the OMP. ▪ PFAS was detected above the LOR in surface water and sediment samples in the small pond adjacent to the Former Quarry. Like the Former Commandants House, these detections were localised and not leading to migration of PFAS into Sandy Creek. However, the detection of PFAS in surface water was above the 95% ecological screening criteria, Hence, sampling of surface water and sediment at this location as part of the OMP is included to assess for potential variation and monitor changes to PFAS migrating in surface water and sediment away from this source area. ▪ PFAS was detected in perched water and groundwater in a limited number of areas in the DSI and HHERA. Bores within these areas (the Former Commandants House, the Wastewater Treatment Plant and the Kapooka Creek pathway Off-

Data Quality Step	Description
	base) will be monitored to test for any potential future migration of PFAS in or into groundwater. ▪ PFAS was detected in sewer and within the Wastewater Treatment Plant ponds on-base during the DSI. Detections of PFAS in some of the sewer samples is attributed to adjacent PFAS source areas. Hence, these locations and some of the WTP ponds will be monitored to assess for PFAS variability over time. ▪ An initial time period of two years with monitoring events once every six months was proposed in the OMP. The first monitoring event was completed in October, 2021. A review of the data collected and potential revisions to the OMP have been recommended to Defence.
Step 5: Develop the Analytical Approach	The purpose of this step is to identify the parameters of interest, specify action levels and combine the outputs of previous DQO steps to develop a series of options if certain trigger events occur. The contaminants of interest for this investigation are PFAS and so all samples will be analysed for the standard PFAS suite (refer to Appendix B). The key decision rules of the OMP are: 1. Has the analytical data collected as part of the monitoring program met the Data Quality Indicators (DQI) outlined in Table 5 and the Data Acceptance Criteria (DAC) outlined in Table 12. If yes, then the data can be used to answer the decision rule below and the principal additional data will be required. 2. Does the data indicate a change to level of risk defined in the DSI and HHERA? If yes, then further risk assessment will need to be carried out. This may lead to a need to revise the PMAP. If no, then continue monitoring as per the OMP. 3. Does the data conform with the most up to date CSM? If yes, then continue monitoring as per the OMP. If no, then further risk assessment will need to be carried out. This may lead to a need to revise the PMAP. 4. Is the data meeting the DQO as outlined in the OMP? If yes, then continue monitoring as per the OMP. If not, then a revision of the OMP should be undertaken. 5. Has the proposed time period of the OMP been achieved? If yes, review the available information and determine if continued monitoring is required. If yes, continue monitoring as per the OMP. Trigger levels to assist in the above decision rules are detailed in Table 14.
Step 6: Specify Performance or Acceptance Criteria	Investigation criteria set out in the DSI and HHERA will be adopted for use to determine if the OMP data collected indicates a change in the level of PFAS within the test media. These are described in further detail in Section 5. The potential for significant decision errors will be minimised by completing a robust QA/QC program in accordance with the ASC NEPM and PFAS NEMP (HEPA, 2020) guideline requirements. Standard operating procedures will be closely followed in the field to ensure accurate and representative data acquisition. DQI and DAC will be applied to assess usability of data prior to making decisions, based on precision, accuracy, representativeness, comparability, completeness and sensitivity.

Data Quality Step	Description
	The acceptable limit on decision error is 95% compliance with the applied DQI (Table 5). If any of the DQI are not met, further assessment will be necessary to evaluate the significance of the non-conformance and implement corrective actions.
Step 7: Develop the Plan for Obtaining the Data	The plan for obtaining data has been developed in accordance with relevant guidelines through targeted monitoring of potential source-pathway-receptors. Optimisation of the data collection process will be achieved by: ▪ working closely with the analytical laboratories and sampling equipment suppliers to ensure that appropriate procedures and processes are developed and implemented prior to and during the fieldwork, to ensure that sample handling, and transport to and processing by the analytical laboratories is appropriate. ▪ conducting sampling according to Defence and Australian Standards for the type of sampling being conducted. These standards are as follows: - Department of Defence Contamination Management Manual (March 2018, Amended August2019), - Standards Australia (AS/NZ 5667.6-1998) Water Quality – Sampling. Part 6: Guidance on sampling of rivers and streams, - Standards Australia (AS/NZS5667.11–1998) Water Quality – Sampling, part 11: Guidance on sampling of groundwater. ▪ conducting sampling in accordance with the Jacobs internal PFAS Sample Collection Guidance. ▪ sampling conducted by suitably qualified and experienced field staff who have completed Jacobs internal training. ▪ basing the sampling upon a CSM developed using the information available at the implementation of the OMP. Updating the CSM as new data becomes available in the course of the implementation of the OMP, as required. ▪ progressive review of the data and modification of sampling programs to optimise the value of data generated. ▪ continually seeking to identify opportunities for refinement and optimisation of the OMP, including, but not limited to, identifying redundant locations that can be excluded from the monitoring program. This will be achieved through an annual review of the SAQP.

3.2 Assessment of Data Quality

Data quality will be assessed in accordance with the PARCCS parameters (Precision, Accuracy, Representation, Completeness, Comparability and Sensitivity) principles and indicators (see Table 5)..

The quality of data collected as part of the sampling will be assessed on a range of factors including:

- documentation and data completeness; and
- data quality – comparability, representativeness, precision, sensitivity, and accuracy of the analytical data.

The project target for data completeness is to achieve 95% of data as suitable for use.

An assessment of the Data Quality Indicators (DQI) relating to both field and laboratory procedures will be undertaken with appropriate documentation provided for each environmental element or media assessed.

The DQI adopted for the OMP are summarised in Table 5 and acceptance criteria for the DQI's are presented in Section 5.

Table 5. Data Quality Indicators

Data quality indicator	Field	Laboratory method and results
Precision	▪ Compliance with Jacobs Work Instructions ▪ Investigation by suitably qualified and experienced personnel ▪ Collection of blind replicate and split samples	▪ Use of National Association of Testing Authorities, Australia (NATA) accredited laboratories ▪ Analysis of inter- and intra-laboratory duplicate samples (1 in 10 primary) ▪ Laboratory internal duplicate samples
Accuracy	▪ Compliance with Jacobs Work Instructions ▪ Investigation by suitably qualified and experienced personnel ▪ Collection of rinsate samples and trip blanks	▪ Analysis of method blanks, matrix spike recoveries, surrogate spikes recoveries, laboratory control spike recoveries ▪ Compliance with sample holding times
Representativeness	▪ Compliance with Jacobs Work Instructions	▪ Analysis of contaminants of potential concern
Comparability	▪ Compliance with Jacobs Work Instructions	▪ Use of NATA accredited laboratories ▪ Analysis of split sample (1 in 10 primary) ▪ Comparison of data against historic data where available
Completeness	▪ All critical locations sampled (spatially and temporally)	▪ All critical samples analysed ▪ Assessment of the impact any spatial gaps in samples collected
Sensitivity	▪ Personnel to ensure correct analytical methods are selected	▪ Analytical methods to achieve the stated limits of detection

4. Sampling Location Rationale and Methodology

The OMP presents an overview of specific monitoring works to be undertaken and provides the basis for the preparation of this SAQP. This scope of works presented in this SAQP is generally consistent with that detailed in the OMP.

Deviations from the OMP are presented Section 7.

4.1 Monitoring Schedule

The proposed schedule of fieldworks is presented in Table 6.

Table 6. Monitoring Schedule

Matrix	Location	Interval	Monitored Parameters
Surface Water	Surface water on and off-base	Twice-annually: Early autumn (March - April) and early spring (September - October)	Field: Water quality parameters[1] Lab: Standard PFAS Suite
Groundwater	Groundwater on and off-base	Twice-annually Early autumn (March - April) and early spring (September - October)	Field: Water quality parameters[1] Field: Water level Lab: Standard PFAS Suite
Sediment	Sediment on and off-base	Twice-annually Early autumn (March - April) and early spring (September - October)	Lab: Standard PFAS Suite

Source: Defence 2021b

Notes

1 Physical parameters include pH, electrical conductivity, DO, temperature and redox potential

As stated in the OMP, where possible, mobilising to collect samples during or shortly after a significant rainfall event should be attempted for one of the sampling events each year. However, it is noted that this may be challenging. The amount of recent rain should be taken into account when interpreting results against the DQO's.

4.1.1 Access Arrangements

There are several sampling locations that are not located within the Kapooka Military area, or are located in restricted areas and require notification prior to entry. These include:

- Sampling location MW625 is located off base – Notification to Local Land Services (LLS) is necessary to request LLS to coordinate timing to open gates for access to complete sampling.
- Locations MW008, MW109 and MW110 are located within on-base, but the northern firing Range (northern portion of Range area MDP2). Prior to entry into this area requires coordination with Kapooka Range Control (located at Building 184), to collect radio and keys for access.
- Monitoring locations MW601, MW624 and SW614 are on land owned by Wagga City Council. Notification of sampling prior to entry to the site is also required.
- Surface Water location SW680 is located on private property and therefore access needs to be coordinated with the property owner prior to undertaking sampling.

4.2 Groundwater Monitoring

4.2.1 Groundwater Monitoring Locations

The network of on-base and off-base groundwater monitoring wells included in the OMP and a summary of the well construction details are summarised in Table 7 (also shown in Appendix A, Figure 3).

The rationale for the selection of these locations is presented in the OMP and broadly includes:

- **Wastewater Treatment Plant (WTP) –** These locations are adjacent the WTP and target the regional groundwater and perched groundwater aquifers. Testing during the DSI showed no results above LOR. Testing will continue at these locations to assess presence of PFAS in perched water (in MW107) and in regional groundwater aquifer (MW103 and MW104). If PFAS is detected above the laboratory LOR in MW103 or MW104 (regional groundwater), this would trigger a need for review and further assessment of potential risk to regional groundwater and groundwater users in the area.

  MW104 is located on the northern boundary of the WTP and is the northern most regional groundwater well on-base prior to San Isidore. Testing of this well is also included as an indicator of potential future migration of PFAS off-base towards residential properties

- **Former Commandants House -** MW008 near to the Former Commandants House has had consistent detections of PFAS above the laboratory LOR over the course of the Preliminary Site Investigation (Golder, 2017), DSI and HHERA. The construction details of MW008 are unknown and Defence made the decision to install a replacement well (MW628) approximately 10m to the south east of MW008. The HHERA installed new wells (MW109, MW110 and MW625) surrounding MW008 to assess the extent of PFAS migration in groundwater in the area (no detections of PFAS above the laboratory LOR in MW109, MW110 or MW625). Testing in these locations is to monitor potential future migration of PFAS in groundwater away from MW008 down gradient (towards the north-west). Down gradient wells used for groundwater extraction and irrigation of crops are located approximately 800m downgradient of MW008. These wells had no detection of PFAS above laboratory LOR when sampled for the DSI.

  Detection of PFAS above the laboratory LOR in the wells surrounding MW008 and in particular MW625 (which is located downgradient of MW008) would trigger a need for review and further assessment of potential risk to regional groundwater and groundwater users in this area.

- **Kapooka Creek flow pathway -** MW601 is installed in perched water associated with Kapooka Creek and has been sampled three times over the course of the DSI and HHERA. Results show an increasing trend in the concentration of PFAS at this location with results ranging from 0.15 to 0.89 µg/L PFOS + PFHxS. Ongoing sampling in this well will improve the understanding of the trend and provide a base level for possible PFAS present in perched water associated with Kapooka Creek.

  MW624 was installed as part of the HHERA adjacent to Kapooka Creek and near to MW601. The well is screened in shale in the regional aquifer. Sampling of MW624 as part of the HHERA had no detections of PFAS above the laboratory LOR. This, along with the geophysical investigation, indicates PFAS from perched water at Kapooka Creek is not currently migrating into the regional aquifer. Ongoing testing of MW624 is required to monitor potential future migration of PFAS. If PFAS is detected above the laboratory LOR during future monitoring rounds in MW624, this would trigger the need for review and further assessment of potential risk to regional groundwater and groundwater users in the area.

Table 7. Blamey Barracks Kapooka Groundwater Monitoring Network

On/Off-base	Area	Location ID	Easting	Northing	Top of Casing Elevation (mAHD)	Screen Interval (mBTOC)	Sampling Frequency	Total
On-base	Waste Water Treatment Plant	MW103	526845.6	6110958.8	225.8	49-52	Twice annually	3
		MW104	526597.8	6111277.7	231.87	38-53	Twice annually	
		MW107	526628.4	6111282.8	230.54	12.5-15.5	Twice annually	
	Former Commandants House	MW628[1]	-	-	-	15-21	Twice annually	4
		MW109	525327.6	6114785	180.29	22.58-31.58	Twice annually	
		MW110	525096	6114455.5	193.62	15.56-19.06	Twice annually	
Off-base		MW625	*	*	174.572	15.5-21.5	Twice annually	
	Kapooka Creek	MW601	527164.1	6112666.0	205.3	10-16	Twice annually	2
		MW624	527138.1	6112814.3	205.92	28.03-50.03	Twice annually	

Note: Historical Name, Eastings, Northings, Top of Casing Elevation and Screen Interval are sourced from Defence ESdat database.

1 – At the completion of the Service Provider engagement, Stantec installed a replacement monitoring well for MW008 (old concrete well of unknown construction), with a new bore MW628. Survey of the well has not yet been completed.

*Coordinates are not displayed for privacy reasons.

The rationale for each sampling location is presented in the OMP

4.2.2 Groundwater Sampling Methodology

Groundwater monitoring will be undertaken as detailed in Table 8.

Table 8. Groundwater Monitoring Wells – Sampling Method

Activity	Details
Groundwater Gauging	Standing Water Level (SWL) will be gauged using either an interface probe or a water level meter. All wells will be measured against a specified mark at the top of the well casing.
Groundwater Sample Collection Methodology	Except for well MW008 (described below), groundwater samples will be collected from monitoring wells using no-purge methodology with HydraSleeves™ which will be installed within the screened interval (approximate mid point) of the wells (available well construction details, including screen intervals, are shown in Table 7). The HydraSleeves™ will remain within the well for a minimum of 24 hours prior to sampling for the initial sampling round or when necessary to re-deploy. Care should be taken to avoid placing the base of the HydraSleeves™ at the base of the monitoring well, where a build-up of sediment may be present. The installation depth of the HydraSleeves™ is to be recorded (generally as HydraSleeve™ collar depth in mbTOC). Subsequent monitoring events will attempt to target the same horizon for deployment of HydraSleeves™. HydraSleeves™ are to be installed / deployed in monitoring wells for a minimum of 24 hours prior to sampling, to allow re-stabilisation of the well following disturbance. Following sampling, field parameters are recorded ex-situ, from any excess water available in the Hydrasleeve™. In the event that a HydraSleeve™ fails to deploy or has been removed inadvertently (i.e. by non-OMP project), the sample will be collected using a dedicated disposable high-density polyethylene (HDPE) bailer, if time or access constraints do not permit re-deployment of the HydraSleeve™ and subsequent sampling in the same sampling event. When sampling with a bailer, a minimum of three well volumes should be purged and purging should be continued until stabilisation of water quality parameters (to be collected continuously ex-situ) is achieved. If recharge is insufficient during purging, care should be taken to avoid purging the well dry and collecting the sample when reasonable to do so. Once sampling is completed, a new HydraSleeve™ will be deployed at the screened interval depth at each location in preparation for the next scheduled sampling round, where practicable. Hydrasleeve™ sampling will be completed in accordance with the manufacturer's guidance.
Sample collection by low-flow Micropurge (MW008)	MW008 is a large diameter open well and therefore this well will be sampled using low-flow micropurge methodology. Groundwater sampling will commence once the water quality field parameters have stabilised, indicating that they represent natural groundwater in the aquifer. Samples will be collected directly into appropriately preserved laboratory supplied bottles and packed in chilled containers for delivery to the laboratory under Chain of Custody (COC) documentation. Disposable High-Density Polyethylene (HDPE) tubing will be utilised for sampling and will be taken off-site for disposal following completion of sampling.
Field Parameters	Refer to Section 4.5.1.
Sample identification, preservation	Each sample will be labelled with the sample location, date, project identification number and sampler's initials. Sample labelling and naming will be in accordance with Annex L of the Defence Contamination Management Manual (DCMM). Refer to Sections 4.5.2 and 4.5.4.

Activity	Details
transport and holding times	Samples will be collected directly in into appropriately preserved laboratory supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under COC documentation (refer to Section 4.5.3). Sample containers, preservation procedures, sample storage requirements and holding times will be undertaken in accordance with the requirements set out in Australian Standard AS/NZS 5567.1:1998 and AS 4482.1.
QA/QC Samples to be Collected	Groundwater QC samples will be collected at the following frequencies: ▪ Field duplicate (intra-laboratory) samples at 1 per 10 water samples or 1 per batch if the batch is less than 10 samples. ▪ Field triplicate (inter-laboratory) samples at 1 per 10 water samples should be sent to a secondary laboratory. ▪ Rinsate blank sample at 1 per day [collected off re-used sampling equipment (e.g. interface probe)]. ▪ Trip blank samples of 1 per shipment to be included in the chilled sample containers upon transport to the laboratory. All QC samples will be tested for a standard PFAS analytical suite (see Appendix B). Jacobs personnel will attempt to reduce potential heterogeneity in the sample media matrix by dividing the sample collected between primary and intra-laboratory jars or bottles during sampling.
Sample Analysis	All primary and QC samples will be submitted for analysis using the standard Defence PFAS analytical suite (refer to Appendix B).
Decontamination	Used HydraSleeves® will be replaced with a new HydraSleeve® after sample collection at each location, thus removing the need for decontamination. All re-usable sampling equipment (such as the interface probe and micropurge pump) will be thoroughly washed using 'PFAS free' and phosphate-free detergent (Liquinox), then double rinsed with de-ionised water before the sample collection. Clean, disposable nitrile gloves will be worn and replaced between each sample.
Laboratory Accreditation	All groundwater analysis will be undertaken by laboratories accredited by the NATA. ▪ Primary analysis will be undertaken by ALS Global Laboratories. ▪ Secondary analysis will be undertaken by Eurofins.

4.3 Surface Water and Sediment Monitoring

4.3.1 Monitoring Locations

The proposed on-base and off-base surface water, sediment and sewer monitoring locations are summarised in Table 9 and presented on Appendix A, Figure 3.

The rationale for the selection of these locations is presented in the OMP and broadly includes:

- **Overland drainage pathways (on-base)** – These sample locations are in surface water pathways on the eastern side of the base that feed into Kapooka Creek. These sampling locations provide an overview of the concentrations in surface water feeding into Kapooka Creek as a result of source areas on the eastern portion of the base.

- **Kapooka Creek** – Risks identified Off-base in the HHERA are all associated with Kapooka Creek. The three proposed sampling locations include an on-base dam just prior to Kapooka Creek flowing Off-base into San Isidore, and two off-base locations on public land, approximately evenly spaced between the base and the Murrumbidgee River.
- **Sewer** – Resampling of sewer locations detected during the DSI (adjacent to former Fire Training Areas) and their surrounds.
- **Wastewater treatment plant ponds** – The results from previous sampling rounds have shown a slight decreasing trend in PFOS + PFHxS concentration. The objective of these sampling locations is to assess this trend.
- **Overland drainage pathways (Former Quarry)** – Surface water and sediment sampling point downstream of the Former Quarry in the south-west area of the base. The DSI identified that PFAS from the Former Quarry is considered localised and not migrating to Sandy Creek to the west.

Table 9. OMP Surface Water and Sediment Monitoring Locations and Frequency

On/Off-base	Area	Location ID	Easting	Northing	Sampling Frequency	Total
On-base	Overland drainage pathways	SW/SD136	526132.2	6110304.8	Twice annual	5
		SW/SD103	526271.4	6110348.6	Twice annual	
		SW/SD106	526717.6	6109926.1	Twice annual	
		SW/SD107	526752.7	6110464.8	Twice annual	
		SW/SD118	526946.5	6110587.0	Twice annual	
	Sewer	SW140	526449.8	6109549.2	Twice annual	4
		SW144	526185.0	6110390.0	Twice annual	
		SW148	526404.5	6110931.5	Twice annual	
		SW149	526455.0	6111012.0	Twice annual	
	Wastewater treatment plant ponds	SW/SD108	526719.2	6110895.1	Twice annual	2
		SW/SD111	526686.5	6111169.2	Twice annual	
	Former Quarry	SW/SD127	524610.6	6108182.2	Twice annual	1
	Kapooka Creek	SW/SD121	527077.5	6111316.7	Twice annual	1
Off base		SW/SD614	527151.5	6112749.5	Twice annual	3
		SW/SD677	526647.3	6114308.7	Twice annual	
		SW680	*	*	Twice annual	

Note: Historical Name, Eastings, Northings, Top of Casing Elevation and Screen Interval are sourced from Defence ESdat database.

*Coordinates are not displayed for privacy reasons.

4.3.2 Surface Water Sampling Methodology

The methodology for the surface water monitoring is detailed in Table 10.

Table 10. Surface Water Monitoring – Sampling Method

Item	Description
Surface Water Sampling Method	Where possible, surface water samples will be collected directly into laboratory supplied sample containers using a 'Grab' (manual) sample method via a long-handled sampling device. The sample container is secured to the end of the sampling device and is then lowered into the water, oriented with the capped opening facing downwards to avoid the collection of surface films. Where depth permits, the sample container should be positioned at least 20 cm below the surface water level and above the sediment bed before reorienting the sample container so that the capped opening is facing upwards, allowing it to fill. This approach is consistent with the Australian Water Quality Guidelines, which advises to 'immerse a sample bottle by hand to just below the surface (typically 0.2 to 0.50 m depth) and hold the sampler downstream of where the sample is to be collected'. Description of each sampling location will be recorded (refer to Section 4.5.1).
Sewer Sampling Method	Sewer sampling will be completed at maintenance pits. The maintenance cover (a round concrete plug) is to be lifted and a grab sample of water collected directly from the flow via a long-handled sampling device. For sampling within the Wastewater Treatment Plant ponds, the same method as surface water sampling should be followed.
Field Records	Refer to Section 4.5.1.
Sample Identification, preservation & holding times	Each sample will be labelled with the sample location, date, project identification number and sampler's initials. Sample labelling and naming will be in accordance with Annex L of the Defence Contamination Management Manual (DCMM). Refer to Sections 4.5.2 and 4.5.4 Samples will be collected directly in into appropriately preserved laboratory supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under COC documentation (as shown in Section 4.5.3). Sample containers, preservation procedures, sample storage requirements and holding times will be undertaken in accordance with the requirements set out in Australian Standard AS/NZS 5567.1:1998 and AS 4482.1.
QA/QC Samples to be Collected	Surface water QC samples will be collected at the following frequencies: ▪ Field duplicate (intra-laboratory) samples at 1 per 10 water samples or 1 per batch if the batch is less than 10 samples. ▪ Field triplicate (inter-laboratory) samples at 1 per 10 water samples should be sent to a secondary laboratory. ▪ Rinsate blank sample at 1 per day collected off re-used sampling equipment (e.g. interface probe)]. ▪ Trip blank samples of 1 per shipment to be included in the chilled sample containers upon transport to the laboratory. All QC samples will be tested for a reduced PFAS analytical suite (see Appendix B). Jacobs personnel will attempt to reduce potential heterogeneity in the sample media matrix by dividing the sample collected between primary and intra-laboratory jars or bottles during sampling.
Sample Analysis	All primary and QC samples will be submitted for analysis using the standard Defence PFAS analytical suite (see Appendix B).

Item	Description
Decontamination	All re-usable sampling equipment (such as the long-handled sampling device) will be thoroughly washed using phosphate-free detergent (Liquinox), then double rinsed with de-ionised water before the sample collection.
Laboratory Accreditation	All groundwater analysis will be undertaken by laboratories accredited by the NATA. ▪ Primary analysis will be undertaken by ALS Global Laboratories. ▪ Secondary analysis will be undertaken by Eurofins.

4.3.3 Sediment Sampling Methodology

The methodology for sediment sampling is detailed in Table 11.

Table 11. Sediment Investigation – Sampling Methodology

Item	Details
Sample Collection	Sediment samples should be collected from the approximate mid-point of the flow pathway, to the extent practicable, and collected from the top ten centimetres after removal of the immediate surface material using hand tools (e.g. trowel, hand auger, PVC pipe, etc.). Sediment samples should be collected after the co-located surface water sample is collected to prevent agitating sediments into the water body and surface water sample matrix. Samples should be placed directly into appropriately labelled, laboratory supplied sample containers and packed in chilled containers for delivery to the laboratory under COC documentation. At each sampling location, the sediment sample will be visually assessed and observations (physical description including makeup, colour, visible signs of contamination and moisture) recorded on field data sheets.
Field Records	Refer to Section 4.5.1
Decontamination	All re-usable sampling equipment (such as a trowel) will be thoroughly washed using phosphate-free detergent (Liquinox), then double rinsed with de-ionised water before the sample collection.
Sample identification, preservation, transport and holding times.	Each sample will be labelled with the sample location, date, project identification number and sampler's initials. Sample labelling and naming will be in accordance with Annex L of the Defence Contamination Management Manual (DCMM). Refer to Sections 4.5.2 and 4.5.4 Samples will be collected directly in into appropriately preserved laboratory supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under COC documentation (as shown in Section 4.5.3). Sample containers, preservation procedures, sample storage requirements and holding times will be undertaken in accordance with the requirements set out in Australian Standard AS/NZS 5567.1:1998 and AS 4482.1.
Laboratory Testing	All sediment samples will be analysed for the standard PFAS analytical suite (see Appendix B).
Laboratory Testing – Quality Control	Sediment QC samples will be collected at the following frequencies: ▪ Field duplicate (intra-laboratory) samples at 1 per 10 sediment samples or 1 per batch if the batch is less than 10 samples.

Item	Details
	▪ Field triplicate (inter-laboratory) samples at 1 per 10 sediment samples should be sent to a secondary laboratory. All QC samples will be tested for a full PFAS analytical suite (see Appendix B).
Laboratory Accreditation	All sediment sample analysis will be undertaken by the following NATA-accredited laboratories: ▪ Primary analysis will be undertaken by ALS Global Laboratories. ▪ Secondary analysis will be undertaken by Eurofins.

4.4 Validation of Analytical Results

Validation of analytical results may be required in the form of re-analysis by the reporting laboratory or through re-sampling and analysis, to confirm original results.

The requirement for re-sampling and/or re-analysis will be determined in consultation with Defence and will generally apply to results that are first-time detections of PFAS in water matrices or new exceedances of human health guidelines.

The QA/QC evaluation to be undertaken is discussed in Section 5..

4.5 Fieldwork Documentation

4.5.1 Field Notes

Field notes will be maintained to record all field sampling events and include observations made at each sample location. Field notes will include general site setting, location information, and information specific to the sample media, as follows:

- Weather conditions, and visual or olfactory conditions at the location.
- Location coordinates and means of access, and any changes from previous access to a specific location.
- Groundwater samples – the observed characteristics of the sample (e.g. colour, turbidity, presence/absence and nature of odours, presence/absence of slicks or sheens) and measured field water quality parameters (pH, EC, DO, ORP, temperature) will be recorded. Condition of monitoring wells and gauging details and depth of deployment for Hydrasleeve at installation, will also be recorded.
- Surface water samples – the observed characteristics of the sample (e.g. colour, turbidity, presence/absence and nature of odours, presence/absence of slicks or sheens) and field water quality parameters (pH, EC, DO, ORP, temperature) will be recorded. Additionally, a description of each surface water sampling location will be recorded, such as indicating the waterbody type (lake, stream, etc.), presence/absence of water flow, and waterbody width.
- Sediment samples – the observed characteristics of the sample (material type and description, including any observations of staining or odours), details of sampling collection (method, equipment used and confirmation of decontamination procedures when non-disposable equipment is used), sampling time, date and name of the sampler and weather conditions.
- All sample documentation including field notes, reporting records, calibration certificates, COC documentation and procedures will be retained within project files.
- The quality control (e.g. duplicate and inter-laboratory duplicate) sample details be recorded.

4.5.2 Sample Labels

Sample containers will be labelled, as a minimum, with the following information:

- Jacobs project number
- name of sampler
- sample ID
- date of sample collection

An indelible felt pen will be used for labelling, to ensure that the lettering is not erased during transit to the laboratory. Sample containers that are sent to the primary laboratory, ALS, will also be scanned into the laboratory's custom-built mobile app (by scanning the barcode applied to each laboratory-supplied container) for streamlined labelling and Chain of Custody (COC) creation and to ensure compliant sample IDs are used in the field.

4.5.3 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 form will include the following information:

- job number
- date and time of sample collection
- sample ID
- type of containers
- name of sampler
- laboratory to be used
- analyses required
- any comments
- 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 and sample receipt notification (SRN) to confirm analyses to be performed and the due date for the analytical results.

4.5.4 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 naming convention:

PPPP_XX000_ZZZ_YYMMDD

[property ID]_[type of sample][THREE DIGIT sample number]_[top of sample depth]_[yearmonthday]

e.g. 0315_MW001_191015

Location types and codes are prescribed by the Defence Contamination Management Manual, Annex L

Data Management (Defence, 2021a) and the base's investigation history.

Location types relevant to this SAQP include:

- MW = monitoring well
- SW = surface water, or sewer
- SD = sediment sample

QA/QC Samples will be labelled in accordance with the following convention:

- Blind duplicate (intra-laboratory duplicate): PPPP_QC1XX_YYMMDD
- Split duplicate (inter-laboratory duplicate): PPPP_QC2XX_YYMMDD
- Rinsate blank: PPPP_QC3XX_YYMMDD.

4.5.5 Defence ESdat Requirements

Defence has contracted Earth Science Information Systems (EScIS), to provide contamination data management services through a cloud instance of its ESdat product.

All field and laboratory data collected by Jacobs will be uploaded, stored and managed in Defence's Environmental Data Management System (EDMS (ESdat)) in accordance with Section 6 of Annex L to the Defence Contamination Management Manual. Jacobs 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.

Jacobs will ensure that electronic data deliverables (EDDs) from the laboratory include required information for automatic upload into the EDMS, such as including the correct Project ID in ESdat files and including the Defence ESdat auto-upload email address (DERP.LabReports@esdat.com.au) in the laboratory report recipient list.

Jacobs will ensure that field data is uploaded, and laboratory data is uploaded and approved into the EDMS and that QA/QC data is correctly reconciled for each monitoring event.

4.6 Waste Management

The proposed "no purge" sampling methodology adopted for the majority of the groundwater monitoring locations and the grab samples from the designated surface water sampling locations, it is not anticipated that significant volumes of liquid waste would be generated that would require onsite management and disposal. The only other generated wastewater will be a minor amount from the Micropurge at MW008. The water will be either irrigated onto the ground or reinstalled back within the large diameter bore following sample collection.

All consumables (i.e. HydraSleevesTM, general rubbish) will be bagged and placed in on-base general waste bins for disposal.

5. Quality assurance and quality control

Quality Assurance and Quality Control (QA/QC) procedures have been developed based on the guidance in Schedules B2 and B3 of the ASC NEPM as well as PFAS NEMP Version 2.0 (HEPA, 2020).

5.1 Field quality control

Field quality control will comprise:

- Ensuring all sampling is undertaken by suitably qualified and experienced Jacobs personnel.
- Adherence to the relevant Jacobs Work Instructions including record keeping.
- Use of laboratory supplied sample containers.
- Preservation of samples in ice chests and transport to laboratories under chain of custody documentation.
- Submission and extract of samples within the recommended holding times.
- Appropriate decontamination of any sampling equipment that can come in contact with multiple samples between locations.
- Collection of quality control samples.
- Calibration of all field measuring equipment such as water quality meters and retaining of calibration records.

Further detail regarding specific procedures is described in Sections to 5.1.1 to 5.1.4.

5.1.1 General Procedures

Sampling will be carried out in accordance with the Jacobs' Standard Operating Procedure for PFAS sampling (ANZIE_SOP_N_003). This procedure has been developed in accordance with the PFAS NEMP Version 2.0 (HEPA, 2020) and the WA DER 2017 guidelines.

5.1.2 Decontamination

Reusable equipment will be avoided. However, where it can't be avoided, decontamination prior to sampling and between sampling will occur using a triple wash system. This involves washing in PFAS free detergent and tap water, rinsing in tap water, then rinsing in laboratory supplied deionised water.

5.1.3 Sample containers and sample labelling

Samples will be placed in appropriate laboratory-supplied sample containers. Sample containers will be polypropylene or High Density Polyethylene (HDPE). No polytetrafluoroethylene (PTFE) materials including Teflon lined lids will be used for PFAS samples. All samples (including QC samples) will be labelled to include the in accordance with Sections 4.5.2 to 4.5.4.

5.1.4 Field quality control samples

Field quality control (QC) samples will comprise:

- **Duplicate samples:** Duplicate samples will be collected at a rate of one for every 10 primary samples (or more frequent) for each sample matrix. Both the primary sample and the duplicate sample will be sent to the primary laboratory (ALS), however the duplicate sample will be blind coded.
- **Triplicate samples:** Triplicate samples will be collected at a rate of one for every 10 primary samples. The triplicate sample will be sent to an independent secondary laboratory (Eurofins).

- **Trip Blanks:** Trip blanks will be collected at a rate of one per laboratory batch of samples. Each trip blank will be prepared by the primary laboratory and will be stored and transported with the other samples throughout the sampling event.
- **Rinsate Samples:** Rinsate samples are proposed for collection at a rate of one per day when sampling equipment which can come in to contact with multiple samples is used. This is not anticipated based on the proposed methodology in this SAQP. However, where needed, rinsate blanks will be collected by running deionized water supplied by the laboratory over the equipment and directly into a laboratory supplied bottle suitable for PFAS analysis. The laboratory shall provide appropriate certification that the rinsate water supplied is free from PFAS. If this certification is not available then Jacobs will test one sample of supplied rinsate water for standard PFAS analysis for every 10 rinsate samples.

Acceptance criteria for the quality control sample analysis results are presented in Section 5.3.

5.2 Laboratory quality control

All analysis will be performed by laboratories accredited by the National Association of Testing Authorities (NATA) for the analysis requested by Jacobs. The laboratory internal quality control processes will include the analysis of:

- Laboratory duplicate samples
- Method blanks
- Matrix spike recoveries
- Surrogate spikes recoveries
- Laboratory control spike recoveries

5.3 Data validation

The primary objective of the data validation process will be to ensure that the data reported can be used to achieve the investigation objectives.

The data validation process will occur at several stages:

- All data collected in the field will be input to the relevant electronic databases upon return to the office. An initial check of these data will be performed by another member of the project team.
- The laboratory will supply a Sample Receipt Notification including whether the security seal was intact, internal temperature of the cooler box and / or whether an attempt to cool was apparent, a list of all samples received and the intended analysis and confirmation of any onward dispatch of split samples to the secondary laboratory. The SRN will be reviewed by Jacobs and any errors or issues will be actioned.
- Upon receipt of laboratory analysis data, Jacobs will conduct a QA check of the data including a review of the laboratory QC report, assessment of field duplicate and split samples and assessment of rinsate and trip blank results. Jacobs will also check that the data has been appropriately uploaded to the ESdat database for the Project and the analysis data is correctly linked to the field data at each location.

Quality control parameters will be assessed against the Data Acceptance Criteria presented in Table 12. Should data be found to fall outside the data acceptance criteria, an investigation will be performed to determine if the data is acceptable or if corrective actions need to be instigated.

Table 12. Data acceptance criteria

Element	Data quality indicator	Method of Assessment	Acceptance Criteria
Field QA/QC			
Field duplicate and split samples	▪ Precision ▪ Comparability	▪ To ensure the primary data is reliable and fit for purpose. ▪ The assessment of blind replicate and split samples is undertaken by calculating the Relative Percent Difference (RPD) of the replicate or split concentration compared with the original sample concentration. The RPD is defined as: $RPD = 100 \times \frac{[x1 - x2]}{Average}$ Where: $x1$and $x2$ are the concentration of the original and replicate or split samples.	▪ Analysed for the same chemicals as the primary sample. ▪ a RPD ≤ 30% will be considered acceptable. Higher RPDs may be acceptable where concentrations are less than 10 times the LOR. This is in line with the general guidance provided in Queensland Government (2018). ▪ Particulates or suspended solids in the water samples can affect analytical results. Field observations and turbidity measurements will also be considered in evaluating the data.
Trip blanks and rinsate samples	▪ Precision ▪ Accuracy ▪ Comparability	▪ Ensure that cross-contamination has not occurred from sampling equipment, sampling procedure, or during storage and transport of samples. ▪ Each trip blank and rinsate sample is analysed as per the original samples.	▪ Each trip blank and rinsate sample is analysed for the full PFAS analytical suite (see Appendix B). ▪ Analytical result < LOR.
Review of Analytical method	▪ Comparability ▪ Sensitivity	▪ The analytical methods and limits of recovery must be confirmed to be appropriate for media and adopted assessment criteria	▪ Laboratory LOR ≤ assessment criteria
Laboratory QA/QC			
Sample Holding Times	▪ Precision ▪ Accuracy	▪ Period between sample collection, extraction and analysis as reported by the laboratory.	▪ For water samples, the samples are to be extracted within 14 days of sample collection and analysed within 28 days of extraction
Laboratory duplicates	▪ Precision	▪ To ensure precision of the analysis method and replicability	▪ As specified in the laboratory QC report.

Element	Data quality indicator	Method of Assessment	Acceptance Criteria
		of analysis due to potential sample heterogeneity. ▪ Assessment as per blind replicates and split samples.	
Matrix spike recoveries	▪ Accuracy	▪ To assess the effect of the matrix on the accuracy of the analytical method used. ▪ Assessment is undertaken by determining the percent recovery of the known spike or addition to the sample. $\% \, Recovery = 100 \times \frac{C - A}{B}$ Where: A = Concentration of analyte determined in the original sample B = Added concentration C = Calculated concentration	▪ As specified in the laboratory QC report.
Method blanks	▪ Accuracy	▪ To determine background contamination or interferences in the analytical process.	▪ Analytical result < LOR.

Note: LOR = Laboratory Level of Reporting (LOR) or the minimum detection limit for a particular analyte.

6. Assessment Criteria

6.1 Groundwater and Surface Water

The assessment levels adopted for groundwater and surface water in this SAQP are based upon the PFAS screening criteria specified in the OMP (Defence, 2021b), which were adopted based on the guidance in the PFAS NEMP (HEPA, 2020). The adopted assessment criteria for groundwater and surface water are detailed in Table 13. Screening levels will be reviewed and updated (if deemed necessary) as part of the OMP review process.

In relation to the ecological assessment criteria, the OMP noted that should data collected as part of the OMP indicate a potential risk for increased uptake of PFAS in biota beyond what was identified as part of the HHERA then additional biota sampling may be recommended.

Table 13. PFAS Adopted Screening Criteria

Exposure Scenario	Adopted Assessment Criteria		Guidance
	PFHxS / PFOS	PFOA	
	µg/L		
Groundwater and Surface Water			
Human Health - Drinking Water Quality Guideline[1]	0.07[2]	0.56	HEPA 2020
Human Health - Surface Water Recreational	2[2]	10	HEPA 2020
Ecological (95% species protection)	0.13[3]	220	HEPA 2020

Notes:

1. Drinking Water screening guidelines have been adopted for screening purposes for Industrial Water use, Stock Water use and Agriculture/Parks/Gardens Water use.
2. Combined PFOS and PFHxS.
3. PFOS only.

In November 2024, the National Health and Medical Research Centre (NHMRC, 2024) released draft health based drinking water guideline values for public consultation. Defence is considering how the draft guidelines, if adopted, may affect its PFAS Investigation and Management Program, and communities surrounding the Defence Estate. Until the revised PFAS guideline values are finalised and published, the current guideline values remain in effect.

A review is being undertaken of historical water use surveys to confirm that there is no use of surface water or groundwater for drinking water purposes in the Management Area. If evidence is found of use of groundwater or surface water for drinking water purposes then appropriate changes to this SAQP, including testing of the water using reduced laboratory detection limits to enable comparison with the draft guidelines may be undertaken. At this stage a reduction in the laboratory detection limits, is not proposed for the Kapooka OMP.

6.2 Sediment

There are currently no Australian regulatory endorsed assessment levels for risk posed to ecology or human health by PFAS in sediment. However, consistent with the DSI and HHERA, the presence or absence of PFAS in sediments will be utilised to obtain a better understanding of the nature of PFAS within the Management Area environment.

6.3 Trigger levels and response

Initial trigger levels and responses were defined in the OMP and are set out in Table 14 below. These will be reviewed with each review of the OMP.

Table 14. OMP trigger levels and responses

Trigger	Response
First time detect of PFAS above laboratory LOR in groundwater	▪ Request the analytical laboratory to reanalyse the sample to verify detection ▪ If initial sample result is verified by the laboratory, resample location within one month and verify detection ▪ If detection verified in second sample, review CSM and potential risks to human health and environment ▪ Notify NSW EPA and other relevant agencies ▪ Consider increasing the monitoring frequency at the location ▪ Implement additional investigations or management actions as required
First time exceedance of the recreational water guideline values in surface water	▪ Request the analytical laboratory to reanalyse the sample to verify detection ▪ If initial sample result is verified by laboratory, resample location within one month and verify detection ▪ Calculate rolling average over a three year (or available data) period for sample results from the same location and compare with the appropriate guideline value ▪ If rolling average exceeds appropriate guideline value, review CSM and potential risks to human health and environment ▪ Notify NSW EPA and other relevant agencies ▪ Consider increasing the monitoring frequency at the location ▪ Implement additional investigations or management actions as required
Increasing PFAS trends in surface water or sewer	▪ Further assessment of the data to determine if additional management actions are required. ▪ Review data against recent rainfall (for surface water and WTP ponds), check if comparing like conditions for samples of surface water across monitoring events. ▪ If increasing PFAS levels in surface water samples from Kapooka Creek are identified then this may indicate the potential for higher PFAS uptake in aquatic biota in Murrumbidgee River. Further sampling and risk assessment may be required. ▪ If increasing PFAS levels in surface water samples from near the Former Quarry are detected, review of sampling plan and addition of sampling points within Sandy Creek may be required
Decreasing PFAS trends in surface water or sewer	▪ Review monitoring frequency and / or need for ongoing monitoring at this location as part of annual OMP review.
Increasing PFAS trends in sediment	▪ Review data along with surface water results ▪ Review surface water levels from time of sampling, consider if additional sampling during a rain event is required. ▪ Review data against the conceptual site model ▪ Consider increasing the monitoring frequency at the location ▪ Implement additional investigations or management actions as required

7. Deviations from the OMP

Only one deviation from the OMP has occurred, with the addition of biannual surface water monitoring location SW680 to the monitoring network as of October 2022. The surface water location is located within a farm dam on private property along the Kapooka Creek flow path.

8. Reporting

8.1 Sampling Event Factual Report

Jacobs will prepare and submit a Sampling Event Factual Report to Defence following the completion of each sampling event. The Sampling Event Factual Report will be prepared in accordance with Defence PFAS OMP Reporting Guidance (Defence, 2024) and will include:

- Details of the scope completed.
- Details of the analytical suite for PFAS analytes.
- A description of the sampling methodologies used.
- Identification of any components of the scope that could not be completed.
- A summary of field observations (e.g. any visual or olfactory observations that may indicate impacts to surface water or groundwater), water quality parameter measurements.
- A summary of any changes to the monitoring network condition that may affect data integrity, or require rectification works, and recommendations for repair, replacement or decommissioning of a location.
- Evaluation of the applicability of adopted assessment levels.
- A presentation of the analysis results in a table that includes comparisons with PFAS guidelines.
- A presentation of groundwater levels for the event on a figure with inferred contours and inferred groundwater flow direction.
- Review of the suitability of the data for assessment purposes (QA/QC evaluation).
- Summary of field parameters and analytical results, with comparison to historical conditions and screening criteria.
- Consideration of results and other information against OMP triggers.
- Summary of key findings
- Inclusion of the following information as attachments:
  - Field data including field water quality parameter and gauging measurements.
  - Chain of custody forms.
  - Laboratory analytical certificates.
  - Equipment calibration certificates.

8.2 Interpretive Report

At the end of each 12-month monitoring period, Jacobs will prepare and submit an Ongoing Monitoring Report to Defence. The Ongoing Monitoring Report will be prepared in accordance with Defence PFAS OMP Ongoing Monitoring Program Reporting Guidance (Defence, 2024) and will include:

- Executive Summary that provides focus on key findings, triggers and what these mean to the community and other stakeholders.
- Evidence of compliance or a summary of deviations to the requirements of the SAQP. Any recommendations for repair, replacement or decommissioning of a location
- Description of the base Site Setting (as outlined in Section 2), with updates based on observations and data collected during the round.

- Contextual and ancillary information that have occurred in the Management area which may affect monitoring results including remediation projects, infrastructure projects and significant weather events.
- Sampling Analysis methodology, including description of any deviations from the SAQP, or if no deviations a statement to that effect.
- Relevant figures depicting sampling locations and site-specific hydrogeological features, management/monitoring areas.
- Evaluation of the applicability of adopted assessment levels, including a discussion of guideline revisions and / or screening criteria as appropriate.
- A presentation of the analytical results in a table that includes comparisons with PFAS guidelines.
- A presentation of groundwater levels for the event on a figure with inferred contours and inferred groundwater flow direction.
- Review of the suitability of the data for assessment purposes (QA/QC evaluation).
- Summary of field parameters and analytical results, with comparison to historical conditions and screening criteria.
- Laboratory results and analysis including comparison with relevant screening criteria.
- Assessment and commentary on appropriate QA/QC procedures.
- Consideration of results and other information against OMP triggers. (e.g., mass flux assessments, remediation validation, data from other programs).
- Discussion to include consideration of key changes observed during the monitoring period, undertake statistical analysis (where appropriate), and consider seasonal variations.
- Data interpretation, including trends in groundwater concentration, gradient and flow directions.
- Assessment of statistically based trends (as described in Step 3 and 5 of the DQOs) that may inform decision making when it comes to the revision of the OMP including whether a review of the Conceptual Site Model is required or whether the risk profile has changed overall, or for any specific location at the base, and a recommendation as to whether this should trigger an OMP and/or PMAP review, or other action.
- Overall summary of the changes and extent of PFAS and whether monitoring has met objectives of the OMP. Any identified changes will also consider whether an action or review is triggered as a result of the observed change.

8.3 Provision of Results to Off-base Landowners

In addition to the reporting of groundwater, surface water and sediment data collected off-base in the factual and ongoing monitoring reports described in Section 8.1 and Section 8.2, the analytical results of off-base sampling will also need to be reported to the landowners, by way of a factual results letter. The results letters will be delivered to the landowners following Defence review and approval and include the following information, as a minimum:

- A brief description of the purpose of the OMP;
- The PFAS assessment levels relevant at the time of sampling;
- The laboratory LORs;
- The analytical results of the samples collected;
- A description of how the data will be used; and
- Contact details of the appropriate Defence representative.

In the event that the results exceed screening criteria, a follow-up consultation will be conducted with the property owner by telephone unless otherwise directed.

Note: Identifying data for private properties, such as addresses, will not be included on the Defence ESdat database. However, the groundwater, surface water, soil, and sediment data will be included in the ESdat database.

8.4 SAQP Review

Prior to each monitoring event, the SAQP will be reviewed to ensure it complies with the following guidelines:

- Heads of Environmental Protection Authority's Australia and New Zealand (HEPA) (2020), PFAS National Environmental Management Plan (NEMP) Version 2.0, January 2020.;
- National Environment Protection (Assessment of Site Contamination) Measure (ASC NEPM), National Environment Protection Council (NEPC), 2013;
- Department of Defence, 2016. Routine Environment Water Quality Monitoring Manual;
- Standards Australia 1998. AS/NZ 5667:1998 Water quality – sampling;
- Australian and New Zealand Guidelines, 2018. Australian and New Zealand Guidelines for Fresh and Marine Water Quality; and
- State guidelines: Environment Protection Authority (EPA) or equivalent state environmental regulators relevant guidelines e.g. NSW EPA Contaminated Land Guidelines, Sampling design Part 1 Application (NSW EPA 2022).

Any changes to the SAQP identified as part of the review are to be documented by way of a revision of the SAQP.

9. References

General References

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21. USEPA (2002), Guidance on Environmental Data Verification and Data Validation (EPA QA/G-8).

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Site Specific References

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24. AECOM (2018b), Preliminary PFAS Assessment, Kapooka, Caltex. Caltex Australia Petroleum Pty Ltd. AECOM.

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26. Department of Defence (2021b), PFAS Ongoing Monitoring Plan (OMP) - Blamey Barracks Kapooka, June 2021.

27. Department of Defence (2021c), PFAS Management Area Plan (PMAP) – Blamey Barracks Kapooka, June 2021

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30. Jacobs (2021), Blamey Barracks Comprehensive PFAS Investigation – Human Health and Ecological Risk Assessment (No. IS253200-040-NP-RPT-0006 Rev4 (23rd June 2021).

31. KBR (2013), Kapooka Training Area Sustainability Monitoring and Reporting Plan (No. MEN208-TDEV-GEB-0005 Rev0). Kellogg Brown & Root Pty Ltd. .

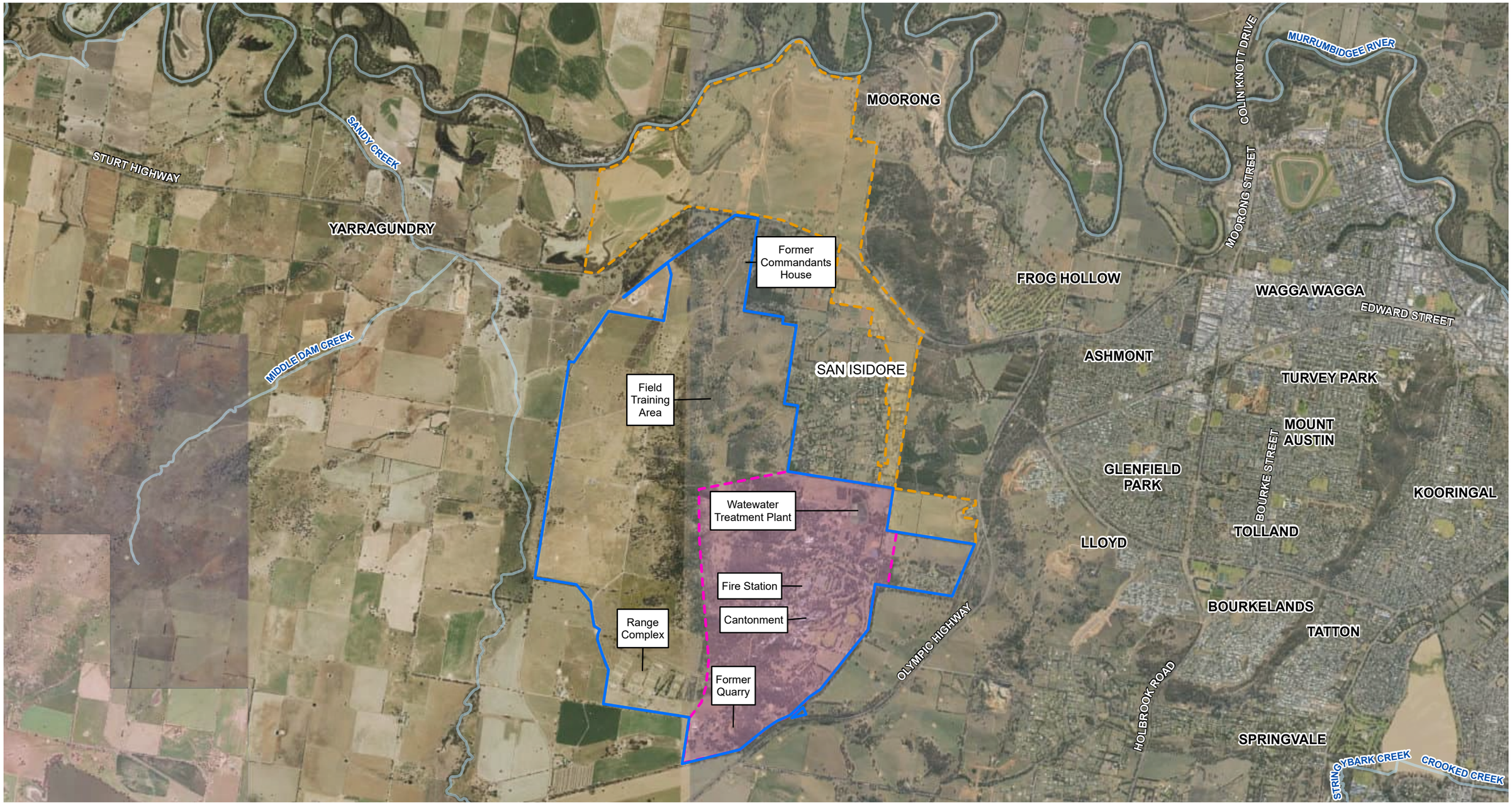
Appendix A. Figures

Figure 1: Blamey Barracks Kapooka – Base Areas

Figure 2: Blamey Barracks Kapooka – PFAS Source and Management Areas

Figure 3: Blamey Barracks Kapooka – OMP Sampling Locations

Figure 4: Blamey Barracks Kapooka – Conceptual Site Model



Site Boundary
Off-Base Management Area
On-Base Management Area
Watercourse

Kilometres
0 1 2
1:50,000 at A3
GDA 1994 MGA Zone 55

Data sources

Jacobs 2024
Department of Customer Service 2024
© Aerometrex Metromaps 2024

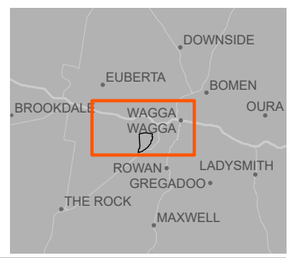


Figure 1 Site Locality Plan and Management Areas

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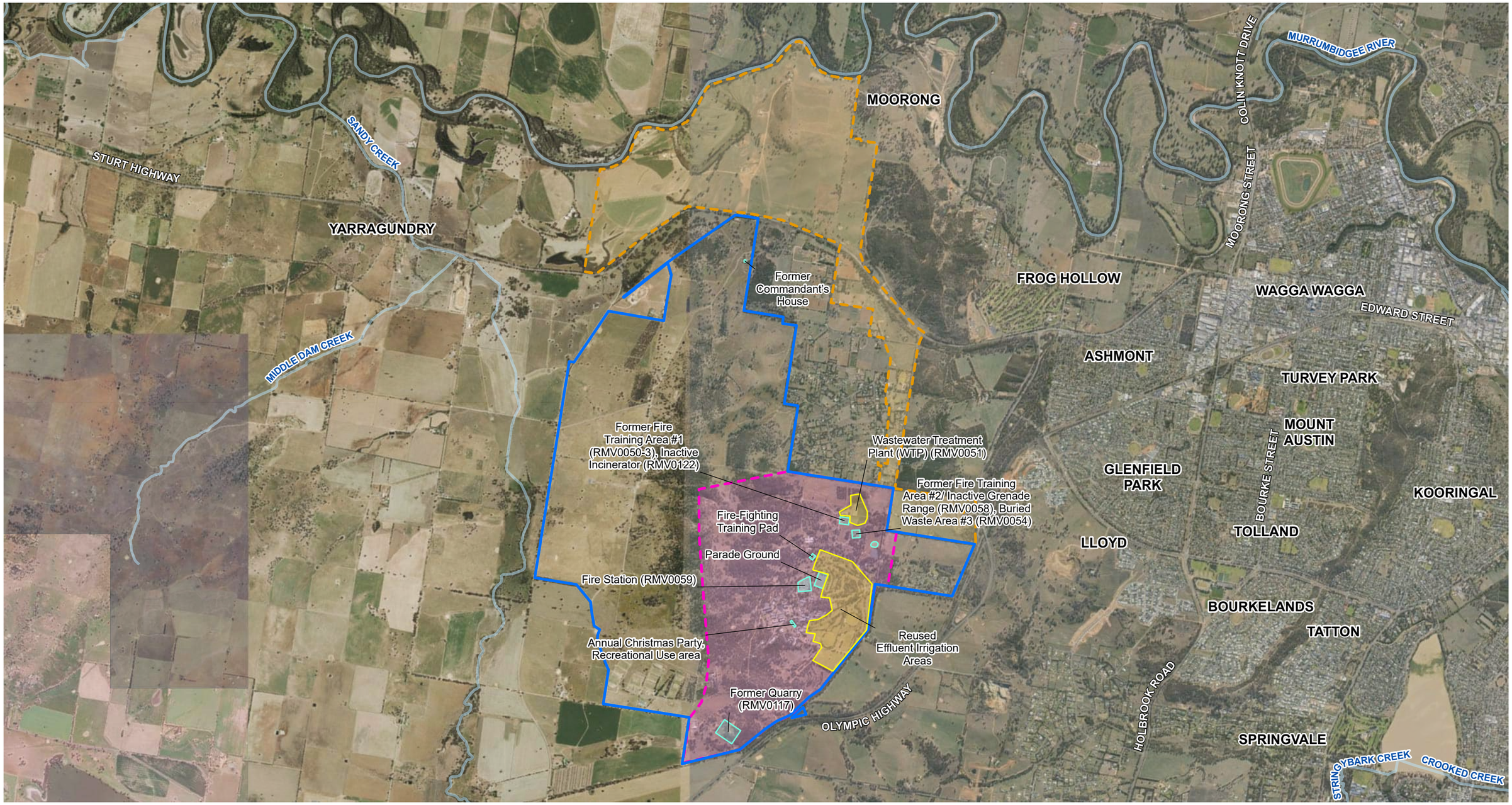

Site Boundary
Off-Base Management Area
On-Base Management Area

Source areas
Primary source area
Secondary source area

Watercourse

Kilometres
0 1 2
1:50,000 at A3
GDA 1994 MGA Zone 55

Data sources

Jacobs 2024
Department of Customer Service 2024
© Aerometrex Metromaps 2024

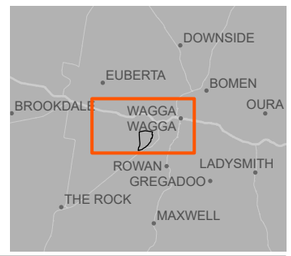

Figure 2 Blamey Barracks Kapooka - PFAS Sources and Management Areas

Date: 4/12/2024 Path: \\ausyd0vs01\GISWork\NSW_IS419100_Kapooka_Holsworthy\Kapooka\Apps\ArcPro\Figures\OMP_SAQPIS41900_OMP_SAQP_Kap.aprx
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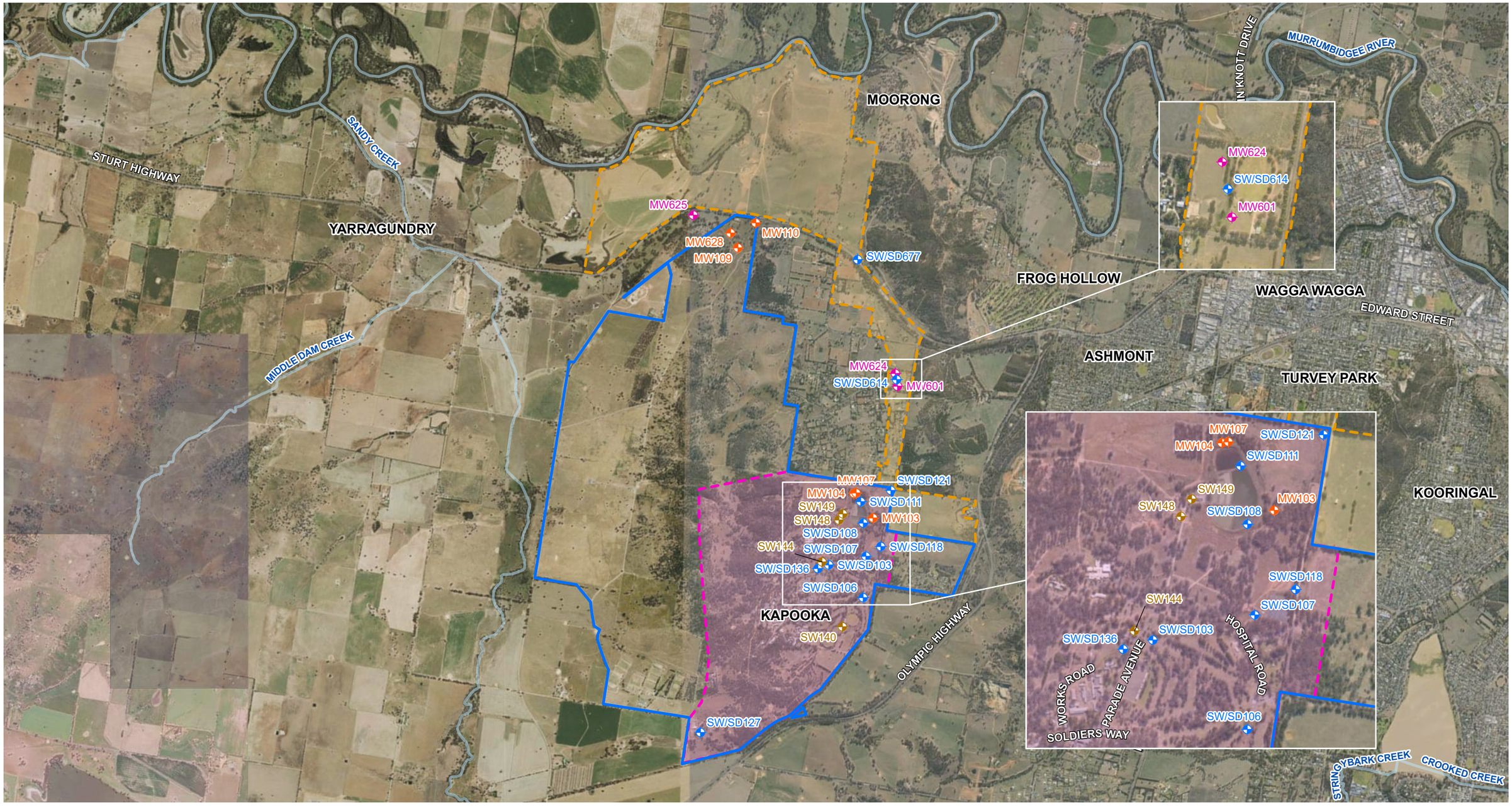

Site Boundary
Off-Base Management Area
On-Base Management Area

Location type
- Surface Water and Sediment Sampling
- Sewer Sampling
- On-Site Groundwater Monitoring Well
- Off-Site Groundwater Monitoring Well

Watercourse

Kilometres
0 1 2
1:50,000 at A3
GDA 1994 MGA Zone 55

Data sources

Jacobs 2024
Department of Customer Service 2024
© Aerometrex Metromaps 2024

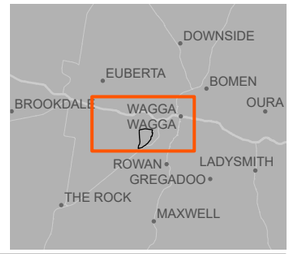

Figure 3 Blamey Barracks Kapooka - OMP Sampling Locations

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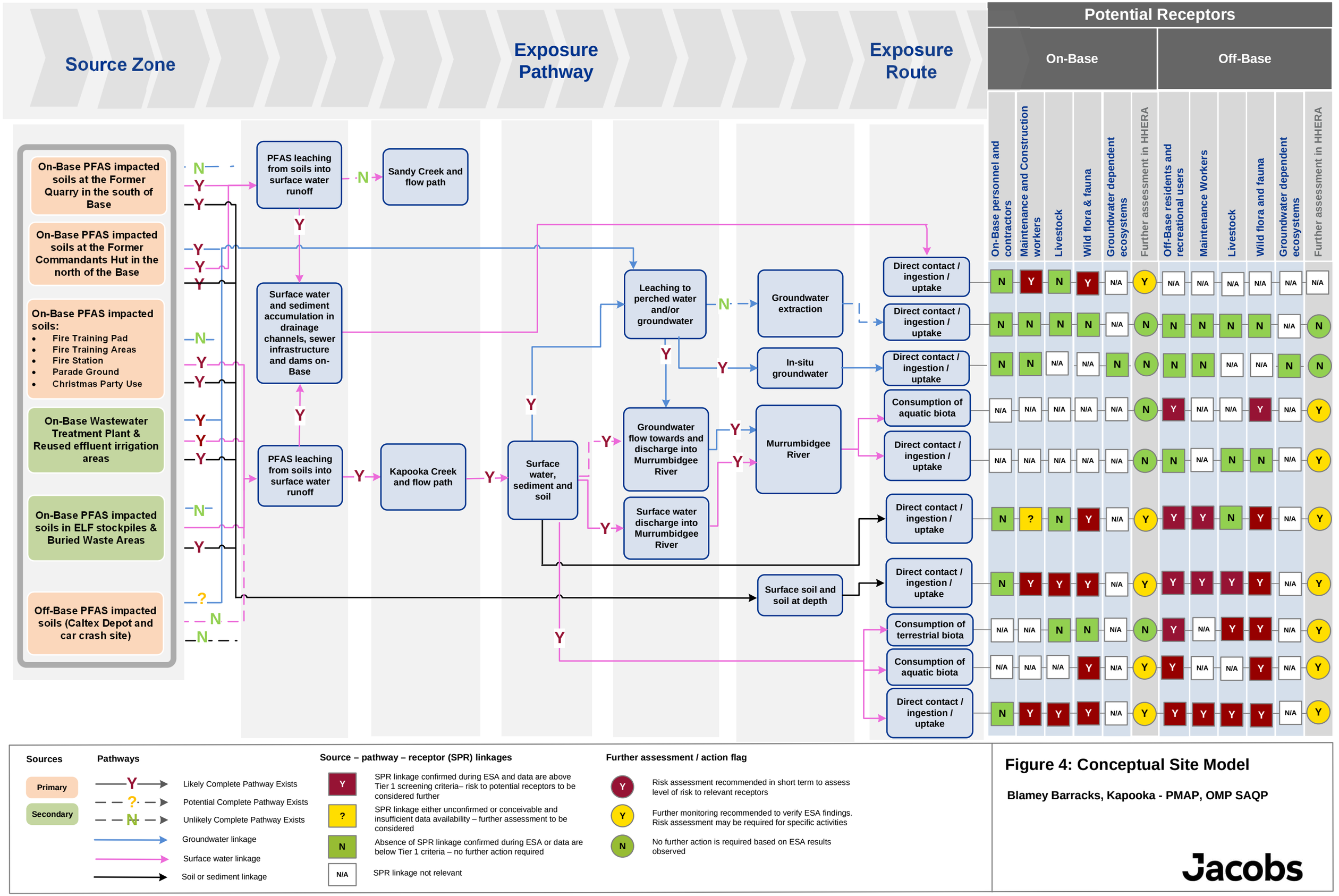

Figure 4: Conceptual Site Model

Blamey Barracks, Kapooka - PMAP, OMP SAQP

Jacobs

Appendix B. Standard PFAS Analytical Suite Guidance

Table 15. PFAS Analytical Suite

Acronym	Name	CAS Number	Standard suite	Reduced suite	Water LOR (µg/L)	Lowest Water Screening Criteria (µg/L) Table 13	Solid LOR (mg/kg)	Lowest Soil Screening Criteria (mg/kg) s6.2	LORs acceptable
Perfluoroalkane Sulfonic Acids									
PFBS	Perfluorobutane sulfonic acid	375-73-5	X	X	0.02	-	0.0002	Presence/absence	Yes
PFPeS	Perfluoropentane sulfonic acid	2706–91-4	X		0.02	-	0.0002	Presence/absence	Yes
PFOS	Perfluorooctane sulfonic acid	1763-23-1	X	X	0.01	0.07	0.0002	Presence/absence	Yes
PFHxS	Perfluorohexane sulfonic acid	355-46-4	X	X	0.02		0.0002	Presence/absence	Yes
PFHpS	Perfluoroheptane sulfonic acid	375-92-8	X		0.02	-	0.0002	Presence/absence	Yes
PFDS	Perfluorodecane sulfonic acid	335-77-3	X		0.02	-	0.0002	Presence/absence	Yes
Perfluoroalkane Carboxylic Acids									
PFBA	Perfluorobutanoic acid	375-22-4	X	X	0.1	-	0.001	Presence/absence	Yes
PFPeA	Perfluoropentanoic acid	2706-90-3	X	X	0.02	-	0.0002	Presence/absence	Yes
PFHxA	Perfluorohexanoic acid	307-24-4	X	X	0.02	-	0.0002	Presence/absence	Yes
PFHpA	Perfluoroheptanoic acid	375-85-9	X	X	0.02	-	0.0002	Presence/absence	Yes
PFOA	Perfluorooctanoic acid	335-67-1	X	X	0.01	0.56	0.0002	Presence/absence	Yes
PFNA	Perfluorononanoic acid	375-95-1	X		0.02	-	0.0002	Presence/absence	Yes
PFDA	Perfluorodecanoic acid	335-76-2	X		0.02	-	0.0002	Presence/absence	Yes
PFUnDA	Perfluoroundecanoic acid	2058-94-8	X		0.02	-	0.0002	Presence/absence	Yes
PFDoDA	Perfluorododecanoic acid	307-55-1	X		0.02	-	0.0002	Presence/absence	Yes
PFTrDA	Perfluorotridecanoic acid	72629-94-8	X		0.02	-	0.0002	Presence/absence	Yes
PFTeDA	Perfluorotetradecanoic acid	376-06-7	X		0.05	-	0.0005	Presence/absence	Yes
FOSA	Perfluorooctane sulfonamide	754-91-6	X		0.02	-	0.0002	Presence/absence	Yes
MeFOSA	N - Methyl perfluorooctane sulfonamide	31506-32-8	X		0.05	-	0.0005	Presence/absence	Yes

Acronym	Name	CAS Number	Standard suite	Reduced suite	Water LOR (µg/L)	Lowest Water Screening Criteria (µg/L) Table 13	Solid LOR (mg/kg)	Lowest Soil Screening Criteria (mg/kg) s6.2	LORs acceptable
EtFOSA	N - Ethyl perfluorooctane sulfonamide	4151-50-2	X		0.05	-	0.0005	Presence/absence	Yes
MeFOSE	N - methyl perfluorooctane sulfonamidoethanol	24448-09-7	X		0.05	-	0.0005	Presence/absence	Yes
EtFOSE	N - Ethyl perfluorooctane sulfonamidoethanol	1691-99-2	X		0.05	-	0.0005	Presence/absence	Yes
MeFOSAA	N - methyl perfluorooctane sulfonamidoacetic acid	2355-31-9	X		0.02	-	0.0002	Presence/absence	Yes
EtFOSAA	N - ethyl perfluorooctane sulfonamidoacetic acid	2991-50-6	X		0.02	-	0.0002	Presence/absence	Yes
(n:2) Fluorotelemer Sulfonic Acids									
4:2 FTS	4:2 Fluorotelomer sulfonic acid	757124-72-4	X	X	0.05	-	0.0005	Presence/absence	Yes
6:2 FTS	6:2 Fluorotelomer sulfonic acid	27619-97-2	X	X	0.05	-	0.0005	Presence/absence	Yes
8:2 FTS	8:2 Fluorotelomer sulfonic acid	39108-34-4	X	X	0.05	-	0.0005	Presence/absence	Yes
10:2 FTS	10:2 Fluorotelomer sulfonic acid	120226-60-0	X	X	0.05	-	0.0005	Presence/absence	Yes

Appendix D. Stantec (2024a). Blamey Barracks Kapooka, Biannual Sampling Event Report (October 2023)

PFAS OMP Factual Report

Biannual Sampling Event October 2023

Blamey Barracks Kapooka

DEF19008

Prepared for
Department of Defence

15 February 2024

Cardno
now
Stantec

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List of Abbreviations and Units

Chemical Names

DO	Dissolved Oxygen
PFAS	Per- and Poly-fluoroalkyl Substances
PFHxS	Perfluorohexane sulfonate, or perfluorohexane sulfonic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonate, or perfluorooctane sulfonic acid
TDS	Total Dissolved Solids (salinity of water)

Technical Terms

AFFF	Aqueous Film-Forming Foam
AHD	Australian Height Datum
ANZECC	Australian and New Zealand Environment and Conservation Council
AS	Australian Standard
BGL	Below Ground Level
CoC	Chain of Custody
DCMM	Defence Contamination Management Manual
EC	Electrical Conductivity
EPA	Environment Protection Authority
HDPE	High-density polyethylene
HHERA	Human Health and Ecological Risk Assessment
HSL	Health Screening Level
LOR	Limit of Reporting
N/A	Not Applicable
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council
NEPM	National Environmental Protection Measure
ORP	Oxidation Reduction Potential
QA	Quality Assurance
QC	Quality Control
RPD	Relative Percentage Difference
SAQP	Sampling and Analysis Quality Plan
SWL	Standing Water Level
WTP	Wastewater Treatment Plant

Units

cm	Centimetre
Ha	Hectares
m	Metres
mAHD	Metres above Australian Height Datum
mBGL	Metres Below Ground Level
mbTOC	Metres below Top of Casing
mg/kg	Milligrams per Kilogram (approximately equivalent to ppm)
mg/L	Milligrams per Litre
mm	Millimetre
mV	Millivolt
ppm	Parts per Million
µg/L	Micrograms per Litre
µS/cm	Micro Siemens per Centimetre (Electrical Conductivity – Water)

Base Specific

ESdat	Environmental data management software
MA	Management Area
OMP	Ongoing Monitoring Plan
PMAP	PFAS Management Area Plan

1 Introduction

1.1 Background

Cardno, now Stantec (Cardno) was engaged by the Department of Defence ("Defence") to carry out the Per- and Poly-fluoroalkyl Substances (PFAS) Ongoing Monitoring Plan (OMP) at Blamey Barracks Kapooka ("the Base"). The location of the Base is displayed in Figure 1 of Appendix A.

The OMP was carried out in accordance with the scope and limitations presented in Cardno's Sampling and Analysis Quality Plan (SAQP):

> Cardno, 27 October 2023, Reference: DEF19008, *PFAS Ongoing Monitoring Plan Sampling and Analysis Quality Plan (SAQP), Rev5*, Blamey Barracks Kapooka

For the purposes of this report:

> The "On-Base Management Area" is defined as a portion of the Base including the eastern built-up portion of the Base from the Former Quarry in the south to the Wastewater Treatment Plant (WTP) in the north. It extends as far west as the natural ridgeline that runs north-south through the middle of the Base and to the east to include the Kapooka Creek flow pathway (Figure 1, Appendix A);

> The "Off-Base Management Area" includes the Kapooka Creek flow pathway on public land and all private properties which have some portion of the flow pathway passing through them. This area stretches from the Base, north all the way to the Murrumbidgee River (Figure 1, Appendix A);

> The "Management Area" (MA) is comprised of the "On-Base Management Area" and the "Off-Base Management Area" (Figure 1, Appendix A).

> The "Monitoring Area" is defined as the Base and the surrounding Off-Base areas that collectively encompasses the network of OMP monitoring locations (Figure 2, Appendix A).

1.2 Purpose & Objectives

The objective of the OMP is to assess the changes in the nature and extent of PFAS in groundwater, surface water and sediment, specifically where there is an identified potentially elevated risk to a receptor or a potential future risk to a receptor associated with Defence's historical use of Aqueous Film-Forming Foam (AFFF) including PFAS. The OMP will also provide confirmation of our current understanding of risk.

The purpose of this PFAS OMP factual report is to provide an up-to-date status of the condition of the Base as it is currently understood in relation to the most recent sampling event.

The objectives of the report are:

> To provide a succinct summary of the October 2023 sampling event and provision of analytical results with supporting tables and figures.

> To provide confirmation of the current understanding of risk.

> To provide supporting data for the assessment of management actions, where relevant.

1.3 Relevant Guidelines

This assessment has been undertaken in general accordance with applicable industry standards for a site investigation for the purpose, objectives and scope identified in this report. These standards are set out in:

> Australian and New Zealand Guidelines, (2018), *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*.

> Australian Standard AS 4482-2005, *Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 - Non-volatile and semi-volatile compounds*.

> Department of Defence, (2019a), *Contamination Management Manual* (DCMM), August 2019.

> Department of Defence, (2019b), *Pollution Prevention Management Manual – Annex 1L: Pollution Prevention Guidance - Routine Water Quality Monitoring*.

> EPA NSW, (2002), *The NSW State Groundwater Dependant Ecosystems Policy*, April 2002.

- EPA NSW, (2004), *Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales*, Publication 1669.2, March 2004
- NSW EPA, (2016), Designing Sampling Programs for Sites Potentially Contaminated by PFAS.
- Heads of Environmental Protection Authority's Australia and New Zealand (HEPA), (2020), *PFAS National Environmental Management Plan (NEMP)*, Version 2.0, January 2020.
- National Environment Protection Council (NEPC), (1999), *National Environmental Protection (Assessment of Site Contamination) Measure (as amended 2013) (ASC NEPM)*.
- National Health and Medical Research Council (NHMRC), (2019), *Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water*, August 2019.
- Standards Australia, (1998), *AS/NZ 5667:1998, Water quality – sampling*.
- U.S. Environmental Protection Agency (EPA), (2000), *Guidance for the Data Quality Objectives Process (EPA QA/G-4)*.
- USEPA, (2002), *Guidance on Environmental Data Verification and Data Validation (EPA QA/G-8)*.

2 Scope of Work

Cardno carried out the following tasks in order to satisfy the purpose and objectives of this assessment.

2.1 Review / Revision of the SAQP

Cardno undertook a review of the SAQP prior to commencement of sampling and completed updates to bring the SAQP in line with *the PFAS Ongoing Monitoring Program Sampling, Analysis and Quality Plan Guidance* (2023) document. The SAQP (Cardno, 2023) will be reviewed and revised (as required) prior to the next monitoring event scheduled for April 2024.

2.2 Groundwater Monitoring

Sampling of groundwater monitoring wells was performed in accordance with the SAQP, applying methods set out in Section 3.1 of this report. The groundwater monitoring wells monitored as part of the OMP biannual event are presented in Table 2-1, and are shown in Figure 2, Appendix A.

Table 2-1 Groundwater Monitoring Locations

Monitoring Area	Location ID	Total
WTP	On-Base: MW103, MW104, MW107	Three Location IDs
Former Commandants House	On-Base: MW008, MW109, MW110 Off-Base: MW625	Four Location IDs
Kapooka Creek flow pathway	Off-Base: MW601, MW624	Two Location IDs

2.3 Surface Water Monitoring

Sampling of surface water locations was performed in general accordance with the SAQP, applying methods set out in Section 3.2 of this report. The surface water sampling locations monitored as part of the OMP are presented in Table 2-2, and are shown in Figure 2, Appendix A.

Table 2-2 Surface Water Monitoring Locations

Monitoring Area	Location ID	Total
Overland drainage pathways On-Base	On-Base: SW103, SW106, SW107, SW118, SW136	Five Location IDs
Kapooka Creek	On-Base: SW121 Off-Base: SW614, SW677, SW680	Four Location IDs

Monitoring Area	Location ID	Total
Sewer	On-Base: SW140, SW144, SW148, SW149	Four Location IDs
WTP ponds	On-Base: SW108, SW111	Two Location IDs
Overland drainage pathways – Former Quarry	On-Base: SW127	One Location ID

2.4 Sediment Monitoring

Sampling of sediment locations was performed in accordance with the SAQP, applying methods set out in Section 3.3 of this report. The sediment sampling locations monitored as part of the OMP are presented in Table 2-3, and are shown in Figure 2, Appendix A.

Table 2-3 Sediment Monitoring Locations

Monitoring Area	Location ID	Total
Overland drainage pathways On-Base	SD103, SD106, SD107, SD118, SD136	Five Location IDs
Kapooka Creek	On-Base: SD121 Off-Base: SD614, SD677	Three Location IDs
WTP ponds	On-Base: SD108, SD111	Two Location IDs
Overland drainage pathways – Former Quarry	On-Base: SD127	One Location ID

2.5 Data Management

All the data included in the report has been collected, uploaded to the ESdat database and reviewed according to the data management requirements of the DCMM Annex L (Defence, 2021b).

2.6 Deviations from the OMP SAQP

Deviations from the SAQP were attributed to a lack of sampling media, as summarised in Table 2-4. On-Base and Off-Base sampling and testing was undertaken at nine groundwater monitoring wells, 14 surface water monitoring locations and 11 sediment monitoring locations.

Table 2-4 Deviations from the SAQP

Location	Deviation	Comment/Justification	Impact on Existing Dataset
Surface Water			
SW106	Not Sampled	Location Dry	Minor impact - the Sum of PFHxS and PFOS has been above the limit of reporting (LOR) in both the October 2022 and April 2023 events, with PFOS detected above the LOR for the first time in the previous event. However, locations SW118 and SW121, both located downstream along the onsite overland drainage pathway leading to Kapooka Creek, were sampled in this event.
SW677	Not Sampled	Location Dry	Potential data gap – historically, location is dry with only one sample collected in November 2022. PFOS and Sum of PFHxS and PFOS results were reported above LOR but below criteria. This location is the most down-stream monitoring location along the Kapooka Creek pathway and thus closest to down-stream receptors. It may be worth discussing with the PFAS Management Area Plan (PMAP) Lead Consultant to identify a suitably representative alternative location to sample should this location be dry.

3 Methodology

3.1 Groundwater Sampling Methodology

Groundwater monitoring was undertaken as detailed in Table 3-1.

Table 3-1 Groundwater Sampling Method

Activity	Details
Dates of Field Activity	11 to 16 October 2023
Well Gauging	Standing Water Levels (SWL) were gauged using an interface probe. All wells were measured against a specified mark at the top of the well casing.
Groundwater Water Quality Parameters	Groundwater water quality parameters were recorded with a water quality meter after sample collection using extra sample water from within the HydraSleeve® decanted into a clean jar. With the exception of MW008, sampling was completed via HydraSleeve® technique. MW008 was sampled by low-flow micropurge as specified in the OMP (Jacobs, 2021b), which states that "MW008 is not suitable for sampling with HydraSleeve® due to the approximate one-metre diameter of the well". Groundwater quality parameters were monitored and recorded during groundwater removal (purging), prior to collecting groundwater samples for laboratory analysis. The following water quality parameters were recorded using a water quality meter: ▪ pH. ▪ Electrical conductivity (EC). ▪ Oxidation reduction potential (ORP). ▪ Dissolved oxygen (DO). ▪ Temperature. Water quality parameters measured by the water quality meter were recorded on field data records. All field instruments (e.g. water quality meter) were calibrated to verify the accuracy of the measurements taken. Bump tests were also completed daily by field staff during the monitoring event. Calibration certificates and bump test records have been provided in Appendix D.
Deployment of HydraSleeve®	The HydraSleeves® were deployed with attached weights in order for sample collection to begin at the lowest point of the well screen. All existing HydraSleeves® were replaced following sampling during the previous sample event. HydraSleeve® were left in wells for a minimum of 24 hours to allow restabilisation of the well following the slight disturbance caused by sampler deployment, before sampling.
Retrieval of HydraSleeves® (Sample Collection)	Samples were collected via continuous pull method at a rate allowing the water to pass through the check valve into the sample sleeve. Samples were discharged into laboratory sample bottles immediately (to minimise changes in chemistry) via a discharge tube. All HydraSleeves® were replaced with new HydraSleeves® after sampling in preparation for the next sampling event.
Sample collection by low-flow Micropurge (MW008)	Groundwater sampling commenced once the water quality parameters had stabilised, indicating that they represent natural groundwater in the aquifer. Samples were collected directly into appropriately preserved laboratory supplied bottles and packed in chilled containers for delivery to the laboratory under Chain of Custody (CoC) documentation. Disposable High-Density Polyethylene (HDPE) tubing was utilised for sampling and was taken Off-Base for disposal following completion of sampling.
Decontamination procedure	New HydraSleeves® were used at each groundwater monitoring well, thus removing the need for decontamination. All re-usable sampling equipment and down-hole equipment (interface probe and low flow pump) were thoroughly washed using phosphate-free detergent (Liquinox), then double rinsed with de-ionised water before the sample collection.

Activity	Details
Sample identification, preservation transport and holding times	Each sample was labelled with the sample location, date, project identification number and sampler's initials. Samples were collected directly into appropriately preserved laboratory supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under CoC documentation. Sample containers, preservation procedures, sample storage requirements and holding times were undertaken in accordance with those recommended by Standards Australia (AS/NZS 5667.1:1998).
Laboratory Testing	All groundwater samples were analysed for the full PFAS analytical suite (see SAQP for full list of analytes). The primary laboratory was ALS Global Laboratories (Springvale), and the secondary laboratory (quality control) was Eurofins (Dandenong South). Both laboratories are National Association of Testing Authorities (NATA)-accredited for the parameters tested. Copies of the NATA stamped laboratory reports and CoC documentation are included in Appendix C.
Laboratory Testing – Quality Control	Groundwater quality control samples were collected as follows and analysed for the full PFAS analytical suite: ▪ Field duplicate (intra-laboratory) samples at one per 10 water samples (one sample). ▪ Field triplicate (inter-laboratory) samples at one per 10 water samples (one sample). ▪ Rinsate blank samples at one per day [collected off re-used sampling/down-hole equipment] (five samples total). ▪ Trip blank samples of one per shipment included in the chilled sample containers upon transport to the laboratory (three samples total).

3.2 Surface Water Sampling Methodology

Surface water monitoring was undertaken using a grab method as detailed in Table 3-2.

Table 3-2 Surface Water Sampling Method

Item	Details
Dates of Field Activity	11 to 16 October 2023
Water Level Gauging	Water depths were measured where relevant with a measuring pole following sample collection.
Water Quality Parameters	Surface water quality parameters (i.e. pH, EC, ORP, DO, and temperature) were recorded at the time of sampling using a pre-calibrated water quality meter. Field observations such colour, odours, suspended solids, sheen presence, condition of the water body that was sampled from such as the type (lake, stream etc.) and channel width were also recorded on field sampling sheets.
Sampling Method	Where possible, the samples were collected directly into sample containers. The sample bottles were positioned at least 10 cm below the surface water level and above the sediment bed and orientated with the opening facing downwards to avoid the collection of surface films. Where access to surface water samples was difficult, the samples were collected by attaching the sample bottles to a long-handled sampling device (telescopic pole) which was directly filled by lowering the sample bottle into the surface water body. The sample bottles were attached so that the telescopic pole was not in direct contact with the opening of the sample bottle. Samples were collected in accordance with Australian/New Zealand Standards (AS/NZS 5667.1:1998) '*Water quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples'*.
Decontamination	All re-usable sampling equipment (telescopic pole) were thoroughly washed using phosphate-free detergent (Liquinox), and subsequently double rinsed with clean water before the sample collection.

Item	Details
Sample identification, preservation, transport and holding times.	Each sample was labelled with the sample location, date, project identification number and sampler's initials. Sample labelling and naming was in accordance with Annex L of the DCMM (Defence, 2021b). Samples were contained in appropriately preserved laboratory supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under CoC documentation. Sample containers, preservation procedures, sample storage requirements and holding times were undertaken in accordance with those recommended by Standards Australia (AS/NZS 5667.1:1998).
Laboratory Testing	All surface water samples were analysed for the full PFAS analytical suite (see SAQP for full list of analytes). The primary laboratory was ALS Global Laboratories (Springvale), and the secondary laboratory (quality control) was Eurofins (Dandenong South). Both laboratories are NATA-accredited for the parameters tested. Copies of the NATA stamped laboratory reports and CoC documentation are included in Appendix C.
Laboratory Testing – Quality Control	Surface water quality control samples were collected as follows and analysed for the full PFAS analytical suite: ▪ Field duplicate (intra-laboratory) samples at one per 10 water samples (two samples). ▪ Field triplicate (inter-laboratory) samples at one per 10 water samples (two samples). ▪ Rinsate blank samples at one per day [collected off re-used sampling equipment] (five samples total). ▪ Trip blank samples of one per shipment included in the chilled sample containers upon transport to the laboratory (three samples total).

3.3 Sediment Sampling Methodology

Sediment monitoring was undertaken as detailed in Table 3-3.

Table 3-3 Sediment Sampling Method

Item	Details
Dates of Field Activity	11 to 16 October 2023
Sample Collection	Sediment samples were collected from the approximate midpoint of the flow pathway and collected from the top 10 centimetres after removal of the immediate surface material using the required hand tools (e.g. hand trowel, sediment corer or hand auger), with samples placed directly into appropriately labelled, laboratory supplied sample containers and packed in chilled containers for delivery to the laboratory under CoC documentation. Sediment samples were collected after the co-located surface water sample was collected to prevent agitating sediments into the water body and surface water sample matrix. At each sampling location, the sediment sample was visually assessed and observations (physical description including makeup, colour, visible signs of contamination and moisture) recorded on field data sheets.
Decontamination	All re-usable sampling equipment (hand trowel or sediment corer) were thoroughly washed using phosphate-free detergent (Liquinox), and subsequently double rinsed with clean water before the sample collection.
Sample identification, preservation, transport and holding times.	Each sample was labelled with the sample location, date, project identification number and sampler's initials. Sample labelling and naming was in accordance with Annex L of the DCMM (Defence, 2021b). Samples were contained in appropriately preserved laboratory supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under CoC documentation. Sample containers, preservation procedures, sample storage requirements and holding times were undertaken in accordance with those recommended by Standards Australia (AS/NZS 5667.1:1998).

Item	Details
Laboratory Testing	All sediment samples were analysed for the full PFAS analytical suite (see SAQP for full list of analytes). The primary laboratory was ALS Global Laboratories (Springvale), and the secondary laboratory (quality control) was Eurofins (Dandenong South). Both laboratories are NATA-accredited for the parameters tested. Copies of the NATA stamped laboratory reports and CoC documentation are included in Appendix C.
Laboratory Testing – Quality Control	Sediment quality control samples were collected as follows and analysed for the full PFAS analytical suite: ▪ Field duplicate (intra-laboratory) samples at one per 10 sediment samples (two samples). ▪ Field triplicate (inter-laboratory) samples at one per 10 sediment samples (two samples). ▪ Rinsate blank samples at one per day [collected off re-used sampling equipment] (five samples total). ▪ Trip blank samples of one per shipment included in the chilled sample containers upon transport to the laboratory (three samples total).

3.4 Quality Control (QC) / Quality Assurance (QA)

A critical aspect of site assessments is the demonstration of the quality of the data used as the basis for the assessment. This is achieved through a Data Validation process which includes a review of the following data quality indicators, as described in the SAQP:

> QA documentation.

> Bias.

> Data Representativeness.

> Data Precision & Accuracy.

> Data Comparability.

> Data Set Completeness.

A detailed review of these aspects has been undertaken, the results of which are presented in Appendix E. A summary of the data validation from the QA/QC review is included in Section 4.5 below.

3.5 Assessment Criteria

3.5.1 Groundwater and Surface Water

The adopted assessment criteria for groundwater and surface water are detailed in Table 3-4. The assessment levels adopted for groundwater and surface water are based upon the PFAS screening criteria specified in the OMP (Jacobs, 2021c), which were adopted based on the guidance in the PFAS NEMP (HEPA, 2020).

Table 3-4 Criteria for Groundwater and Surface Water

Exposure Scenario	Adopted Assessment Criteria		Guidance
	PFHxS / PFOS	PFOA	
	µg/L		
Human Health - Drinking Water Quality Guideline[1]	0.07[2]	0.56	HEPA 2020
Human Health - Surface Water Recreational	2[2]	10	HEPA 2020
Ecological (95% species protection)	0.13[3]	220	HEPA 2020

1. Drinking Water screening guidelines have been adopted for screening purposes for Industrial Water use, Stock Water use and Agriculture/Parks/Gardens Water use.
2. Combined PFOS and PFHxS.
3. PFOS only. 95% species protection guideline values adopted for screening of results, in accordance with the OMP (Jacobs, 2021c).

3.5.2 Sediment

There are currently no Australian regulatory endorsed assessment levels for risk posed to ecology or human health by PFAS in sediment.

4 Field Observations and Results

4.1 Conditions Impacting the Sampling Event

In the seven days prior to the sampling event, 13.6 mm of rain was recorded at the nearest weather station (74272), located on the Kapooka Base. October 2023 rainfall was 21.4 mm, which is lower than the monthly October average between 2018 and 2022 of 36.8 mm.

No On-Base activities with the potential to impact sample collection or the results were noted.

4.2 Groundwater

4.2.1 Summary of Field Observations

4.2.1.1 Water quality parameter measurements

Stabilised water quality parameters, water colour and turbidity observations recorded during the groundwater sampling program are presented in field sampling record sheets, included in Appendix D. Water quality parameters for conductivity at MW103 reported a decrease from 2,451 µs/cm in April 2023 to 449.0 µs/cm within this event. MW109 reported significant changes to water quality parameters with a decrease in DO from 7.39 mg/L to 0.00 mg/L, conductivity from 16 µs/cm to 668 µs/cm, ORP from 178.9 mV to -7.9 mV.

Water quality parameters for all other locations were generally consistent with April 2023 data. Groundwater varied from clear to brown with low to high turbidity.

4.2.1.2 Groundwater Elevation and Flow Direction

Groundwater elevation during this sampling event ranged from 169.66 metres Australian Height Datum (mAHD) (MW625) to 220.10 mAHD (MW107), which is generally consistent with previous monitoring events.

Regional groundwater flow is inferred to be in a north-westerly direction, towards the Murrumbidgee River, consistent with previous monitoring events.

Groundwater elevation contours and flow directions are shown in Figure 3, Appendix A. Gauging records are presented in Appendix D.

4.2.2 Groundwater Laboratory Results

The results of laboratory analysis have been compared against adopted assessment criteria, and are presented in Table B1, Appendix B, and summarised in Table 4-1 below. Of the nine primary samples that were tested, PFOA was reported above the LOR in 2 samples, and PFOS+PFHxS in four samples.

Table 4-1 Summary of Groundwater Results Exceeding Adopted Criteria

Analytes	Locations Exceeding Criteria	Lowest Criteria (µg/L)	Max Conc. (µg/L)	No. Analytical Results >LOR	No. Results Above Criteria	Significant Concentration Changes[3]
PFOS	MW601	0.13[2]	0.37	4	1	-
PFOA	NA	0.56[1]	0.04	2	0	-
PFOS+PFHxS	MW008, MW103, MW107, MW601	0.07[1]	0.79	4	4	MW103 (increase)

1. Drinking water assessment criteria
2. Ecological assessment criteria
3. Significant concentration change defined as an order of magnitude increase or decrease

One new exceedance of PFOS+PFHxS was reported at MW103 at a concentration of 0.14 ug/L.

No first-time detections or new exceedances of guideline values were reported for PFOS and PFOA at the remaining locations.

Results have also been compared against available historical data. One location reported a significant change in concentration for this monitoring event:

> MW103: PFOS+PFHxS has increased by one order of magnitude from a previous result of <0.01 µg/L in April 2023 to 0.14 µg/L in this event.

A summary of locations where a first-time detection of PFOS, PFOS+PFHxS or PFOA or a new exceedance of guideline values were reported, is provided in Table 4-2 below. The laboratory reports are provided in Appendix C.

Table 4-2 Summary of Groundwater Results with First-time Detections or New Exceedances

Deviation Type	Surface Water Location	PFOS+PFHxS concentration (µg/L)		PFOA concentration (µg/L)		PFOS concentration (µg/L)	
		October 2023	Previous Maximum	October 2023	Previous Maximum	October 2023	Previous Maximum
First-time detections	MW103	0.14	0.06	0.04	0.02	0.02	0.02

Note:
Location with first-time detection of PFOS+PFHxS, PFOA or PFOS in latest monitoring round
Location with a new exceedance of lowest adopted guideline values in latest monitoring round
Bold: Exceedance of lowest adopted guideline values

4.3 Surface Water

4.3.1 Summary of Field Observations

4.3.1.1 Water quality parameter measurements

Water quality parameters, water colour and turbidity observations recorded during the surface water sampling program are presented in field sampling record sheets, included in Appendix D. Field observations indicated that sampled locations generally had similar water levels and flow rates compared with the previous monitoring event in April 2023. SW136 reported a significant increase in ORP, from -9.4 mV to 90.1 mV. Surface water varied from clear to brown with generally low turbidity.

4.3.2 Laboratory Results

The results of laboratory analysis have been compared against adopted assessment criteria, presented in Table B2, Appendix B, and summarised in Table 4-3 below. Of the 15 primary samples that were tested, PFOA was reported above the LOR for five samples, with PFOS+PFHxS reported above the LOR in 13 samples.

Table 4-3 Summary of Surface Water Results Exceeding Adopted Criteria

Analytes	Locations Exceeding Criteria	Lowest Criteria (µg/L)	Max Conc. (µg/L)	No. Analytical Results >LOR	No. Results Above Criteria	Significant Concentration Changes[3]
PFOS	SW103, SW107, SW118, SW121, SW136	0.13[2]	1.21	13	5	SW118 (increase) SW136 (increase)
PFOA	NA	0.56[1]	0.04	5	0	-
PFOS+PFHxS	SW103, SW107, SW121, SW127, SW136, SW614, SW680	0.07[1]	1.91	13	7	SW118 (increase) SW136 (increase)

1. Drinking water assessment criteria
2. Ecological assessment criteria
3. Significant concentration change defined as an order of magnitude increase or decrease

Results have also been compared to available historical data. Two locations have reported a significant change in concentration for this monitoring event:

- SW118: PFOS+PFHxS has increased by one order of magnitude from a previous result of 0.02 µg/L in April 2023 to 0.47 µg/L in this event. PFOS has also increased by one order of magnitude from a previous result of 0.02 µg/L in April 2023 to 0.38 µg/L in this event.
- SW136: PFOS+PFHxS has increased by one order of magnitude from a previous result of 0.04 µg/L in April 2023 to 1.21 µg/L in this event. PFOS has also increased by one order of magnitude from a previous result of 0.06 µg/L in April 2023 to 1.91 µg/L in this event.

All other concentrations reported during this event were generally consistent with previous sampling events.

No first-time detections or exceedances of criteria were reported in any samples for this event. The laboratory reports are provided in Appendix C.

4.3.3 Summary of Monitoring Network Condition and Repairs

No changes to the monitoring network condition were noted during the fieldwork.

4.4 Sediment

4.4.1 Summary of Field Observations

Odour, colour and other observations recorded during the sediment sampling program are presented in field sampling record sheets, included in Appendix D. Field observations were generally consistent with the previous monitoring event in April 2023.

4.4.2 Laboratory Results

National assessment criteria have not been established for PFAS in sediment. The results of laboratory analysis have been compared against historical results, presented in Table B3, Appendix B and summarised below:

- Of the 11 primary samples analysed, 10 samples reported PFOS+PFHxS concentrations above the LOR. All 11 samples analysed reported concentrations below LOR for PFOA.
- No locations reported a significant change in concentration for this monitoring event.
- No first-time detections of PFOA or PFOS+PFHxS were reported.

4.5 Data Validation

The data validation process has concluded that there are no significant systematic errors in the data collection process. Therefore, the data set used as the basis for the surface water, groundwater and

sediment assessment is considered valid and complete. A detailed Data Quality Review is included in Appendix E.

5 Summary and Conclusions

Cardno conducted the October 2023 biannual groundwater, surface water and sediment monitoring event at Blamey Barracks Kapooka as part of the PFAS OMP. On-Base and Off-Base sampling and testing was undertaken at nine groundwater monitoring wells, 14 surface water locations and 11 sediment locations.

Groundwater levels were gauged in all accessible wells before sampling. Regional groundwater flow is inferred to be in a north-westerly direction, towards the Murrumbidgee River, consistent with the previous monitoring event. It is noted that the first-time exceedance of drinking water criteria for PFOS+PFHxS in MW103 triggers a need for review and further assessment of potential risk to regional groundwater and groundwater users in this area, as per the OMP.

Table 5-1 Summary of Results

Activity	Details
Deviations from OMP SAQP	> Two surface water locations (SW106 and SW677) could not be sampled as the locations were dry.
Groundwater Analytical Results	> Nine groundwater samples were collected in total. > No locations reported a first-time detection for PFOS, PFOS+PFHxS or PFOA. > One location reported a new exceedance of the lowest adopted assessment criteria for PFOS+PFHxS (MW103). > One groundwater monitoring location (MW103) reported an order of magnitude increase in PFOS+PFHxS results compared to the previous event.
Surface Water Analytical Results	> 14 surface water samples were collected in total. > No locations reported a first-time detection for PFOS+PFHxS, PFOS or PFOA. > Two surface water monitoring locations (SW118 and SW136) reported an order of magnitude increase in PFOS and PFOS+PFHxS results compared to the previous event. > All other results were generally consistent with results reported in the previous event.
Sediment Analytical Results	> 11 sediment samples were collected in total. > No sediment locations reported a first-time detection for PFOS, PFOA or PFOS+PFHxS. > No significant concentration changes were reported, and results were generally consistent with results reported in the previous event.
Next Scheduled Monitoring Event	> The next OMP monitoring event is scheduled for April 2024. > SAQP to be reviewed and updated as required prior to the next monitoring event. > Consideration should be given by Defence, the PMAP Lead Consultant and the OMP Service Provider, on an alternative location to sample in the future should SW677 continue to found to be dry. > No other actions which require completion prior to the next monitoring round have been identified.

6 References

General References

1. Australian and New Zealand Guidelines, (2018), *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*.
2. Department of Defence (2019b), *Pollution Prevention Management Manual – Annex 1L: Pollution Prevention Guidance - Routine Water Quality Monitoring*.
3. Department of Defence, Department of Energy, 2018, *Quality System Manual Schedule B15*.
4. Department of Defence (2021a) *Defence OMP Factual Report Preparation Guidance*, Revised May 2021.
5. Department of Defence (2021b), *Defence Contamination Management Manual (DCMM), Annex L – Data Management*, August 2018, Amended June 2021.
6. Directorate of PFAS Investigation and Remediation Infrastructure Division (2023), *PFAS Ongoing Monitoring Program Sampling, Analysis and Quality Plan Guidance*, Version 0.1, January 2023, Department of Defence.
7. National Environment Protection Council (2013), *National Environment Protection (Assessment of Site Contamination) Measure,* December 1999, Amended April 2013.
8. NSW EPA (2002), The NSW State Groundwater Dependant Ecosystems Policy, April 2002.
9. NSW EPA (2004), Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales, Publication 1669.2, March 2004.
10. NSW EPA (2016), Designing Sampling Programs for Sites Potentially Contaminated by PFAS.
11. NSW EPA (2014), Waste Classification Guidelines – Part 1: Classification of Waste, November 2014.
12. Environmental Protection Agency (United States EPA; 2002) EPA/240/R-02/004 *Guidance on Environmental Data Verification and Data Validation,* November 2002.
13. The Heads of EPAs Australia and New Zealand (HEPA; 2020) *PFAS National Environmental Management Plan (NEMP) Version 2.0*, January 2020.
14. National Environment Protection Council (NEPC; 1999 - amended 2013) *National Environmental Protection (Assessment of Site Contamination) Measure (as amended),* registered May 2013.
15. National Health and Medical Research Council (2011 – updated 2018) *National Water Quality Management Strategy Australian Drinking Water Guidelines*, 6 August 2018.
16. Nation Health and Medical Research Council (NHMRC; 2019) *Guidance on Per and Poly-fluoroalkyl Substances (PFAS) in Recreational Water,* August 2019.
17. Standards Australia/Standards New Zealand (1998) AS5667.1:1998 *Water Quality – Sampling, Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples*.
18. US EPA (2006) *Guidance for the Data Quality Objectives Process* (EPA QA/G-4), United States Environmental Protection Agency.
19. US EPA (2002) *Guidance on Environmental Data Verification and Data Validation,* Reference: EPA/240/R-02/004, United States Environmental Protection Agency, November 2002.

Base Specific References

20. Jacobs (2019) Blamey Barracks *Comprehensive PFAS Investigation. Detailed Site Investigation (DSI)*, September 2019.
21. Jacobs (2021a) Blamey Barracks *Comprehensive PFAS Investigation. Human Health and Ecological Risk Assessment (HHERA)*, 23 June 2021.
22. Jacobs (2021b) *Blamey Barracks Kapooka; PFAS Management Area Plan (PMAP)*, June 2021.
23. Jacobs (2021c) *PFAS Ongoing Monitoring Plan*, June 2021.
24. Cardno (2023) *PFAS Ongoing Monitoring Plan Sampling and Analysis Quality Plan (SAQP),* Rev5, Blamey Barracks Kapooka. Prepared for Department of Defence, 27 October 2023.

APPENDIX

A

FIGURES

Cardno

now

Stantec

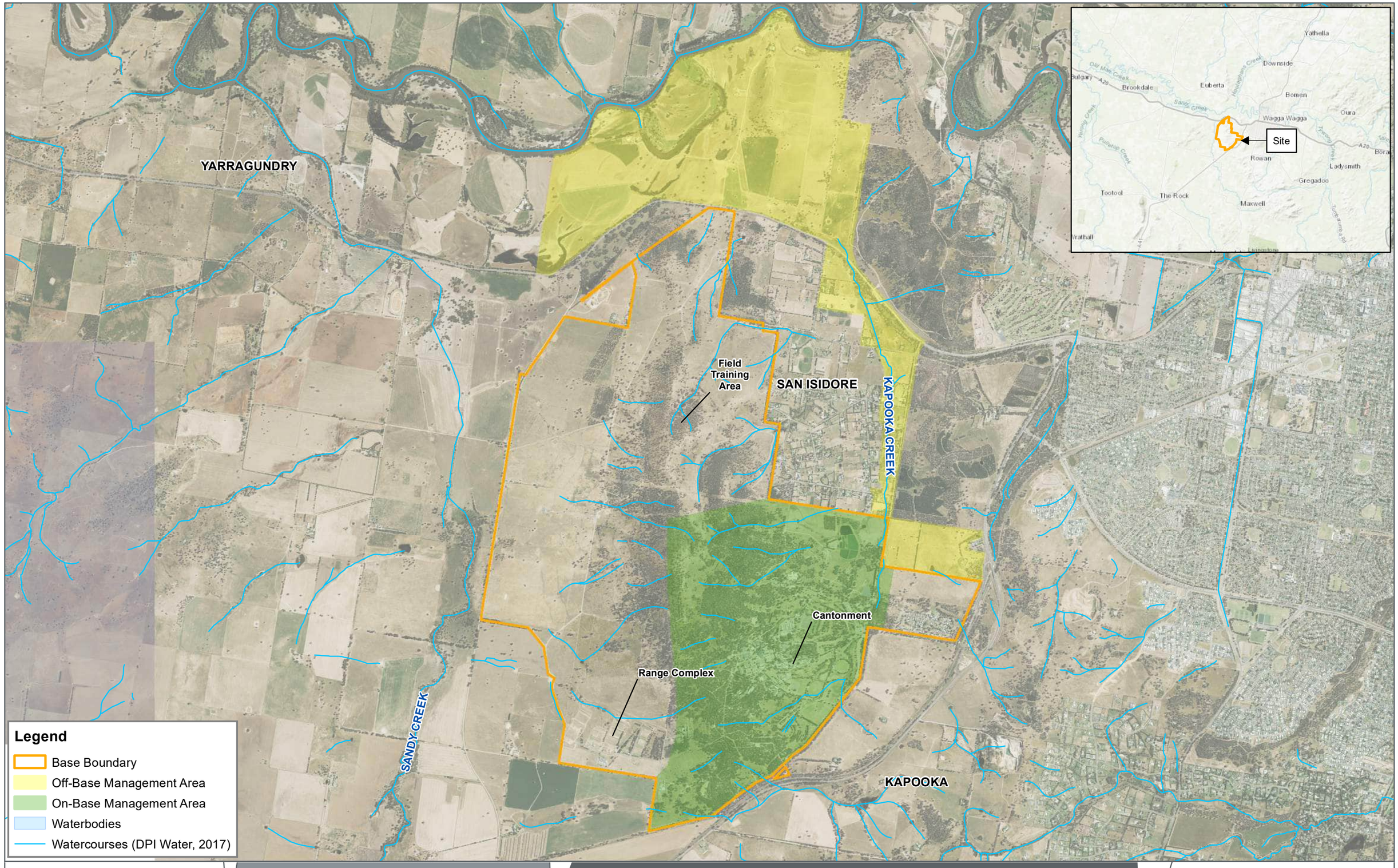


FIGURE 1

1:40,000 Scale at A3

Metres

0 1,000 2,000

Site Locality Plan & Management Areas

BIANNUAL SAMPLING EVENT
BLAMEY BARRACKS KAPOOKA
DEPARTMENT OF DEFENCE

N

Cardno now Stantec

Map Produced by Cardno now Stantec
Date: 2023-03-24 | Project: DEF19008
Coordinate System: GDA2020 MGA Zone 55
Map: DEF19008-GS-0164-SiteLocalityPlan_K.mxd 02
Aerial Imagery Supplied by Metromap (February, 2022)

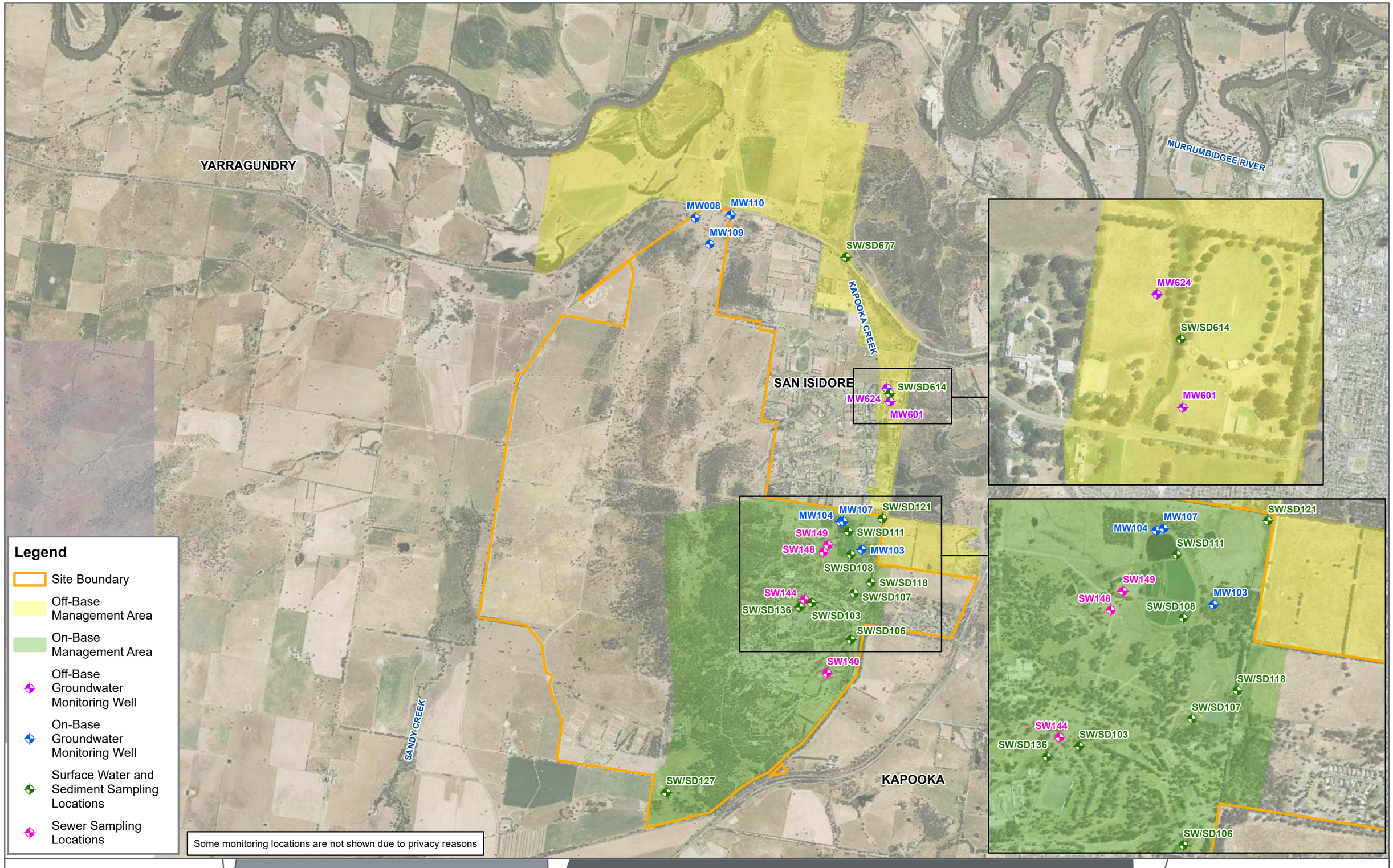


FIGURE 2

1:40,000 Scale at A3

Metres

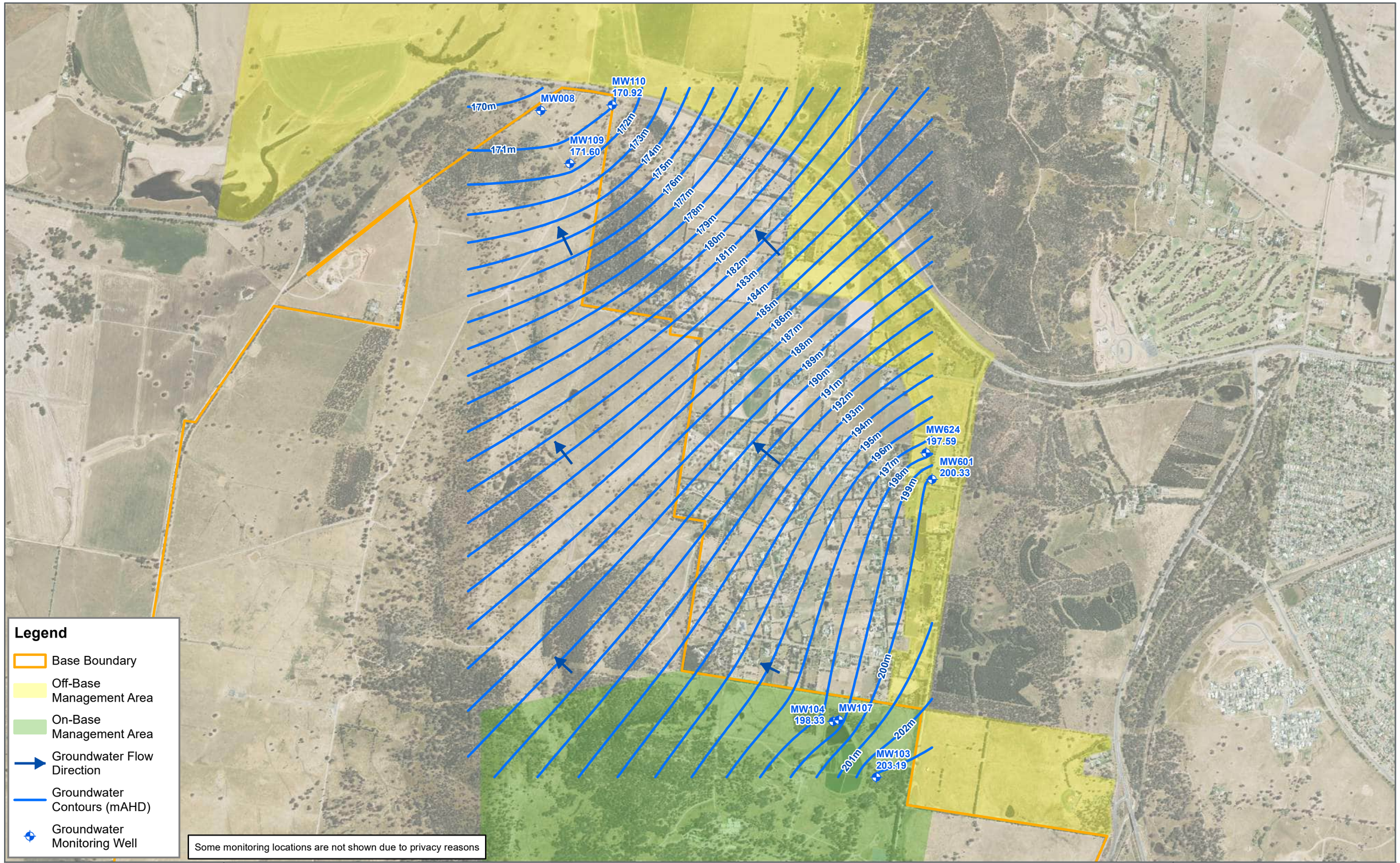
0 1,000 2,000

Sampling Locations

BIANNUAL SAMPLING EVENT
BLAMEY BARRACKS KAPOOKA
DEPARTMENT OF DEFENCE

Cardno now Stantec

Map Produced by Cardno now Stantec
Date: 2023-11-15 | Project: DEF19008
Coordinate System: GDA2020 MGA Zone 55
Map: DEF19008-GS-0166-SampleLocationsN_K.mxd 02
Aerial Imagery Supplied by Metromap (February, 2022)


MW110
170.92
MW008
170m
MW109
171.60
171m
172m
173m
174m
175m
176m
177m
178m
179m
180m
181m
182m
183m
184m
185m
186m
187m
188m
189m
190m
191m
192m
193m
194m
195m
196m
197m
198m
199m
MW624
197.59
MW601
200.33
200m
202m
201m
MW104
198.33
MW107
MW103
203.19
Legend
Base Boundary
Off-Base Management Area
On-Base Management Area
Groundwater Flow Direction
Groundwater Contours (mAHD)
Groundwater Monitoring Well
Some monitoring locations are not shown due to privacy reasons
FIGURE 3
1:20,000 Scale at A3
Metres
0
500
1,000
Groundwater Elevation Contours (October, 2023)
BIANNUAL SAMPLING EVENT
BLAMEY BARRACKS KAPOOKA
DEPARTMENT OF DEFENCE
N
Cardno now Stantec
Map Produced by Cardno now Stantec
Date: 2023-11-15 | Project: DEF19008
Coordinate System: GDA2020 MGA Zone 55
Map: DEF19008-GS-0383-GW_Contours_E5_K.mxd 01
Aerial Imagery Supplied by Metromap (February, 2022)

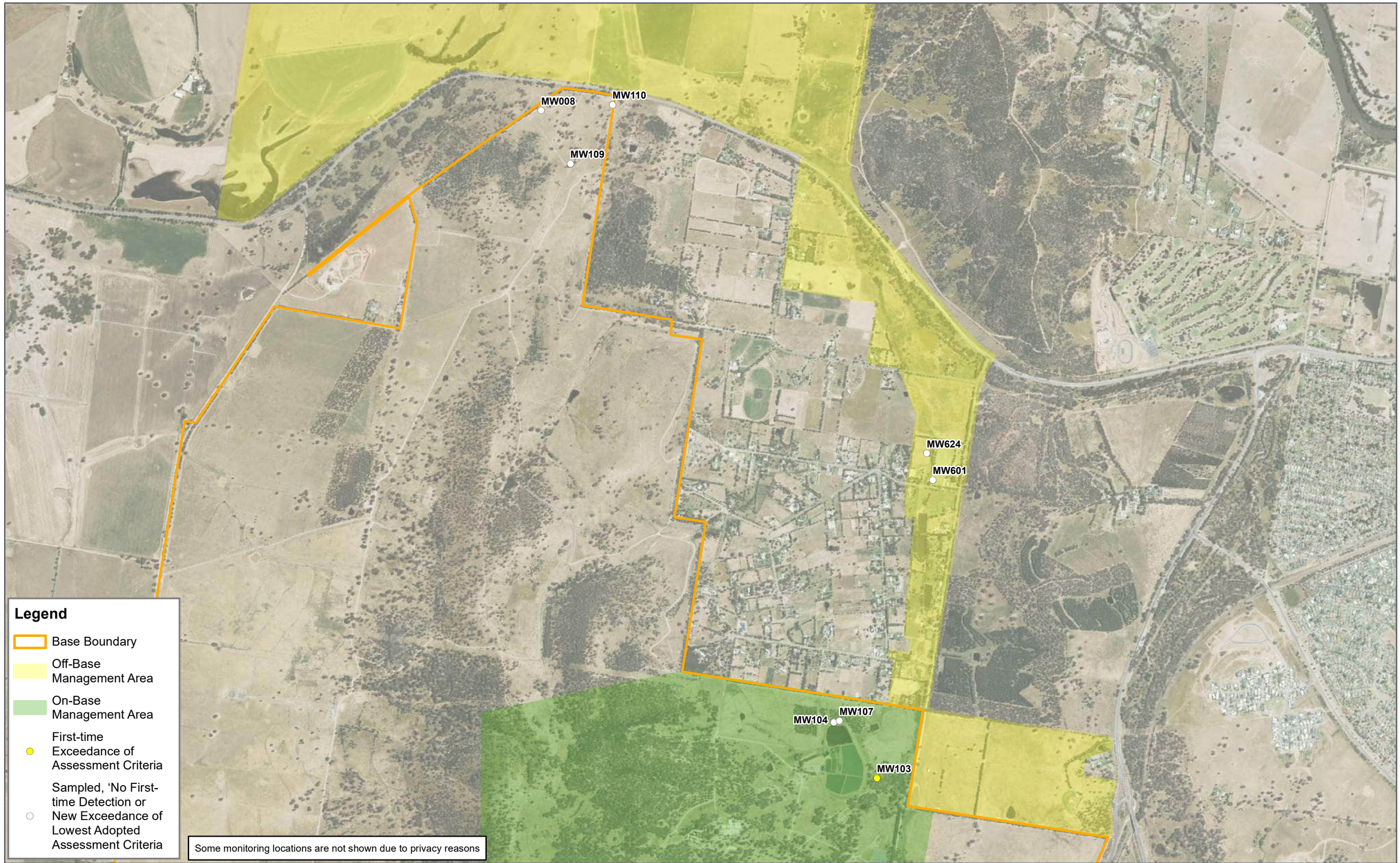


FIGURE 4

1:20,000 Scale at A3

Metres

0 500 1,000

PFAS Results Summary - Groundwater (October, 2023)

BIANNUAL SAMPLING EVENT
BLAMEY BARRACKS KAPOOKA
DEPARTMENT OF DEFENCE

N

Cardno now Stantec

Map Produced by Cardno now Stantec
Date: 2023-11-15 | Project: DEF19008
Coordinate System: GDA2020 MGA Zone 55
Map: DEF19008-GS-0384-GW_PFAS_Summary_E5_K.mxd 01
Aerial Imagery Supplied by Metromap (February, 2022)

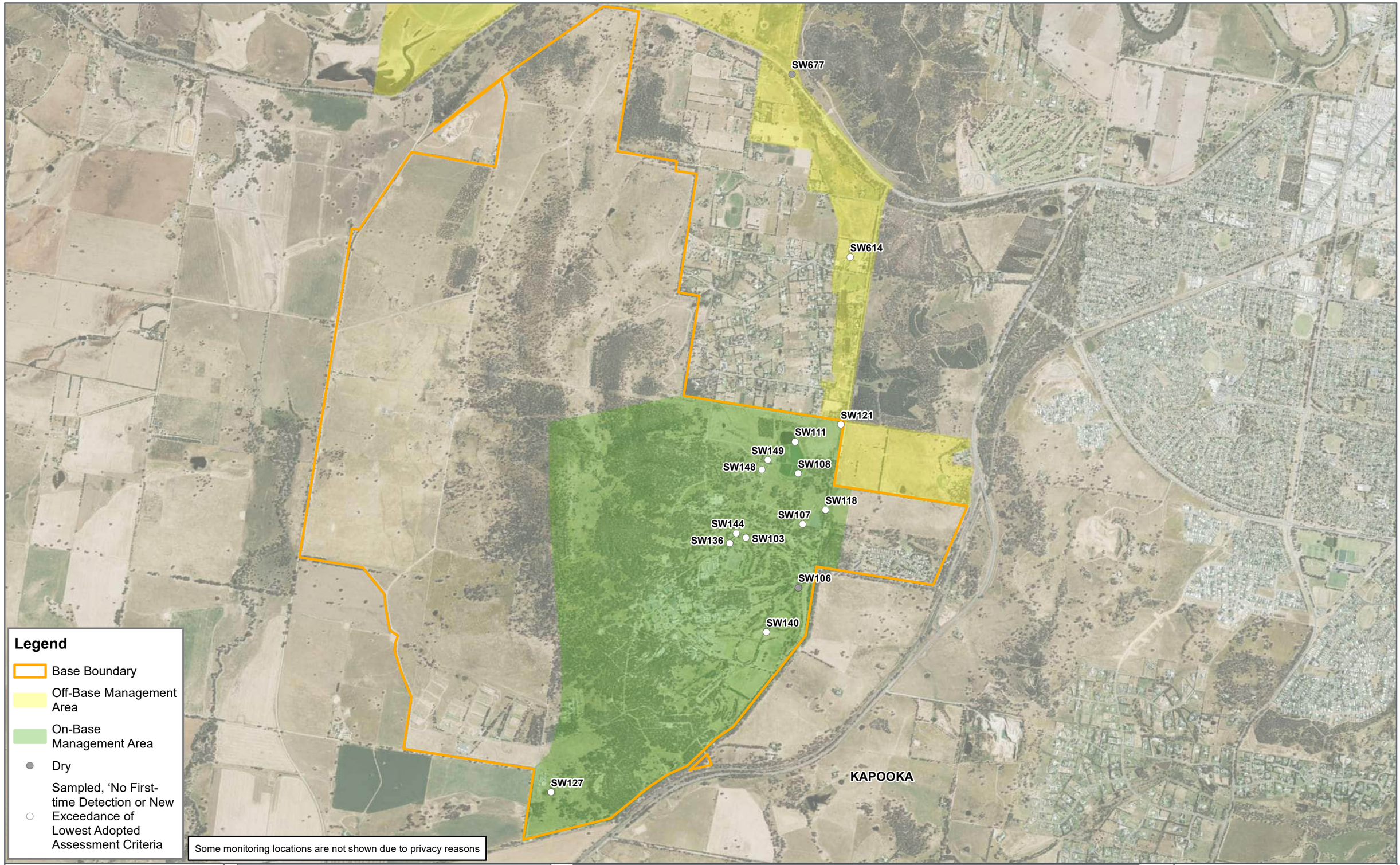


FIGURE 5

1:30,000 Scale at A3

Metres

0 500 1,000

PFAS Results Summary - Surface water (October, 2023)

BIANNUAL SAMPLING EVENT
BLAMEY BARRACKS KAPOOKA
DEPARTMENT OF DEFENCE

Cardno now Stantec

Map Produced by Cardno now Stantec
Date: 2023-11-15 | Project: DEF19008
Coordinate System: GDA2020 MGA Zone 55
Map: DEF19008-GS-0385-SW_PFAS_Summary_E5_K.mxd 01
Aerial Imagery Supplied by Metromap (February 2022)

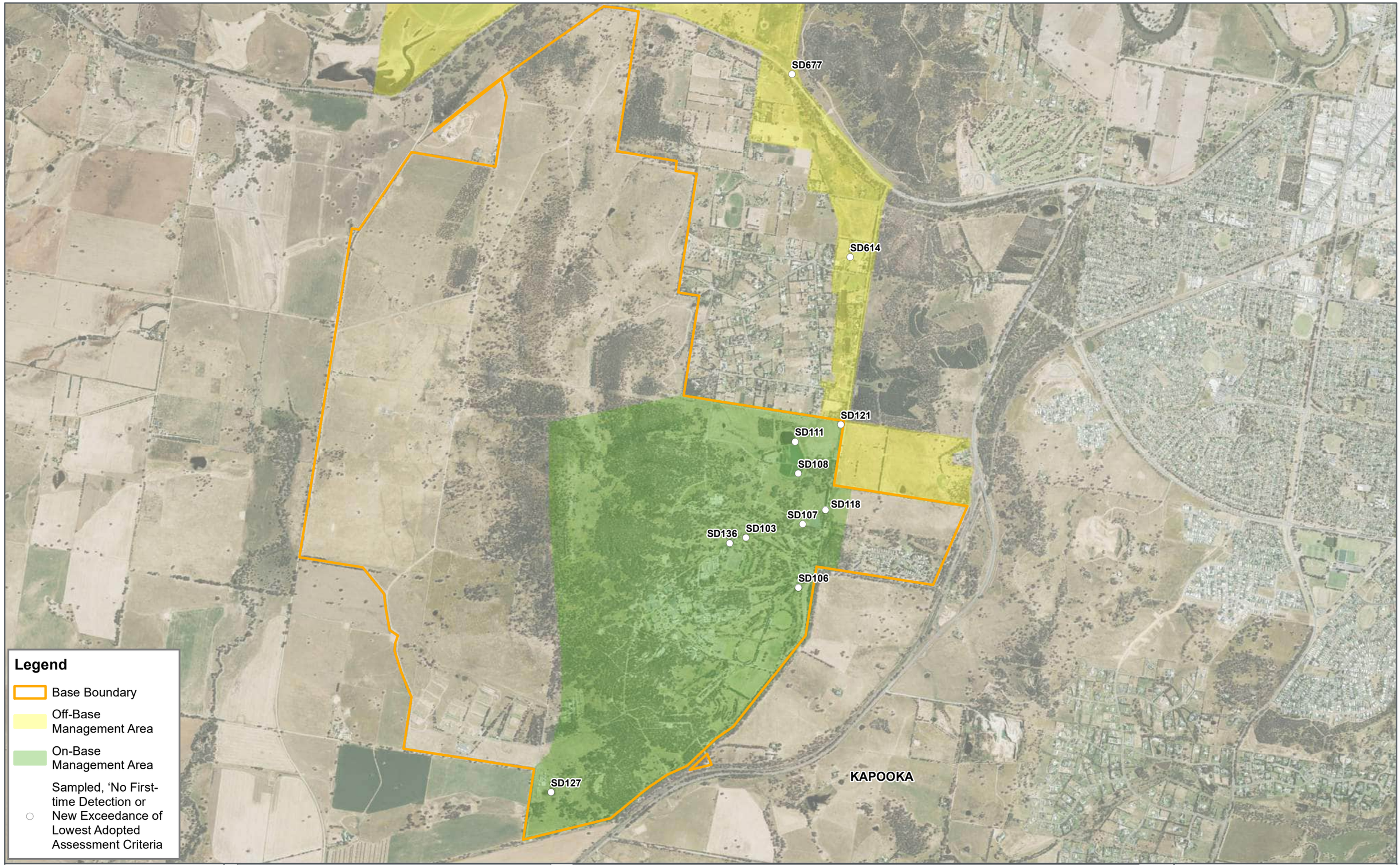


FIGURE 6

1:30,000 Scale at A3

Metres

0 500 1,000

PFAS Results Summary - Sediment (October, 2023)

BIANNUAL SAMPLING EVENT
BLAMEY BARRACKS KAPOOKA
DEPARTMENT OF DEFENCE

Cardno now Stantec

Map Produced by Cardno now Stantec
Date: 2023-11-15 | Project: DEF19008
Coordinate System: GDA2020 MGA Zone 55
Map: DEF19008-GS-0386-SED_PFAS_Summary_E5_K.mxd 01
Aerial Imagery Supplied by Metromap (February, 2022)

APPENDIX

B

DATA ASSESSMENT TABLES

Cardno

now

Stantec

						Perfluorocarbons																
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorononanesulfonic acid (PFNS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)
						µg/L	µg/L	µg/L	UG/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	UG/L	µg/L	µg/L	µg/L	µg/L	µg/L
					LOR	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water							**0.56**	**0.07**															
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*															
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report No.**																		
MW008	On-Base	16 Mar 2017	0315_MW008_170316	Normal	ES1706394	0.0252	<0.0005	**0.111**	-	0.0145	0.0088	0.0855	0.0034	<0.0005	0.023	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
		18 Dec 2018	0315_MW008_S_181218	Normal	ES1838696	0.04	<0.01	**0.14**	-	<0.02	<0.02	0.10	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC102_181218	Field_D	ES1838696	0.04	<0.01	**0.14**	-	<0.02	<0.02	0.10	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC104_181218	Field_D	ES1838696	0.04	<0.01	**0.15**	-	<0.02	<0.02	0.11	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC202_181218	Interlab_D	635075	0.09	<0.01	**0.23**	-	0.01	0.01	0.14	<0.01	<0.01	<0.05	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01
		09 Mar 2020	0315_MW008_S_200309	Normal	ES2008982	0.06	<0.01	**0.23**	-	<0.02	<0.02	0.17	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC101_200309	Field_D	ES2008982	0.06	<0.01	**0.23**	-	<0.02	<0.02	0.17	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC201_200309	Interlab_D	239048	0.05	<0.01	**0.18**	-	0.01	<0.01	0.13	<0.01	<0.02	<0.02	<0.02	<0.01	-	<0.01	<0.01	<0.02	<0.02	<0.05
		28 Oct 2021	0315_MW008_20211028	Normal	ES2139229	0.03	<0.01	**0.11**	-	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		28 Apr 2022	0315_MW008_20220428	Normal	EM2208205	0.02	<0.01	**0.10**	-	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	0315_MW008_20221103	Normal	EM2222407	0.04	<0.01	**0.13**	-	<0.02	<0.02	0.09	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		12 Apr 2023	0315_MW008_20230412	Normal	EM2306946	0.02	<0.01	**0.11**	-	<0.02	<0.02	0.09	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	0315_MW008_231012	Normal	EM2318619	0.02	<0.01	**0.11**	-	<0.02	<0.02	0.09	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
MW103	On-Base	20 Feb 2019	0315_MW103_S_190220	Normal	ES1905450	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		28 Oct 2021	0315_MW103_20211028	Normal	ES2139229	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		29 Apr 2022	0315_MW103_20220429	Normal	EM2208205	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	0315_MW103_20221103	Normal	EM2222407	<0.01	0.02	0.06	-	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02	<0.02
		13 Apr 2023	0315_MW103_20230413	Normal	EM2306946	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC105_20230413	Field_D	EM2306946	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC205_20230413	Interlab_D	982794	<0.01	<0.01	<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
		12 Oct 2023	0315_MW103_231012	Normal	EM2318619	0.02	0.04	**0.14**	-	0.03	<0.02	0.12	<0.02	<0.02	<0.1	0.02	0.06	-	0.03	<0.02	<0.02	<0.02	<0.02
MW104	On-Base	20 Feb 2019	0315_MW104_S_190220	Normal	ES1905450	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		28 Oct 2021	0315_MW104_20211028	Normal	ES2139229	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		28 Apr 2022	0315_MW104_20220428	Normal	EM2208205	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	0315_MW104_20221103	Normal	EM2222407	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		15 Apr 2023	0315_MW104_20230415	Normal	EM2306946	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	0315_MW104_231012	Normal	EM2318619	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC104_231012	Field_D	EM2318619	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC204_20230413	Interlab_D	1036476	<0.01	<0.01	<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
MW107	On-Base	30 Jan 2019	0315_MW107_P_190130	Normal	ES1902996	<0.01	<0.01	**0.10**	-	<0.02	<0.02	0.10	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		07 Mar 2019	0315_MW107_P_190307	Normal	ES1907492	0.02	<0.01	0.07	-	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		29 Apr 2022	0315_MW107_20220429	Normal	EM2208205	0.02	0.02	**0.14**	-	0.02	0.02	0.12	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	0315_MW107_20221103	Normal	EM2222407	0.01	<0.01	**0.09**	-	0.03	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		13 Apr 2023	0315_MW107_20230413	Normal	EM2306946	0.01	0.01	**0.09**	-	0.03	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	0315_MW107_231012	Normal	EM2318619	0.02	0.02	**0.10**	-	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
MW109	On-Base	10 Mar 2020	0315_MW109_S_200310	Normal	ES2008982	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		27 Oct 2021	0315_MW109_20211027	Normal	ES2139229	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC105_20211027	Field_D	ES2139230	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC205_20211027	Interlab_D	837707	<0.01	<0.01	<0.01	<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
		27 Apr 2022	0315_MW109_20220427	Normal	EM2208205	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC101_20220427	Field_D	EM2208205	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC201_20220427	Interlab_D	889626	<0.01	<0.01	<0.01	<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
		03 Nov 2022	0315_MW109_20221103	Normal	EM2222407	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC104_20221103	Field_D	EM2222407	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC204_20221103	Interlab_D	940511	<0.01	<0.01	<0.01	<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
		13 Apr 2023	0315_MW109_20230413	Normal	EM2306946	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	0315_MW109_231012	Normal	EM2318619	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02

Table B1: Groundwater Analytical Results

						Perfluorocarbons																
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorononanesulfonic acid (PFNS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)
						µg/L	µg/L	µg/L	UG/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	UG/L	µg/L	µg/L	µg/L	µg/L	µg/L
					LOR	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water							**0.56**	**0.07**															
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*															
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report No.**																		
MW110	On-Base	10 Mar 2020	0315_MW110_S_200310	Normal	ES2008982	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		28 Oct 2021	0315_MW110_20211027	Normal	ES2139229	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		27 Apr 2022	0315_MW110_20220427	Normal	EM2208205	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	0315_MW110_20221103	Normal	EM2222407	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		13 Apr 2023	0315_MW110_20230413	Normal	EM2306946	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	0315_MW110_231012	Normal	EM2318619	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
MW601	Off-Base	29 Jan 2019	0315_MW601_S_190129	Normal	ES1902996	0.01	<0.01	**0.15**	-	<0.02	<0.02	0.14	<0.02	<0.02	<0.1	<0.02	<0.02	-	0.03	<0.02	<0.02	<0.02	<0.02
			0315_QC101_190129	Field_D	ES1902996	0.01	<0.01	**0.15**	-	<0.02	<0.02	0.14	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC201_190129	Interlab_D	638493	0.01	<0.01	**0.1**	-	0.01	0.01	0.09	<0.01	<0.01	<0.05	<0.01	0.01	-	0.01	<0.01	<0.01	<0.01	<0.01
		18 Feb 2019	0315_MW601_S_190218	Normal	ES1905450	0.02	<0.01	**0.25**	-	<0.02	<0.02	0.23	<0.02	<0.02	<0.1	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		12 Mar 2020	0315_MW601_P_200312	Normal	ES2008982	0.16	0.01	**0.89**	-	0.06	0.08	0.73	0.03	<0.02	<0.1	<0.02	0.04	-	<0.02	<0.02	<0.02	<0.02	<0.02
		27 Oct 2021	0315_MW601_20211027	Normal	ES2139235	0.17	<0.01	**0.59**	-	0.03	0.03	0.42	<0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02	<0.02
		28 Apr 2022	0315_MW601_20220428	Normal	EM2208229	0.20	0.01	**0.65**	-	0.03	0.04	0.45	0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02	<0.02
		04 Nov 2022	0315_MW601_20221104	Normal	EM2222368	0.34	<0.01	**0.77**	-	0.04	0.03	0.43	0.03	<0.02	<0.1	<0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		13 Apr 2023	0315_MW601_ 20230413	Normal	EM2306926	0.21	<0.01	**0.57**	-	0.02	0.04	0.36	0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	0315_MW601_231012	Normal	EM2318605	0.37	<0.01	**0.79**	-	0.03	0.03	0.42	0.04	<0.02	<0.1	<0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
MW624	Off-Base	11 Mar 2020	0315_MW624_S_200311	Normal	ES2008982	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		27 Oct 2021	0315_MW624_20211027	Normal	ES2139235	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		20 Dec 2021	MW624	Normal	EM2125953	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		28 Apr 2022	0315_MW624_20220428	Normal	EM2208229	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		04 Nov 2022	0315_MW624_20221104	Normal	EM2222368	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		13 Apr 2023	0315_MW624_20230413	Normal	EM2306926	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	0315_MW624_231012	Normal	EM2318605	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
MW625	Off-Base	21 May 2020	0315_MW625_S_200521	Normal	ES2017986	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		26 Oct 2021	0315_MW625_20211026	Normal	ES2139232	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		27 Apr 2022	0315_MW625_20220427	Normal	EM2208223	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	0315_MW625_20221103	Normal	EM2222366	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		13 Apr 2023	0315_MW625_ 20230413	Normal	EM2306925	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	0315_MW625_231012	Normal	EM2318601	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02

Notes

Denotes first time detection above LOR in latest monitoring round

Denotes new exceedance of lowest adopted screening criteria in latest monitoring round

Table B1: Groundwater Analytical Results

						Perfluorocarbons																NA	
						Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*		Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Perfluorononane sulfonate (PFNS)	Sum of WA DWER PFAS (n=10)*
						µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	UG/L	mg/kg	ug/L	µg/L	UG/L
					LOR	0.01	0.01	0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.00001	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																							
PFAS NEMP 2.0 Table 1 Health Recreational Water																							
PFAS NEMP 2.0 Table 5 Freshwater 95%																							
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report No.**																		
MW008	On-Base	16 Mar 2017	0315_MW008_170316	Normal	ES1706394	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.16	-	-	-	-	0.148
		18 Dec 2018	0315_MW008_S_181218	Normal	ES1838696	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	-	-	-	-	0.14
			0315_QC102_181218	Field_D	ES1838696	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	-	-	-	-	0.14
			0315_QC104_181218	Field_D	ES1838696	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.15	-	-	-	-	0.15
			0315_QC202_181218	Interlab_D	635075	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.25	-	-	-	-	0.24
		09 Mar 2020	0315_MW008_S_200309	Normal	ES2008982	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.23	-	-	-	-	0.23
			0315_QC101_200309	Field_D	ES2008982	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.23	-	-	-	-	0.23
			0315_QC201_200309	Interlab_D	239048	<0.1	<0.5	<0.1	<0.05	<0.05	<0.1	<0.5	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	0.19	-	0.00005	-	-	-
		28 Oct 2021	0315_MW008_20211028	Normal	ES2139229	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.11	-	-	-	-	0.11
		28 Apr 2022	0315_MW008_20220428	Normal	EM2208205	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.10	-	-	-	-	0.10
		03 Nov 2022	0315_MW008_20221103	Normal	EM2222407	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.13	-	-	-	-	0.13
		12 Apr 2023	0315_MW008_20230412	Normal	EM2306946	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.11	-	-	-	-	0.11
		12 Oct 2023	0315_MW008_231012	Normal	EM2318619	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.11	-	-	-	-	0.11
MW103	On-Base	20 Feb 2019	0315_MW103_S_190220	Normal	ES1905450	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
		28 Oct 2021	0315_MW103_20211028	Normal	ES2139229	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
		29 Apr 2022	0315_MW103_20220429	Normal	EM2208205	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
		03 Nov 2022	0315_MW103_20221103	Normal	EM2222407	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.11	-	-	-	-	0.11
		13 Apr 2023	0315_MW103_20230413	Normal	EM2306946	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
			0315_QC105_20230413	Field_D	EM2306946	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
			0315_QC205_20230413	Interlab_D	982794	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	-	<0.01	<0.01	<0.05
		12 Oct 2023	0315_MW103_231012	Normal	EM2318619	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.32	-	-	-	-	0.32
MW104	On-Base	20 Feb 2019	0315_MW104_S_190220	Normal	ES1905450	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
		28 Oct 2021	0315_MW104_20211028	Normal	ES2139229	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
		28 Apr 2022	0315_MW104_20220428	Normal	EM2208205	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.18	<0.05	<0.05	0.18	-	-	-	-	0.18
		03 Nov 2022	0315_MW104_20221103	Normal	EM2222407	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
		15 Apr 2023	0315_MW104_20230415	Normal	EM2306946	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
		12 Oct 2023	0315_MW104_231012	Normal	EM2318619	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
			0315_QC104_231012	Field_D	EM2318619	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
			0315_QC204_20230413	Interlab_D	1036476	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	-	<0.01	<0.01	<0.05
MW107	On-Base	30 Jan 2019	0315_MW107_P_190130	Normal	ES1902996	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.10	-	-	-	-	0.10
		07 Mar 2019	0315_MW107_P_190307	Normal	ES1907492	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-	-	-	0.07
		29 Apr 2022	0315_MW107_20220429	Normal	EM2208205	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.07	<0.05	<0.05	0.27	-	-	-	-	0.25
		03 Nov 2022	0315_MW107_20221103	Normal	EM2222407	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-	-	-	-	0.12
		13 Apr 2023	0315_MW107_20230413	Normal	EM2306946	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.13	-	-	-	-	0.13
		12 Oct 2023	0315_MW107_231012	Normal	EM2318619	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-	-	-	-	0.12
MW109	On-Base	10 Mar 2020	0315_MW109_S_200310	Normal	ES2008982	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
		27 Oct 2021	0315_MW109_20211027	Normal	ES2139229	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
			0315_QC105_20211027	Field_D	ES2139230	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
			0315_QC205_20211027	Interlab_D	837707	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	-	<0.01	-	<0.05
		27 Apr 2022	0315_MW109_20220427	Normal	EM2208205	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
			0315_QC101_20220427	Field_D	EM2208205	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
			0315_QC201_20220427	Interlab_D	889626	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	-	<0.01	-	<0.05
		03 Nov 2022	0315_MW109_20221103	Normal	EM2222407	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
			0315_QC104_20221103	Field_D	EM2222407	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
			0315_QC204_20221103	Interlab_D	940511	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	-	<0.01	-	<0.05
		13 Apr 2023	0315_MW109_20230413	Normal	EM2306946	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
		12 Oct 2023	0315_MW109_231012	Normal	EM2318619	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01

						Perfluorocarbons																NA	
						Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*		Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Perfluorononane sulfonate (PFNS)	Sum of WA DWER PFAS (n=10)*
						µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	UG/L	mg/kg	ug/L	µg/L	UG/L
					LOR	0.01	0.01	0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.00001	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																							
PFAS NEMP 2.0 Table 1 Health Recreational Water																							
PFAS NEMP 2.0 Table 5 Freshwater 95%																							
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report No.**																		
MW110	On-Base	10 Mar 2020	0315_MW110_S_200310	Normal	ES2008982	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
		28 Oct 2021	0315_MW110_20211027	Normal	ES2139229	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
		27 Apr 2022	0315_MW110_20220427	Normal	EM2208205	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
		03 Nov 2022	0315_MW110_20221103	Normal	EM2222407	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
		13 Apr 2023	0315_MW110_20230413	Normal	EM2306946	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
		12 Oct 2023	0315_MW110_231012	Normal	EM2318619	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
MW601	Off-Base	29 Jan 2019	0315_MW601_S_190129	Normal	ES1902996	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.18	-	-	-	-	0.18
			0315_QC101_190129	Field_D	ES1902996	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.15	-	-	-	-	0.15
			0315_QC201_190129	Interlab_D	638493	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.14	0.01	-	0.1	-	0.13
		18 Feb 2019	0315_MW601_S_190218	Normal	ES1905450	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.29	-	-	-	-	0.29
		12 Mar 2020	0315_MW601_P_200312	Normal	ES2008982	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.11	-	-	-	-	1.00
		27 Oct 2021	0315_MW601_20211027	Normal	ES2139235	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.68	-	-	-	-	0.65
		28 Apr 2022	0315_MW601_20220428	Normal	EM2208229	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.78	-	-	-	-	0.72
		04 Nov 2022	0315_MW601_20221104	Normal	EM2222368	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.89	-	-	-	-	0.83
		13 Apr 2023	0315_MW601_ 20230413	Normal	EM2306926	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.68	-	-	-	-	0.62
		12 Oct 2023	0315_MW601_231012	Normal	EM2318605	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.91	-	-	-	-	0.84
MW624	Off-Base	11 Mar 2020	0315_MW624_S_200311	Normal	ES2008982	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
		27 Oct 2021	0315_MW624_20211027	Normal	ES2139235	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.05	<0.05	<0.05	0.05	-	-	-	-	0.05
		20 Dec 2021	MW624	Normal	EM2125953	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
		28 Apr 2022	0315_MW624_20220428	Normal	EM2208229	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
		04 Nov 2022	0315_MW624_20221104	Normal	EM2222368	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
		13 Apr 2023	0315_MW624_20230413	Normal	EM2306926	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.23	<0.05	<0.05	0.23	-	-	-	-	0.23
		12 Oct 2023	0315_MW624_231012	Normal	EM2318605	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.49	<0.05	<0.05	0.49	-	-	-	-	0.49
MW625	Off-Base	21 May 2020	0315_MW625_S_200521	Normal	ES2017986	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
		26 Oct 2021	0315_MW625_20211026	Normal	ES2139232	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
		27 Apr 2022	0315_MW625_20220427	Normal	EM2208223	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
		03 Nov 2022	0315_MW625_20221103	Normal	EM2222366	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
		13 Apr 2023	0315_MW625_ 20230413	Normal	EM2306925	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01
		12 Oct 2023	0315_MW625_231012	Normal	EM2318601	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	<0.01

Notes

Denotes first time detection above LOR in latest monitoring round

Denotes new exceedance of lowest adopted screening criteria in latest monitoring round

						Perfluorocarbons																		
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorononanesulfonic acid (PFNS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)
						µg/L	µg/L	µg/L	UG/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	UG/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	0.01	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
PFAS NEMP 2.0 Table 1 Health Drinking Water							**0.56**	**0.07**																	
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*																	
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																		
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																				
SW103	On-Base	10 Dec 2018	0315_SW103_181210	Normal	ES1837611	0.67	0.05	**1.31**	-	0.10	0.06	0.64	0.02	<0.02	<0.1	0.13	0.18	-	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		26 Oct 2021	0315_QC103_20211026	Field_D	ES2139230	0.74	0.03	**0.99**	-	0.02	<0.02	0.25	<0.02	<0.02	<0.1	0.06	0.07	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0315_QC203_20211026	Interlab_D	837707	1.0	0.03	**1.31**	<0.01	0.02	0.02	0.31	0.02	<0.01	<0.05	0.06	0.07	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0315_SW103_20211026	Normal	ES2139229	0.60	0.02	**0.82**	-	<0.02	<0.02	0.22	<0.02	<0.02	<0.1	0.06	0.06	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		28 Apr 2022	0315_SW103_20220428	Normal	EM2208205	0.19	<0.01	**0.28**	-	<0.02	<0.02	0.09	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		03 Nov 2022	0315_SW103_20221103	Normal	EM2222407	0.22	0.02	**0.36**	-	<0.02	<0.02	0.14	<0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		12 Apr 2023	0315_QC104_20230412	Field_D	EM2306946	0.16	<0.01	**0.24**	-	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0315_QC204_20230412	Interlab_D	982794	0.23	<0.01	**0.32**	-	<0.01	<0.01	0.09	<0.01	<0.01	<0.05	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0315_SW103_20230412	Normal	EM2306946	0.16	<0.01	**0.24**	-	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		12 Oct 2023	0315_SW103_231012	Normal	EM2318619	0.88	0.02	**1.16**	-	<0.02	<0.02	0.28	<0.02	<0.02	<0.1	0.02	0.05	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW106	On-Base	16 Dec 2018	0315_SW106_181216	Normal	ES1838218	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		03 Nov 2022	0315_SW106_20221103	Normal	EM2222407	<0.01	<0.01	0.02	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		12 Apr 2023	0315_SW106_20230412	Normal	EM2306946	0.02	<0.01	0.04	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
					EM2307788	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.10	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW107	On-Base	10 Dec 2018	0315_SW107_181210	Normal	ES1837611	0.43	0.03	**0.65**	-	0.02	<0.02	0.22	<0.02	<0.02	<0.1	0.03	0.04	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		26 Oct 2021	0315_SW107_20211026	Normal	ES2139229	0.18	0.01	**0.25**	-	<0.02	<0.02	0.07	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		02 May 2022	0315_SW107_20220502	Normal	EM2208205	0.15	<0.01	**0.20**	-	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		03 Nov 2022	0315_SW107_20221103	Normal	EM2222407	0.14	<0.01	**0.25**	-	<0.02	<0.02	0.11	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		12 Apr 2023	0315_SW107_20230412	Normal	EM2306946	0.13	<0.01	**0.20**	-	<0.02	<0.02	0.07	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		12 Oct 2023	0315_SW107_231012	Normal	EM2318619	0.20	0.01	**0.27**	-	<0.02	<0.02	0.07	<0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW108	On-Base	15 Dec 2018	0315_SW108_181215	Normal	ES1838218	0.02	0.02	0.06	-	0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		26 Oct 2021	0315_SW108_20211026	Normal	ES2139229	0.01	<0.01	0.02	-	<0.02	<0.02	0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		02 May 2022	0315_SW108_20220502	Normal	EM2208205	0.02	0.01	0.04	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		03 Nov 2022	0315_SW108_20221103	Normal	EM2222407	0.01	<0.01	0.03	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		13 Apr 2023	0315_SW108_ 20230413	Normal	EM2306946	0.01	<0.01	0.03	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		12 Oct 2023	0315_QC103_231012	Field_D	EM2318619	0.01	<0.01	0.02	-	<0.02	<0.02	0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0315_QC203_20230412	Interlab_D	1036476	0.02	0.01	0.04	-	0.01	<0.01	0.02	<0.01	<0.01	<0.05	0.03	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0315_SW108_231012	Normal	EM2318619	0.01	<0.01	0.02	-	<0.02	<0.02	0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW111	On-Base	15 Dec 2018	0315_SW111_181215	Normal	ES1838218	0.03	0.02	**0.11**	-	0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		26 Oct 2021	0315_SW111_20211026	Normal	ES2139229	0.02	<0.01	0.04	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		27 Apr 2022	0315_SW111_20220427	Normal	EM2208205	0.02	<0.01	0.04	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		03 Nov 2022	0315_SW111_20221103	Normal	EM2222407	0.02	<0.01	0.04	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		13 Apr 2023	0315_SW111_ 20230413	Normal	EM2306946	0.01	<0.01	0.04	-	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		12 Oct 2023	0315_QC101_231012	Field_D	EM2318619	0.01	<0.01	0.03	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0315_QC201_20230411	Interlab_D	1036476	0.02	<0.01	0.04	-	<0.01	<0.01	0.02	<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
			0315_SW111_231012	Normal	EM2318619	0.02	<0.01	0.04	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW118	On-Base	30 Nov 2018	0315_SW118_181130	Normal	ES1836659	0.52	0.02	**0.67**	-	<0.02	<0.02	0.15	<0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		13 Dec 2018	0315_SW118_181213	Normal	ES1837950	0.07	<0.01	0.07	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		28 Apr 2022	0315_SW118_20220428	Normal	EM2208205	0.18	<0.01	**0.24**	-	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		03 Nov 2022	0315_SW118_20221103	Normal	EM2222407	0.13	<0.01	**0.23**	-	<0.02	<0.02	0.10	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		12 Apr 2023	0315_SW118_20230412	Normal	EM2306946	0.02	<0.01	0.02	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		12 Oct 2023	0315_SW118_231012	Normal	EM2318619	0.38	0.02	**0.47**	-	<0.02	<0.02	0.09	<0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW121	On-Base	30 Nov 2018	0315_SW121_181130	Normal	ES1836659	0.28	0.02	**0.39**	-	<0.02	<0.02	0.11	<0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		26 Oct 2021	0315_SW121_20211026	Normal	ES2139229	0.22	0.01	**0.31**	-	<0.02	<0.02	0.09	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		28 Apr 2022	0315_SW121_20220428	Normal	EM2208205	0.16	<0.01	**0.21**	-	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		04 Nov 2022	0315_SW121_20221104	Normal	EM2222407	0.09	<0.01	**0.13**	-	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		11 Apr 2023	0315_QC102_20230411	Field_D	EM2306946	0.16	<0.01	**0.22**	-	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0315_QC202_20230411	Interlab_D	982794	0.22	<0.01	**0.28**	-	<0.01	<0.01	0.06	<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
			0315_SW121_20230411	Normal	EM2306946	0.17	<0.01	**0.23**	-	0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		14 Oct 2023	0315_SW121_231014	Normal	EM2318619	0.31	0.01	**0.41**	-	<0.02	<0.02	0.10	<0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW127	On-Base	14 Dec 2018	0315_SW127_181214	Normal	ES1838218	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		25 Oct 2021	0315_QC101_20211025	Field_D	ES2139230	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0315_QC201_20211025	Interlab_D	837707	<0.01	<0.01	<0.01	<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
			0315_SW127_20211025	Normal	ES2139229	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		27 Apr 2022	0315_SW127_20220427	Normal	EM2208205	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		03 Nov 2022	0315_QC101_20221103	Field_D	EM2222407	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0315_QC201_20221103	Interlab_D	940511	<0.01	<0.01	<0.01	<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
			0315_SW127_20221103	Normal	EM2222407	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		12 Apr 2023	0315_SW127_20230412	Normal	EM2306946	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		12 Oct 2023	0315_SW127_231012	Normal	EM2318619	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05

						Perfluorocarbons																	
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorononanesulfonic acid (PFNS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)
						µg/L	µg/L	µg/L	UG/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	UG/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	0.01	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
PFAS NEMP 2.0 Table 1 Health Drinking Water							**0.56**	**0.07**																	
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*																	
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220																		
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																				
SW136	On-Base	29 Jan 2019	0315_SW136_190129	Normal	ES1902996	1.48	0.11	***4.15***	-	0.26	0.24	2.67	0.04	<0.02	<0.1	0.17	0.44	-	0.16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		26 Oct 2021	0315_SW136_20211026	Normal	ES2139229	1.20	0.04	**1.93**	-	0.06	0.06	0.73	0.03	<0.02	<0.1	0.11	0.19	-	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		27 Apr 2022	0315_QC102_20220427	Field_D	EM2208205	0.05	<0.01	0.07	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0315_QC202_20220427	Interlab_D	889626	0.06	<0.01	**0.08**	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.05	0.02	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0315_SW136_20220427	Normal	EM2208205	0.04	<0.01	0.05	-	<0.02	<0.02	0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		03 Nov 2022	0315_SW136_20221103	Normal	EM2222407	0.17	0.02	**0.30**	-	0.03	<0.02	0.13	<0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		12 Apr 2023	0315_SW136_20230412	Normal	EM2306946	0.04	<0.01	0.06	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		12 Oct 2023	0315_SW136_231012	Normal	EM2318619	1.21	0.04	**1.91**	-	0.04	0.05	0.70	0.02	<0.02	<0.1	0.04	0.12	-	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW140	On-Base	29 Jan 2019	0315_SW140_190129	Normal	ES1902996	0.03	<0.01	**0.25**	-	0.04	0.03	0.22	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		26 Oct 2021	0315_SW140_20211026	Normal	ES2139229	<0.01	<0.01	0.02	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		28 Apr 2022	0315_QC103_20220428	Field_D	EM2208205	<0.01	<0.01	0.01	-	<0.02	<0.02	0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0315_QC203_20220428	Interlab_D	889626	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	0.02	<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
			0315_SW140_20220428	Normal	EM2208205	<0.01	<0.01	0.02	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		03 Nov 2022	0315_QC102_20221103	Field_D	EM2222407	0.01	<0.01	0.05	-	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
			0315_QC202_20221103	Interlab_D	940511	0.01	<0.01	0.04	<0.01	<0.01	<0.01	0.03	<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
			0315_SW140_20221103	Normal	EM2222407	<0.01	<0.01	0.03		<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		12 Apr 2023	0315_SW140_20230412	Normal	EM2306946	<0.01	<0.01	0.02	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		12 Oct 2023	0315_SW140_231012	Normal	EM2318619	0.01	<0.01	0.03	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW144	On-Base	29 Jan 2019	0315_SW144_190129	Normal	ES1902996	0.01	<0.01	0.03	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		27 Oct 2021	0315_SW144_20211027	Normal	ES2139229	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		29 Apr 2022	0315_SW144_20220429	Normal	EM2208205	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		03 Nov 2022	0315_SW144_20221103	Normal	EM2222407	0.12	<0.01	**0.17**	-	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		12 Apr 2023	0315_SW144_20230412	Normal	EM2306946	0.02	<0.01	0.02	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		12 Oct 2023	0315_SW144_231012	Normal	EM2318619	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW148	On-Base	29 Jan 2019	0315_SW148_190129	Normal	ES1902996	0.47	0.01	**0.61**	-	0.02	<0.02	0.14	<0.02	<0.02	<0.1	<0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		27 Oct 2021	0315_SW148_20211027	Normal	ES2139229	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		28 Apr 2022	0315_SW148_20220428	Normal	EM2208205	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		03 Nov 2022	0315_SW148_20221103	Normal	EM2222407	0.16	<0.01	**0.16**	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		12 Apr 2023	0315_SW148_20230412	Normal	EM2306946	0.01	<0.01	0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		12 Oct 2023	0315_SW148_231012	Normal	EM2318619	0.02	<0.01	0.02	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW149	On-Base	29 Jan 2019	0315_SW149_190129	Normal	ES1902996	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		27 Oct 2021	0315_SW149_20211027	Normal	ES2139229	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		29 Apr 2022	0315_SW149_20220429	Normal	EM2208205	0.02	<0.01	0.02	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		03 Nov 2022	0315_SW149_20221103	Normal	EM2222407	0.16	0.01	**0.16**	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		12 Apr 2023	0315_SW149_20230412	Normal	EM2306946	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		12 Oct 2023	0315_SW149_231012	Normal	EM2318619	0.01	<0.01	0.02	-	<0.02	<0.02	0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW614	Off-Base	13 Dec 2018	0315_SW614_181213	Normal	ES1837950	0.03	<0.01	0.03	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		27 Oct 2021	0315_SW614_20211027	Normal	ES2139235	0.27	<0.01	**0.35**	-	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		04 Nov 2022	0315_SW614_20221104	Normal	EM2222368	0.05	<0.01	0.07	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		16 Apr 2023	0315_SW614_20230416	Normal	EM2306926	0.07	<0.01	0.07	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		16 Oct 2023	0315_SW614_231016	Normal	EM2318605	0.07	<0.01	**0.08**	-	<0.02	<0.02	0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW677	Off-Base	04 Nov 2022	0315_SW677_20221104	Normal	EM2222368	0.04	<0.01	0.06	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
SW680	Off-Base	10 Dec 2019	0315_SW680_191210	Normal	ES1941493	0.08	<0.01	**0.12**	-	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		04 Nov 2022	0315_SW680_20221104	Normal	EM2222365	0.04	<0.01	0.07	-	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		13 Apr 2023	0315_SW680_20230413	Normal	EM2306924	0.10	<0.01	**0.13**	-	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
		13 Oct 2023	0315_SW680_231013	Normal	EM2318603	0.13	<0.01	**0.18**	-	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05

Notes

Denotes first time detection above LOR in latest monitoring round

Denotes new exceedance of lowest adopted screening criteria in latest monitoring round

Table B2: Surface Water Analytical Results

						Perfluorocarbons														NA	
						Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Perfluorononane sulfonate (PFNS)	Sum of WA DWER PFAS (n=10)*
						µg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	UG/L	ug/L	µg/L	UG/L
					LOR	0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																					
PFAS NEMP 2.0 Table 1 Health Recreational Water																					
PFAS NEMP 2.0 Table 5 Freshwater 95%																					
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																
SW103	On-Base	10 Dec 2018	0315_SW103_181210	Normal	ES1837611	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.89	-	-	-	1.81
		26 Oct 2021	0315_QC103_20211026	Field_D	ES2139230	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.17	-	-	-	1.17
			0315_QC203_20211026	Interlab_D	837707	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.55	1.03	1.34	-	1.51
			0315_SW103_20211026	Normal	ES2139229	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.96	-	-	-	0.96
		28 Apr 2022	0315_SW103_20220428	Normal	EM2208205	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.28	-	-	-	0.28
		03 Nov 2022	0315_SW103_20221103	Normal	EM2222407	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.41	-	-	-	0.41
		12 Apr 2023	0315_QC104_20230412	Field_D	EM2306946	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.24	-	-	-	0.24
			0315_QC204_20230412	Interlab_D	982794	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.36	0.23	0.32	<0.01	0.36
			0315_SW103_20230412	Normal	EM2306946	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.24	-	-	-	0.24
		12 Oct 2023	0315_SW103_231012	Normal	EM2318619	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.25	-	-	-	1.25
SW106	On-Base	16 Dec 2018	0315_SW106_181216	Normal	ES1838218	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
		03 Nov 2022	0315_SW106_20221103	Normal	EM2222407	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-	-	0.02
		12 Apr 2023	0315_SW106_20230412	Normal	EM2306946	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-	-	0.04
					EM2307788	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	-	-	-	<0.02
SW107	On-Base	10 Dec 2018	0315_SW107_181210	Normal	ES1837611	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.77	-	-	-	0.77
		26 Oct 2021	0315_SW107_20211026	Normal	ES2139229	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.26	-	-	-	0.26
		02 May 2022	0315_SW107_20220502	Normal	EM2208205	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.20	-	-	-	0.20
		03 Nov 2022	0315_SW107_20221103	Normal	EM2222407	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.25	-	-	-	0.25
		12 Apr 2023	0315_SW107_20230412	Normal	EM2306946	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.17	<0.05	<0.05	0.37	-	-	-	0.37
		12 Oct 2023	0315_SW107_231012	Normal	EM2318619	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.31	-	-	-	0.31
SW108	On-Base	15 Dec 2018	0315_SW108_181215	Normal	ES1838218	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.10	-	-	-	0.10
		26 Oct 2021	0315_SW108_20211026	Normal	ES2139229	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-	-	0.02
		02 May 2022	0315_SW108_20220502	Normal	EM2208205	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-	-	-	0.05
		03 Nov 2022	0315_SW108_20221103	Normal	EM2222407	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-	-	0.03
		13 Apr 2023	0315_SW108_ 20230413	Normal	EM2306946	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-	-	-	0.05
		12 Oct 2023	0315_QC103_231012	Field_D	EM2318619	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-	-	0.02
			0315_QC203_20230412	Interlab_D	1036476	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.1	0.03	0.05	<0.01	0.1
			0315_SW108_231012	Normal	EM2318619	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-	-	0.02
SW111	On-Base	15 Dec 2018	0315_SW111_181215	Normal	ES1838218	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.18	-	-	-	0.18
		26 Oct 2021	0315_SW111_20211026	Normal	ES2139229	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-	-	0.04
		27 Apr 2022	0315_SW111_20220427	Normal	EM2208205	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-	-	0.04
		03 Nov 2022	0315_SW111_20221103	Normal	EM2222407	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-	-	0.04
		13 Apr 2023	0315_SW111_ 20230413	Normal	EM2306946	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-	-	0.04
		12 Oct 2023	0315_QC101_231012	Field_D	EM2318619	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-	-	0.03
			0315_QC201_20230411	Interlab_D	1036476	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.02	0.04	<0.01	<0.05
			0315_SW111_231012	Normal	EM2318619	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-	-	0.04
SW118	On-Base	30 Nov 2018	0315_SW118_181130	Normal	ES1836659	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.72	-	-	-	0.72
		13 Dec 2018	0315_SW118_181213	Normal	ES1837950	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-	-	0.07
		28 Apr 2022	0315_SW118_20220428	Normal	EM2208205	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.24	-	-	-	0.24
		03 Nov 2022	0315_SW118_20221103	Normal	EM2222407	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.23	-	-	-	0.23
		12 Apr 2023	0315_SW118_20230412	Normal	EM2306946	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.09	<0.05	<0.05	0.11	-	-	-	0.11
		12 Oct 2023	0315_SW118_231012	Normal	EM2318619	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.52	-	-	-	0.52
SW121	On-Base	30 Nov 2018	0315_SW121_181130	Normal	ES1836659	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.44	-	-	-	0.44
		26 Oct 2021	0315_SW121_20211026	Normal	ES2139229	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.32	-	-	-	0.32
		28 Apr 2022	0315_SW121_20220428	Normal	EM2208205	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.21	-	-	-	0.21
		04 Nov 2022	0315_SW121_20221104	Normal	EM2222407	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.13	-	-	-	0.13
		11 Apr 2023	0315_QC102_20230411	Field_D	EM2306946	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.22	-	-	-	0.22
			0315_QC202_20230411	Interlab_D	982794	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.29	0.22	0.28	<0.01	0.29
			0315_SW121_20230411	Normal	EM2306946	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.25	-	-	-	0.25
		14 Oct 2023	0315_SW121_231014	Normal	EM2318619	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.45	-	-	-	0.45
SW127	On-Base	14 Dec 2018	0315_SW127_181214	Normal	ES1838218	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
		25 Oct 2021	0315_QC101_20211025	Field_D	ES2139230	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
			0315_QC201_20211025	Interlab_D	837707	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	-	<0.05
			0315_SW127_20211025	Normal	ES2139229	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
		27 Apr 2022	0315_SW127_20220427	Normal	EM2208205	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
		03 Nov 2022	0315_QC101_20221103	Field_D	EM2222407	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
			0315_QC201_20221103	Interlab_D	940511	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01	-	<0.05
			0315_SW127_20221103	Normal	EM2222407	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
		12 Apr 2023	0315_SW127_20230412	Normal	EM2306946	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
		12 Oct 2023	0315_SW127_231012	Normal	EM2318619	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01

Table B2: Surface Water Analytical Results

						Perfluorocarbons														NA	
						Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Perfluorononane sulfonate (PFNS)	Sum of WA DWER PFAS (n=10)*
						µg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	UG/L	ug/L	µg/L	UG/L
					LOR	0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																					
PFAS NEMP 2.0 Table 1 Health Recreational Water																					
PFAS NEMP 2.0 Table 5 Freshwater 95%																					
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																
SW136	On-Base	29 Jan 2019	0315_SW136_190129	Normal	ES1902996	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	5.57	-	-	-	5.29
		26 Oct 2021	0315_SW136_20211026	Normal	ES2139229	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.45	-	-	-	2.36
		27 Apr 2022	0315_QC102_20220427	Field_D	EM2208205	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-	-	0.07
			0315_QC202_20220427	Interlab_D	889626	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.11	0.06	0.08	-	0.11
			0315_SW136_20220427	Normal	EM2208205	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-	-	-	0.05
		03 Nov 2022	0315_SW136_20221103	Normal	EM2222407	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.38	-	-	-	0.38
		12 Apr 2023	0315_SW136_20230412	Normal	EM2306946	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-	-	-	0.06
		12 Oct 2023	0315_SW136_231012	Normal	EM2318619	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.24	-	-	-	2.17
SW140	On-Base	29 Jan 2019	0315_SW140_190129	Normal	ES1902996	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.32	-	-	-	0.29
		26 Oct 2021	0315_SW140_20211026	Normal	ES2139229	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-	-	0.02
		28 Apr 2022	0315_QC103_20220428	Field_D	EM2208205	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-	-	-	0.01
			0315_QC203_20220428	Interlab_D	889626	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	0.02	-	<0.05
			0315_SW140_20220428	Normal	EM2208205	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-	-	0.02
		03 Nov 2022	0315_QC102_20221103	Field_D	EM2222407	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-	-	-	0.05
			0315_QC202_20221103	Interlab_D	940511	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.01	0.04	-	<0.05
			0315_SW140_20221103	Normal	EM2222407	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-	-	0.03
		12 Apr 2023	0315_SW140_20230412	Normal	EM2306946	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.05	<0.05	<0.05	0.07	-	-	-	0.07
		12 Oct 2023	0315_SW140_231012	Normal	EM2318619	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-	-	0.03
SW144	On-Base	29 Jan 2019	0315_SW144_190129	Normal	ES1902996	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-	-	0.03
		27 Oct 2021	0315_SW144_20211027	Normal	ES2139229	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
		29 Apr 2022	0315_SW144_20220429	Normal	EM2208205	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
		03 Nov 2022	0315_SW144_20221103	Normal	EM2222407	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.17	-	-	-	0.17
		12 Apr 2023	0315_SW144_20230412	Normal	EM2306946	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.11	<0.05	<0.05	0.13	-	-	-	0.13
		12 Oct 2023	0315_SW144_231012	Normal	EM2318619	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
SW148	On-Base	29 Jan 2019	0315_SW148_190129	Normal	ES1902996	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.66	-	-	-	0.66
		27 Oct 2021	0315_SW148_20211027	Normal	ES2139229	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
		28 Apr 2022	0315_SW148_20220428	Normal	EM2208205	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.06	-	-	-	0.06
		03 Nov 2022	0315_SW148_20221103	Normal	EM2222407	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.16	-	-	-	0.16
		12 Apr 2023	0315_SW148_20230412	Normal	EM2306946	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.13	<0.05	<0.05	0.14	-	-	-	0.14
		12 Oct 2023	0315_SW148_231012	Normal	EM2318619	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-	-	0.02
SW149	On-Base	29 Jan 2019	0315_SW149_190129	Normal	ES1902996	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
		27 Oct 2021	0315_SW149_20211027	Normal	ES2139229	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
		29 Apr 2022	0315_SW149_20220429	Normal	EM2208205	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.07	<0.05	<0.05	0.09	-	-	-	0.09
		03 Nov 2022	0315_SW149_20221103	Normal	EM2222407	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.19	-	-	-	0.19
		12 Apr 2023	0315_SW149_20230412	Normal	EM2306946	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	<0.01
		12 Oct 2023	0315_SW149_231012	Normal	EM2318619	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-	-	0.02
SW614	Off-Base	13 Dec 2018	0315_SW614_181213	Normal	ES1837950	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-	-	0.03
		27 Oct 2021	0315_SW614_20211027	Normal	ES2139235	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.35	-	-	-	0.35
		04 Nov 2022	0315_SW614_20221104	Normal	EM2222368	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-	-	0.07
		16 Apr 2023	0315_SW614_20230416	Normal	EM2306926	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-	-	0.07
		16 Oct 2023	0315_SW614_231016	Normal	EM2318605	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-	-	-	0.08
SW677	Off-Base	04 Nov 2022	0315_SW677_20221104	Normal	EM2222368	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-	-	-	0.06
SW680	Off-Base	10 Dec 2019	0315_SW680_191210	Normal	ES1941493	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-	-	-	0.12
		04 Nov 2022	0315_SW680_20221104	Normal	EM2222365	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-	-	0.07
		13 Apr 2023	0315_SW680_20230413	Normal	EM2306924	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.13	-	-	-	0.13
		13 Oct 2023	0315_SW680_231013	Normal	EM2318603	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.18	-	-	-	0.18

Notes

Denotes first time detection above LOR in latest monitoring round

Denotes new exceedance of lowest adopted screening criteria in latest monitoring round

						Perfluorocarbons																	
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorononanesulfonic acid (PFNS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
					LOR	0.0002	0.0002	0.0002	0.005	0.0002	0.0002	0.0002	0.0002	0.0002	0.001	0.0002	0.0002	0.005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Location Code	Monitoring Zone	Date	Field ID	Sample Type	Lab Report No.																		
SD103	On-Base	10 Dec 2018	0315_SD103_181210	Normal	ES1837611	0.0086	<0.0002	0.0096	-	<0.0002	<0.0002	0.0010	<0.0002	0.0003	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
					ES1900789	0.14	<0.01	0.17	-	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		26 Oct 2021	0315_QC104_20211026	Field_D	ES2139230	0.0126	<0.0002	0.0132	-	<0.0002	<0.0002	0.0006	<0.0002	0.0006	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
			0315_SD103_20211026	Normal	ES2139229	0.0140	<0.0002	0.0146	-	<0.0002	<0.0002	0.0006	<0.0002	0.0004	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002
		28 Apr 2022	0315_QC105_20220428	Field_D	EM2208205	0.0163	<0.0002	0.0173	-	<0.0002	<0.0002	0.0010	<0.0002	0.0005	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	0.0004	0.0002	0.0003	<0.0002
			0315_QC205_20220428	Interlab_D	889626	0.013	<0.005	0.013	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
			0315_SD103_20220428	Normal	EM2208205	0.0163	<0.0002	0.0175	-	<0.0002	<0.0002	0.0012	<0.0002	0.0007	<0.001	<0.0002	0.0002	-	<0.0002	<0.0002	0.0003	0.0002	0.0002	<0.0002
		03 Nov 2022	0315_SD103_20221103	Normal	EM2222407	0.0063	<0.0002	0.0066	-	<0.0002	<0.0002	0.0003	<0.0002	0.0004	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		12 Apr 2023	0315_QC103_20230412	Field_D	EM2306946	0.0089	0.0002	0.0093	-	<0.0002	<0.0002	0.0004	<0.0002	0.0005	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	0.0002	<0.0002	0.0003	<0.0002
			0315_QC203_20230412	Interlab_D	982794	0.014	<0.005	0.014	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
			0315_SD103_20230412	Normal	EM2306946	0.0130	0.0002	0.0137	-	<0.0002	<0.0002	0.0007	<0.0002	0.0006	<0.001	0.0003	0.0002	-	<0.0002	<0.0002	0.0003	0.0002	0.0004	<0.0002
					EM2307788	0.0106	0.0002	0.0113	-	<0.0002	<0.0002	0.0007	<0.0002	0.0006	<0.001	0.0002	0.0002	-	<0.0002	<0.0002	0.0003	0.0003	0.0004	<0.0002
		12 Oct 2023	0315_SD103_231012_0.00-0.30	Normal	EM2318619	0.0132	<0.0002	0.0136	-	<0.0002	<0.0002	0.0004	<0.0002	0.0011	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD106	On-Base	16 Dec 2018	0315_SD106_181216	Normal	ES1838218	0.0076	<0.0002	0.0080	-	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
					ES1902216	0.03	<0.01	0.03	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		26 Oct 2021	0315_SD106_20211026	Normal	ES2139229	0.0042	<0.0002	0.0042	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		28 Apr 2022	0315_SD106_20220428	Normal	EM2208205	0.0042	0.0002	0.0042	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	0.0012	<0.0002	0.0004	<0.0002
		03 Nov 2022	0315_SD106_20221103	Normal	EM2222407	0.0040	<0.0002	0.0040	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		12 Apr 2023	0315_SD106_20230412	Normal	EM2306946	0.0053	<0.0002	0.0055	-	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		12 Oct 2023	0315_SD106_231012 _0.00-0.10	Normal	EM2318619	0.0036	<0.0002	0.0036	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD107	On-Base	10 Dec 2018	0315_SD107_181210	Normal	ES1837611	0.0142	<0.0002	0.0149	-	<0.0002	<0.0002	0.0007	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
					ES1900789	0.34	<0.01	0.34	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		26 Oct 2021	0315_SD107_20211026	Normal	ES2139229	0.0051	<0.0002	0.0051	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		02 May 2022	0315_SD107_20220502	Normal	EM2208205	0.0037	<0.0002	0.0042	-	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		03 Nov 2022	0315_SD107_20221103	Normal	EM2222407	0.0027	<0.0002	0.0027	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		12 Apr 2023	0315_SD107_20230412	Normal	EM2306946	0.0033	<0.0002	0.0033	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		12 Oct 2023	0315_SD107_231012_0.00-0.30	Normal	EM2318619	0.0064	<0.0002	0.0064	-	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD108	On-Base	15 Dec 2018	0315_SD108_181215	Normal	ES1838218	0.0004	<0.0002	0.0004	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		26 Oct 2021	0315_SD108_20211026	Normal	ES2139229	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		02 May 2022	0315_SD108_20220502	Normal	EM2208205	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		03 Nov 2022	0315_SD108_20221103	Normal	EM2222407	0.0006	<0.0002	0.0006	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		13 Apr 2023	0315_SD108_ 20230413	Normal	EM2306946	0.0005	<0.0002	0.0005	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		12 Oct 2023	0315_QC102_231012	Field_D	EM2318619	0.0004	<0.0002	0.0004	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
			0315_QC202_20230412	Interlab_D	1036476	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
			0315_SD108_231012_0.00-0.10	Normal	EM2318619	0.0005	<0.0002	0.0005	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD111	On-Base	15 Dec 2018	0315_SD111_181215	Normal	ES1838218	0.0041	<0.0002	0.0045	-	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002
		26 Oct 2021	0315_SD111_20211026	Normal	ES2139229	0.0008	<0.0002	0.0008	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		27 Apr 2022	0315_SD111_20220427	Normal	EM2208205	0.0005	<0.0002	0.0005	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		03 Nov 2022	0315_SD111_20221103	Normal	EM2222407	0.0004	<0.0002	0.0004	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		13 Apr 2023	0315_SD111_ 20230413	Normal	EM2306946	0.0008	<0.0002	0.0008	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		12 Oct 2023	0315_QC100_231012	Field_D	EM2318619	0.0012	<0.0002	0.0012	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
			0315_QC200_20230411	Interlab_D	1036476	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
			0315_SD111_231012_0.00-0.10	Normal	EM2318619	0.0012	<0.0002	0.0012	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD118	On-Base	30 Nov 2018	0315_SD118_181130	Normal	ES1836659	0.0037	<0.0002	0.0037	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		26 Oct 2021	0315_SD118_20211026	Normal	ES2139229	0.0045	<0.0002	0.0045	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		28 Apr 2022	0315_SD118_20220428	Normal	EM2208205	0.0077	<0.0002	0.0077	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		03 Nov 2022	0315_SD118_20221103	Normal	EM2222407	0.0025	<0.0002	0.0025	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		12 Apr 2023	0315_SD118_20230412	Normal	EM2306946	0.0058	<0.0002	0.0058	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		12 Oct 2023	0315_SD118_231012_0.00-0.30	Normal	EM2318619	0.0016	<0.0002	0.0016	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

						Perfluorocarbons																
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorononanesulfonic acid (PFNS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
					LOR	0.0002	0.0002	0.0002	0.005	0.0002	0.0002	0.0002	0.0002	0.0002	0.001	0.0002	0.0002	0.005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report No.**																		
SD121	On-Base	30 Nov 2018	0315_SD121_181130	Normal	ES1836659	0.0238	<0.0002	0.0246	-	<0.0002	<0.0002	0.0008	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
					ES1900789	0.34	<0.01	0.34	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		26 Oct 2021	0315_SD121_20211026	Normal	ES2139229	0.0016	<0.0002	0.0016	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		21 Dec 2021	QC101_211221	Field_D	EM2125953	0.0194	<0.0002	0.0197	-	<0.0002	-	0.0003	-	-	<0.001	<0.0002	<0.0002	-	<0.0002	-	-	-	-	-
			QC201_211221	Interlab_D	853128	0.033	<0.005	0.033	-	-	-	<0.005	-	-	-	-	-	-	-	-	-	-	-	-
			SD121	Normal	EM2125953	0.0184	<0.0002	0.0188	-	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		28 Apr 2022	0315_SD121_20220428	Normal	EM2208205	0.0009	<0.0002	0.0009	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		04 Nov 2022	0315_SD121_20221104	Normal	EM2222407	0.0017	<0.0002	0.0017	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		11 Apr 2023	0315_QC101_20230411	Field_D	EM2306946	0.0039	<0.0002	0.0039	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
			0315_QC201_20230411	Interlab_D	982794	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
			0315_SD121_20230411	Normal	EM2306946	0.0017	<0.0002	0.0017	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		14 Oct 2023	0315_SD121_231014_0.00-0.10	Normal	EM2318619	0.0010	<0.0002	0.0010	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD127	On-Base	14 Dec 2018	0315_SD127_181214	Normal	ES1838218	0.0007	<0.0002	0.0007	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
					ES1902216	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		25 Oct 2021	0315_QC102_20211025	Field_D	ES2139230	0.0003	<0.0002	0.0003	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
			0315_SD127_20211026	Normal	ES2139229	0.0005	<0.0002	0.0005	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		27 Apr 2022	0315_SD127_20220427	Normal	EM2208205	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		03 Nov 2022	0315_QC103_20221103	Field_D	EM2222407	0.0014	<0.0002	0.0014	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
			0315_QC203_20221103	Interlab_D	940511	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
			0315_SD127_20221103	Normal	EM2222407	0.0009	<0.0002	0.0009	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		12 Apr 2023	0315_SD127_20230412	Normal	EM2306946	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		12 Oct 2023	0315_SD127_231012_0.00-0.10	Normal	EM2318619	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD136	On-Base	26 Oct 2021	0315_SD136_20211026	Normal	ES2139229	0.0046	<0.0002	0.0050	-	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		27 Apr 2022	0315_QC104_20220427	Field_D	EM2208205	0.0606	<0.0002	0.0631	-	<0.0002	<0.0002	0.0025	0.0002	0.0005	<0.001	<0.0002	0.0004	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
			0315_QC204_20220427	Interlab_D	889626	0.052	<0.005	0.052	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
			0315_SD136_20220427	Normal	EM2208205	0.0393	<0.0002	0.0411	-	<0.0002	<0.0002	0.0018	<0.0002	0.0004	<0.001	<0.0002	0.0003	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		03 Nov 2022	0315_QC105_20221103	Field_D	EM2222407	0.0029	<0.0002	0.0029	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
			0315_QC205_20221103	Interlab_D	940511	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
			0315_SD136_20221103	Normal	EM2222407	0.0030	<0.0002	0.0030	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		12 Apr 2023	0315_SD136_20230412	Normal	EM2306946	0.0246	0.0003	0.0282	-	<0.0002	<0.0002	0.0036	0.0003	0.0009	<0.001	0.0003	0.0008	-	0.0002	0.0002	0.0004	0.0005	0.0004	0.0003
					EM2307788	0.0179	<0.0002	0.0204	-	<0.0002	<0.0002	0.0025	0.0002	0.0007	<0.001	<0.0002	0.0005	-	<0.0002	<0.0002	0.0002	0.0003	0.0002	<0.0002
		12 Oct 2023	0315_SD136_231012_0.00-0.10	Normal	EM2318619	0.0131	<0.0002	0.0136	-	<0.0002	<0.0002	0.0005	<0.0002	0.0004	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD614	Off-Base	18 Dec 2018	0315_SD614_181218	Normal	ES1838696	0.0094	<0.0002	0.0097	-	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
					ES1902216	0.18	<0.01	0.18	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		27 Oct 2021	0315_SD614_20211027	Normal	ES2139235	0.0110	<0.0002	0.0114	-	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		20 Dec 2021	SD614	Normal	EM2125953	0.0093	<0.0002	0.0095	-	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		28 Apr 2022	0315_SD614_20220428	Normal	EM2208229	0.0075	<0.0002	0.0077	-	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		04 Nov 2022	0315_SD614_20221104	Normal	EM2222368	0.0073	<0.0002	0.0073	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		12 Apr 2023	0315_SD614_20230412	Normal	EM2306926	0.0090	<0.0002	0.0092	-	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		13 Oct 2023	0315_SD614_231013_0.00-0.30	Normal	EM2318605	0.0175	<0.0002	0.0179	-	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD677	Off-Base	26 Oct 2021	0315_SD677_20211026	Normal	ES2139235	0.0052	<0.0002	0.0052	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		21 Dec 2021	SD677	Normal	EM2125953	0.0075	<0.0002	0.0075	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		28 Apr 2022	0315_SD677_20220428	Normal	EM2208229	0.0068	<0.0002	0.0068	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		04 Nov 2022	0315_SD677_20221104	Normal	EM2222368	0.0074	<0.0002	0.0074	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		12 Apr 2023	0315_SD677_20230412	Normal	EM2306926	0.0066	<0.0002	0.0066	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
		14 Oct 2023	0315_SD677_231014_0.00-0.30	Normal	EM2318605	0.0064	<0.0002	0.0064	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Notes

Denotes first time detection above LOR in latest monitoring round

						Perfluorocarbons															NA			
						Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FS)	8:2 Fluorotelomer sulfonate (8:2 FS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Moisture Content	Perfluorononane sulfonate (PFNS)	Sum of WA DWER PFAS (n=10)*	Sum of WA DWER PFAS (n=10)*
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	UG/KG	mg/kg	UG/KG
					LOR	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002	0.005	0.005	0.1	5	0.0002	10
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report No.**																			
SD103	On-Base	10 Dec 2018	0315_SD103_181210	Normal	ES1837611	<0.0005	0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0102	-	-	25.3	-	-	0.0096
					ES1900789	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.17	-	-	-	-	-	0.17
		26 Oct 2021	0315_QC104_20211026	Field_D	ES2139230	<0.0005	0.0004	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0142	-	-	33.3	-	0.0132	-
			0315_SD103_20211026	Normal	ES2139229	<0.0005	0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0156	-	-	38.4	-	0.0146	-
		28 Apr 2022	0315_QC105_20220428	Field_D	EM2208205	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0187	-	-	38.3	-	0.0173	-
			0315_QC205_20220428	Interlab_D	889626	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.005	<0.01	<0.005	<0.005	<0.05	0.013	0.013	-	-	-	13
			0315_SD103_20220428	Normal	EM2208205	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0191	-	-	25.0	-	0.0177	-
		03 Nov 2022	0315_SD103_20221103	Normal	EM2222407	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0070	-	-	23.2	-	0.0066	-
		12 Apr 2023	0315_QC103_20230412	Field_D	EM2306946	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0105	-	-	1.0	-	0.0095	-
			0315_QC203_20230412	Interlab_D	982794	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.005	<0.01	<0.005	<0.005	<0.05	0.014	0.014	-	<5		14
			0315_SD103_20230412	Normal	EM2306946	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0159	-	-	38.6	-	0.0144	-
					EM2307788	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0135	-	-	33.8	-	0.0119	-
		12 Oct 2023	0315_SD103_231012_0.00-0.30	Normal	EM2318619	<0.0005	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0152	-	-	20.6	-	0.0136	-
SD106	On-Base	16 Dec 2018	0315_SD106_181216	Normal	ES1838218	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0080	-	-	38.6	-	-	0.0080
					ES1902216	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-	-	-	-	0.03
		26 Oct 2021	0315_SD106_20211026	Normal	ES2139229	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0042	-	-	16.3	-	0.0042	-
		28 Apr 2022	0315_SD106_20220428	Normal	EM2208205	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	0.0004	<0.0005	<0.0005	<0.0005	<0.0005	0.0064	-	-	24.0	-	0.0044	-
		03 Nov 2022	0315_SD106_20221103	Normal	EM2222407	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0040	-	-	26.4	-	0.0040	-
		12 Apr 2023	0315_SD106_20230412	Normal	EM2306946	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0055	-	-	46.6	-	0.0055	-
		12 Oct 2023	0315_SD106_231012 _0.00-0.10	Normal	EM2318619	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0036	-	-	24.2	-	0.0036	-
SD107	On-Base	10 Dec 2018	0315_SD107_181210	Normal	ES1837611	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0149	-	-	43.8	-	-	0.0149
					ES1900789	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.34	-	-	-	-	-	0.34
		26 Oct 2021	0315_SD107_20211026	Normal	ES2139229	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0051	-	-	30.0	-	0.0051	-
		02 May 2022	0315_SD107_20220502	Normal	EM2208205	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0042	-	-	29.0	-	0.0042	-
		03 Nov 2022	0315_SD107_20221103	Normal	EM2222407	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0027	-	-	23.6	-	0.0027	-
		12 Apr 2023	0315_SD107_20230412	Normal	EM2306946	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0033	-	-	30.2	-	0.0033	-
		12 Oct 2023	0315_SD107_231012_0.00-0.30	Normal	EM2318619	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0066	-	-	22.9	-	0.0064	-
SD108	On-Base	15 Dec 2018	0315_SD108_181215	Normal	ES1838218	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0004	-	-	19.2	-	-	0.0004
		26 Oct 2021	0315_SD108_20211026	Normal	ES2139229	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	-	-	27.4	-	<0.0002	-
		02 May 2022	0315_SD108_20220502	Normal	EM2208205	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	-	-	19.6	-	<0.0002	-
		03 Nov 2022	0315_SD108_20221103	Normal	EM2222407	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0006	-	-	26.5	-	0.0006	-
		13 Apr 2023	0315_SD108_ 20230413	Normal	EM2306946	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	-	-	28.8	-	0.0005	-
		12 Oct 2023	0315_QC102_231012	Field_D	EM2318619	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0004	-	-	26.0	-	0.0004	-
			0315_QC202_20230412	Interlab_D	1036476	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.005	<0.01	<0.005	<0.005	<0.05	<0.005	<0.005	-	<5	-	<10
			0315_SD108_231012_0.00-0.10	Normal	EM2318619	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	-	-	26.1	-	0.0005	-
SD111	On-Base	15 Dec 2018	0315_SD111_181215	Normal	ES1838218	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0048	-	-	49.9	-	-	0.0045
		26 Oct 2021	0315_SD111_20211026	Normal	ES2139229	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0008	-	-	24.8	-	0.0008	-
		27 Apr 2022	0315_SD111_20220427	Normal	EM2208205	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	-	-	20.8	-	0.0005	-
		03 Nov 2022	0315_SD111_20221103	Normal	EM2222407	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0004	-	-	22.7	-	0.0004	-
		13 Apr 2023	0315_SD111_ 20230413	Normal	EM2306946	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0008	-	-	27.6	-	0.0008	-
		12 Oct 2023	0315_QC100_231012	Field_D	EM2318619	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0012	-	-	26.7	-	0.0012	-
			0315_QC200_20230411	Interlab_D	1036476	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.005	<0.01	<0.005	<0.005	<0.05	<0.005	<0.005	-	<5	-	<10
			0315_SD111_231012_0.00-0.10	Normal	EM2318619	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0012	-	-	25.0	-	0.0012	-
SD118	On-Base	30 Nov 2018	0315_SD118_181130	Normal	ES1836659	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0037	-	-	24.2	-	-	0.0037
		26 Oct 2021	0315_SD118_20211026	Normal	ES2139229	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0045	-	-	16.4	-	0.0045	-
		28 Apr 2022	0315_SD118_20220428	Normal	EM2208205	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0077	-	-	17.6	-	0.0077	-
		03 Nov 2022	0315_SD118_20221103	Normal	EM2222407	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0025	-	-	20.4	-	0.0025	-
		12 Apr 2023	0315_SD118_20230412	Normal	EM2306946	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0058	-	-	21.0	-	0.0058	-
		12 Oct 2023	0315_SD118_231012_0.00-0.30	Normal	EM2318619	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0016	-	-	21.8	-	0.0016	-

						Perfluorocarbons															NA			
						Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FS)	8:2 Fluorotelomer sulfonate (8:2 FS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Moisture Content	Perfluorononane sulfonate (PFNS)	Sum of WA DWER PFAS (n=10)*	Sum of WA DWER PFAS (n=10)*
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	UG/KG	mg/kg	UG/KG
					LOR	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002	0.005	0.005	0.1	5	0.0002	10
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report No.**																			
SD121	On-Base	30 Nov 2018	0315_SD121_181130	Normal	ES1836659	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0246	-	-	48.8	-	-	0.0246
					ES1900789	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.34	-	-	-	-	-	0.34
		26 Oct 2021	0315_SD121_20211026	Normal	ES2139229	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0016	-	-	23.0	-	0.0016	-
		21 Dec 2021	QC101_211221	Field_D	EM2125953	-	-	-	-	-	-	-	-	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	32.2	-	0.0197	-
			QC201_211221	Interlab_D	853128	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	0.033	0.033	-	-	-	-
			SD121	Normal	EM2125953	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0188	-	-	28.1	-	0.0188	-
		28 Apr 2022	0315_SD121_20220428	Normal	EM2208205	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0009	-	-	21.7	-	0.0009	-
		04 Nov 2022	0315_SD121_20221104	Normal	EM2222407	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0017	-	-	29.6	-	0.0017	-
		11 Apr 2023	0315_QC101_20230411	Field_D	EM2306946	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0039	-	-	32.7	-	0.0039	-
			0315_QC201_20230411	Interlab_D	982794	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.005	<0.01	<0.005	<0.005	<0.05	<0.005	<0.005	-	<5	-	<10
			0315_SD121_20230411	Normal	EM2306946	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0017	-	-	23.6	-	0.0017	-
		14 Oct 2023	0315_SD121_231014_0.00-0.10	Normal	EM2318619	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0010	-	-	20.6	-	0.0010	-
SD127	On-Base	14 Dec 2018	0315_SD127_181214	Normal	ES1838218	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0007	-	-	18.4	-	-	0.0007
					ES1902216	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-	-	-	-	<0.01
		25 Oct 2021	0315_QC102_20211025	Field_D	ES2139230	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0003	-	-	27.9	-	0.0003	-
			0315_SD127_20211026	Normal	ES2139229	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	-	-	26.8	-	0.0005	-
		27 Apr 2022	0315_SD127_20220427	Normal	EM2208205	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	-	-	25.2	-	<0.0002	-
		03 Nov 2022	0315_QC103_20221103	Field_D	EM2222407	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0014	-	-	22.1	-	0.0014	-
			0315_QC203_20221103	Interlab_D	940511	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.005	<0.01	<0.005	<0.005	<0.05	<0.005	<0.005	-	-	-	<10
			0315_SD127_20221103	Normal	EM2222407	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0009	-	-	23.1	-	0.0009	-
		12 Apr 2023	0315_SD127_20230412	Normal	EM2306946	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	-	-	26.0	-	<0.0002	-
		12 Oct 2023	0315_SD127_231012_0.00-0.10	Normal	EM2318619	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	-	-	21.8	-	<0.0002	-
SD136	On-Base	26 Oct 2021	0315_SD136_20211026	Normal	ES2139229	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0050	-	-	30.9	-	0.0050	-
		27 Apr 2022	0315_QC104_20220427	Field_D	EM2208205	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0642	-	-	26.0	-	0.0635	-
			0315_QC204_20220427	Interlab_D	889626	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.005	<0.01	<0.005	<0.005	0.052	0.052	0.052	-	-	-	52
			0315_SD136_20220427	Normal	EM2208205	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0418	-	-	22.4	-	0.0414	-
		03 Nov 2022	0315_QC105_20221103	Field_D	EM2222407	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0029	-	-	28.6	-	0.0029	-
			0315_QC205_20221103	Interlab_D	940511	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.005	<0.01	<0.005	<0.005	<0.05	<0.005	<0.005	-	-	-	<10
			0315_SD136_20221103	Normal	EM2222407	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0030	-	-	30.7	-	0.0030	-
		12 Apr 2023	0315_SD136_20230412	Normal	EM2306946	<0.0005	0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0330	-	-	49.6	-	0.0298	-
					EM2307788	<0.0005	0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0227	-	-	37.6	-	0.0209	-
		12 Oct 2023	0315_SD136_231012_0.00-0.10	Normal	EM2318619	<0.0005	0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0142	-	-	23.6	-	0.0136	-
SD614	Off-Base	18 Dec 2018	0315_SD614_181218	Normal	ES1838696	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0097	-	-	44.2	-	-	0.0097
					ES1902216	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.18	-	-	-	-	-	0.18
		27 Oct 2021	0315_SD614_20211027	Normal	ES2139235	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0114	-	-	24.7	-	0.0114	-
		20 Dec 2021	SD614	Normal	EM2125953	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0095	-	-	33.8	-	0.0095	-
		28 Apr 2022	0315_SD614_20220428	Normal	EM2208229	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0077	-	-	19.3	-	0.0077	-
		04 Nov 2022	0315_SD614_20221104	Normal	EM2222368	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0073	-	-	23.4	-	0.0073	-
		12 Apr 2023	0315_SD614_20230412	Normal	EM2306926	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0092	-	-	20.4	-	0.0092	-
		13 Oct 2023	0315_SD614_231013_0.00-0.30	Normal	EM2318605	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0179	-	-	18.3	-	0.0179	-
SD677	Off-Base	26 Oct 2021	0315_SD677_20211026	Normal	ES2139235	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0052	-	-	18.3	-	0.0052	-
		21 Dec 2021	SD677	Normal	EM2125953	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0075	-	-	30.9	-	0.0075	-
		28 Apr 2022	0315_SD677_20220428	Normal	EM2208229	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0068	-	-	22.4	-	0.0068	-
		04 Nov 2022	0315_SD677_20221104	Normal	EM2222368	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0074	-	-	46.5	-	0.0074	-
		12 Apr 2023	0315_SD677_20230412	Normal	EM2306926	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0066	-	-	35.3	-	0.0066	-
		14 Oct 2023	0315_SD677_231014_0.00-0.30	Normal	EM2318605	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0064	-	-	21.3	-	0.0064	-

Notes

Denotes first time detection above LOR in latest monitoring round

Table B4: Water RPD Results

Field or Interlab Duplicates

	Lab Report Number		EM2306946	1036476		EM2318619			EM2318619	1036476		
	Field ID		0315_SW111_ 20230413	0315_QC201_20230411		0315_MW104_231012	0315_QC104_231012		0315_MW104_231012	0315_QC204_20230413		
	Matrix Type		Water	Water		Water	Water		Water	Water		
	Date		13 Apr 2023	12 Oct 2023	RPD	12 Oct 2023	12 Oct 2023	RPD	12 Oct 2023	12 Oct 2023	RPD	
	Unit	LOR										
Perfluorocarbons												
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.01	0.02	67	<0.01	<0.01	0	<0.01	<0.01	0	
Perfluorooctanoate (PFOA)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0	
Sum of PFHxS and PFOS	µg/L	0.01	0.04	0.04	0	<0.01	<0.01	0	<0.01	<0.01	0	
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.03	0.02	40	<0.01	<0.01	0	<0.01	<0.01	0	
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.01	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	
Perfluorobutanoic acid (PFBA)	µg/L	0.05	<0.1	<0.05	0	<0.1	<0.1	0	<0.1	<0.05	0	
Perfluoropentanoic acid (PFPeA)	µg/L	0.01	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	
Perfluorohexanoic acid (PFHxA)	µg/L	0.01	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	
Perfluoropropanesulfonic acid (PFPrS)	UG/L	0.01		<0.01						<0.01		
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	
Perfluorononanoic acid (PFNA)	µg/L	0.01	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	
Perfluorodecanoic acid (PFDA)	µg/L	0.01	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.01	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	
Perfluorododecanoic acid (PFDoDA)	µg/L	0.01	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.01	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.01	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0	
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/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	<0.05	<0.05	0	<0.05	<0.05	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-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0	
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01	<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	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.01	<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	0.01	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0	
Sum of PFAS	µg/L	0.01	0.04	<0.1	0	<0.01	<0.01	0	<0.01	<0.1	0	
Sum of US EPA PFAS (PFOS + PFOA)*	UG/L	0.01		0.02						<0.01		
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	ug/L	0.01		0.04						<0.01		
NA												
Perfluorononane sulfonate (PFNS)	µg/L	0.01		<0.01						<0.01		
Sum of WA DWER PFAS (n=10)*	UG/L	0.01	0.04	<0.05	0	<0.01	<0.01	0	<0.01	<0.05	0	

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**

****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 81 (1 - 10 x EQL); 50 (10 - 30 x EQL); 30 (> 30 x EQL))**

*****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 B4: Water RPD Results

Field or Interlab Duplicates

		EM2318619			EM2318619	1036476		EM2318619		
		0315_SW108_231012	0315_QC103_231012		0315_SW108_231012	0315_QC203_20230412		0315_SW111_231012	0315_QC101_231012	
		Water	Water		Water	Water		Water	Water	
		12 Oct 2023	12 Oct 2023	RPD	12 Oct 2023	12 Oct 2023	RPD	12 Oct 2023	12 Oct 2023	RPD
	Unit									
Perfluorocarbons										
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.01	0	0.01	0.02	67	0.02	0.01	67
Perfluorooctanoate (PFOA)	µg/L	<0.01	<0.01	0	<0.01	0.01	0	<0.01	<0.01	0
Sum of PFHxS and PFOS	µg/L	0.02	0.02	0	0.02	0.04	67	0.04	0.03	29
Perfluorobutane sulfonic acid (PFBS)	µg/L	<0.02	<0.02	0	<0.02	0.01	0	<0.02	<0.02	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.01	0	0.01	0.02	67	0.02	0.02	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorobutanoic acid (PFBA)	µg/L	<0.1	<0.1	0	<0.1	<0.05	0	<0.1	<0.1	0
Perfluoropentanoic acid (PFPeA)	µg/L	<0.02	<0.02	0	<0.02	0.03	40	<0.02	<0.02	0
Perfluorohexanoic acid (PFHxA)	µg/L	<0.02	<0.02	0	<0.02	0.01	0	<0.02	<0.02	0
Perfluoropropanesulfonic acid (PFPrS)	UG/L					<0.01				
Perfluoroheptanoic acid (PFHpA)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorononanoic acid (PFNA)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorodecanoic acid (PFDA)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorododecanoic acid (PFDoDA)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
Perfluorooctane sulfonamide (FOSA)	µg/L	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.02	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.02	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.02	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	<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	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
Sum of PFAS	µg/L	0.02	0.02	0	0.02	0.1	133	0.04	0.03	29
Sum of US EPA PFAS (PFOS + PFOA)*	UG/L					0.03				
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	ug/L					0.05				
NA										
Perfluorononane sulfonate (PFNS)	µg/L					<0.01				
Sum of WA DWER PFAS (n=10)*	UG/L	0.02	0.02	0	0.02	0.1	133	0.04	0.03	29

*RPDs have only been considered where a concentration is greater
**Elevated RPDs are highlighted as per QAQC Profile settings (Acc
***Interlab Duplicates are matched on a per compound basis as me

Table B5: Soil RPD Results

	Lab Report Number		EM2318619			EM2318619	1036476	
	Field ID		0315_SD111_231012_0.00-0.10	0315_QC100_231012		0315_SD111_231012_0.00-0.10	0315_QC200_20230411	
	Matrix Type		Soil	Soil		Soil	Soil	
	Date		12 Oct 2023	12 Oct 2023	RPD	12 Oct 2023	12 Oct 2023	RPD
	Unit	EQL						
Perfluorocarbons								
Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0002	0.0012	0.0012	0	0.0012	<0.005	0
Perfluorooctanoate (PFOA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Sum of PFHxS and PFOS	mg/kg	0.0002	0.0012	0.0012	0	0.0012	<0.005	0
Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorodecanesulfonic acid (PFDS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorobutanoic acid (PFBA)	mg/kg	0.001	<0.001	<0.001	0	<0.001	<0.005	0
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluoropropanesulfonic acid (PFPrS)	mg/kg	0.005					<0.005	
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorononanoic acid (PFNA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorodecanoic acid (PFDA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0
Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.01	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.01	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.01	0
8:2 Fluorotelomer sulfonate (8:2 FtS)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0
Sum of PFAS	mg/kg	0.0002	0.0012	0.0012	0	0.0012	<0.05	0
Sum of US EPA PFAS (PFOS + PFOA)*	mg/kg	0.005					<0.005	
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	mg/kg	0.005					<0.005	
NA								
Moisture Content	%	0.1	25.0	26.7	7	25.0		
Perfluorononane sulfonate (PFNS)	UG/KG	5					<5	
Sum of WA DWER PFAS (n=10)*	UG/KG	10					<10	
Sum of WA DWER PFAS (n=10)*	mg/kg	0.0002	0.0012	0.0012	0	0.0012		

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 81 (1 - 10 x EQL); 50 (10 - 30 x EQL); 30 (> 30 x EQL))
***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

		EM2318619			EM2318619	1036476	
		0315_SD108_231012_0.00-0.10	0315_QC102_231012		0315_SD108_231012_0.00-0.10	0315_QC202_20230412	
		Soil	Soil		Soil	Soil	
		12 Oct 2023	12 Oct 2023	RPD	12 Oct 2023	12 Oct 2023	RPD
	Unit						
Perfluorocarbons							
Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0005	0.0004	22	0.0005	<0.005	0
Perfluorooctanoate (PFOA)	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0
Sum of PFHxS and PFOS	mg/kg	0.0005	0.0004	22	0.0005	<0.005	0
Perfluorobutane sulfonic acid (PFBS)	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorohexane sulfonic acid (PFHxS)	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorodecanesulfonic acid (PFDS)	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorobutanoic acid (PFBA)	mg/kg	<0.001	<0.001	0	<0.001	<0.005	0
Perfluoropentanoic acid (PFPeA)	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorohexanoic acid (PFHxA)	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluoropropanesulfonic acid (PFPrS)	mg/kg					<0.005	
Perfluoroheptanoic acid (PFHpA)	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorononanoic acid (PFNA)	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorodecanoic acid (PFDA)	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluoroundecanoic acid (PFUnDA)	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorododecanoic acid (PFDoDA)	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorotridecanoic acid (PFTrDA)	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	<0.0005	<0.0005	0	<0.0005	<0.005	0
Perfluorooctane sulfonamide (FOSA)	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	<0.0005	<0.0005	0	<0.0005	<0.005	0
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/kg	<0.0005	<0.0005	0	<0.0005	<0.005	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	<0.0005	<0.0005	0	<0.0005	<0.005	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	<0.0005	<0.0005	0	<0.0005	<0.005	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.01	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.01	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	<0.0005	<0.0005	0	<0.0005	<0.005	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	<0.0005	<0.0005	0	<0.0005	<0.01	0
8:2 Fluorotelomer sulfonate (8:2 FtS)	mg/kg	<0.0005	<0.0005	0	<0.0005	<0.005	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	<0.0005	<0.0005	0	<0.0005	<0.005	0
Sum of PFAS	mg/kg	0.0005	0.0004	22	0.0005	<0.05	0
Sum of US EPA PFAS (PFOS + PFOA)*	mg/kg					<0.005	
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	mg/kg					<0.005	
NA							
Moisture Content	%	26.1	26.0	0	26.1		
Perfluorononane sulfonate (PFNS)	UG/KG					<5	
Sum of WA DWER PFAS (n=10)*	UG/KG					<10	
Sum of WA DWER PFAS (n=10)*	mg/kg	0.0005	0.0004	22	0.0005		

*RPDs have only been considered where a concentration is greater
**Elevated RPDs are highlighted as per QAQC Profile settings (Acc
***Interlab Duplicates are matched on a per compound basis as me

Table B6: Blank Results

	Lab Report Number		EM2318619							
	Field ID		0315_QC300_231012	0315_QC301_231012	0315_QC302_231013	0315_QC303_231014	0315_QC304_231016	0315_QC501_231013	0315_QC502_231014	0315_QC503_231016
	Date		12 Oct 2023	12 Oct 2023	13 Oct 2023	14 Oct 2023	16 Oct 2023	13 Oct 2023	14 Oct 2023	16 Oct 2023
	Sample Type		Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Trip_B	Trip_B	Trip_B
	Unit	LOR								
Perfluorocarbons										
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoate (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01	<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	<0.01	<0.01	<0.01	<0.01
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<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	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	<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	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	<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	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	<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	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	<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	<0.05	<0.05	<0.05
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	0.05	<0.05	<0.05	<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	<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	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	<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	<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	<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	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.05	<0.05	<0.05	<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	<0.05	<0.05	<0.05
Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
NA										
Sum of WA DWER PFAS (n=10)*	UG/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Statistics

* A Non Detect Multiplier of 0.5 has been applied.

APPENDIX

C

LABORATORY CERTIFICATES

Cardno

now

Stantec

CHAIN OF CUSTODY

(ALS) COC#: 58637 *ALS Laboratory:* EM Melbourne Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	[redacted] DATE TIME: 9/10/23 12:15	DATE TIME:	DATE TIME:

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0315_PFASOMP

SITE: Blamey Barracks

ORDER NO:

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: [redacted] SAMPLER MOBILE: [redacted]

PRIMARY SAMPLER: [redacted] QUOTE NO: SY/139/19 B EM2022MWHAUS0006

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

SAMPLE DETAILS							ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	GW (PFAS Full/Std Level) WATER	SED (PFAS Full/Std Level) SOIL	SW (PFAS Full/Std Level) WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0315_MW008_231012		12/10/2023 09:01 PM	WATER	ALS: 2 Non ALS: 0	No	X				
002	0315_MW103_231012		12/10/2023 09:02 PM	WATER	ALS: 2 Non ALS: 0	No	X				
003	0315_MW104_231012		12/10/2023 08:54 PM	WATER	ALS: 2 Non ALS: 0	No	X				
004	0315_MW107_231012	Internal lab qc taken	12/10/2023 08:48 PM	WATER	ALS: 6 Non ALS: 0	No	X				
005	0315_MW109_231012		12/10/2023 09:10 PM	WATER	ALS: 2 Non ALS: 0	No	X				
006	0315_MW110_231012		12/10/2023 09:07 PM	WATER	ALS: 2 Non ALS: 0	No	X				
007	0315_SW103_231012		12/10/2023 08:50 PM	WATER	ALS: 2 Non ALS: 0	No			X		

Environmental Division Melbourne

Work Order Reference

EM2318619

Telephone : [redacted]

CHAIN OF CUSTODY

ALS COC#: 58637 ALS Laboratory: EM Melbourne Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 19/10/23 12:15	DATE TIME:	DATE TIME:

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0315_PFASOMP

SITE: Blamey Barracks

ORDER NO:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: [redacted] SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 B / EM2022MWHAUS0006

EMAIL REPORTS TO: [redacted]

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	GW (PFAS Full/Std Level) WATER	SED (PFAS Full/Std Level) SOIL	SW (PFAS Full/Std Level) WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
015	0315_SW140_231012		12/10/2023 09:09 PM	WATER	ALS: 2 Non ALS: 0	No			X		
016	0315_SW144_231012		12/10/2023 09:03 PM	WATER	ALS: 2 Non ALS: 0	No			X		
017	0315_SW148_231012		12/10/2023 09:10 PM	WATER	ALS: 2 Non ALS: 0	No			X		
018	0315_SW149_231012		12/10/2023 09:21 PM	WATER	ALS: 2 Non ALS: 0	No			X		
019	0315_SD103_231012_0.00 -0.30		12/10/2023 08:56 PM	SOIL	ALS: 1 Non ALS: 0	No		X			
020	0315_SD106_231012 _0.00-0.10		12/10/2023 09:20 PM	SOIL	ALS: 1 Non ALS: 0	No		X			
021	0315_SD107_231012_0.00 -0.30		12/10/2023 08:51 PM	SOIL	ALS: 1 Non ALS: 0	No		X			

CHAIN OF CUSTODY

ALS COC#: 58637 ALS Laboratory: EM Melbourne Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 19/10/23 1215	DATE TIME:	DATE TIME:

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0315_PFASOMP

SITE: Blamey Barracks

ORDER NO:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: [redacted]

QUOTE NO: SY/139/19 B

SAMPLER MOBILE: [redacted] / EM2022MWHAUS0006

EMAIL REPORTS TO: [redacted]

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	GW (PFAS Full/Std Level) WATER	SED (PFAS Full/Std Level) SOIL	SW (PFAS Full/Std Level) WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
029	0315_QC102_231012		12/10/2023 09:37 PM	SOIL	ALS: 1 Non ALS: 0	No		X			
030	0315_QC300_231012		12/10/2023 09:39 PM	WATER	ALS: 2 Non ALS: 0	No			X		
031	0315_QC301_231012		12/10/2023 09:40 PM	WATER	ALS: 2 Non ALS: 0	No			X		
032	0315_QC101_231012		12/10/2023 09:44 PM	WATER	ALS: 2 Non ALS: 0	No			X		
033	0315_QC103_231012		12/10/2023 09:47 PM	WATER	ALS: 2 Non ALS: 0	No			X	Forward to Eurofins	
034	0315_QC104_231012		12/10/2023 09:50 PM	WATER	ALS: 2 Non ALS: 0	No	X				
035	0315_QC302_231013		13/10/2023 06:38 PM	WATER	ALS: 2 Non ALS: 0	No			X		

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EM2318619**		
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Me bourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	[redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0315_PFASOMP_23	Page	: 1 of 4
Order number	: -	Quote number	: ES2022MWHAUS0002 (SY/139/19 B)
C-O-C number	: 58637	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: BLAMEY BARRACKS		
Sampler	: [redacted]		

Dates

Date Samples Received	: 19-Oct-2023 12:15	Issue Date	: 08-Nov-2023
Client Requested Due Date	: 30-Oct-2023	Scheduled Reporting Date	: **30-Oct-2023**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 4	Temperature	: 15°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 42 / 41

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.**

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

EM2318619-004	: 12-Oct-2023 20:48	: 0315_MW107_231012 - Internal lab qc taken
EM2318619-008	: 12-Oct-2023 20:59	: 0315_SW107_231012 - Internal lab qc
EM2318619-019	: 12-Oct-2023 20:56	: 0315_SD103_231012_0.00-0.30
EM2318619-020	: 12-Oct-2023 21:20	: 0315_SD106_231012 _0.00-0.10
EM2318619-021	: 12-Oct-2023 20:51	: 0315_SD107_231012_0.00-0.30
EM2318619-022	: 12-Oct-2023 21:33	: 0315_SD108_231012_0.00-0.10
EM2318619-023	: 12-Oct-2023 21:32	: 0315_SD111_231012_0.00-0.10
EM2318619-024	: 12-Oct-2023 21:19	: 0315_SD118_231012_0.00-0.30
EM2318619-025	: 14-Oct-2023 18:39	: 0315_SD121_231014_0.00-0.10
EM2318619-026	: 12-Oct-2023 21:14	: 0315_SD127_231012_0.00-0.10
EM2318619-027	: 12-Oct-2023 21:16	: 0315_SD136_231012_0.00-0.10

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: **SOIL**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
EM2318619-019	12-Oct-2023 20:56	0315_SD103_231012_0....	✓	✓
EM2318619-020	12-Oct-2023 21:20	0315_SD106_231012 _0...	✓	✓
EM2318619-021	12-Oct-2023 20:51	0315_SD107_231012_0....	✓	✓
EM2318619-022	12-Oct-2023 21:33	0315_SD108_231012_0....	✓	✓
EM2318619-023	12-Oct-2023 21:32	0315_SD111_231012_0....	✓	✓
EM2318619-024	12-Oct-2023 21:19	0315_SD118_231012_0....	✓	✓
EM2318619-025	14-Oct-2023 18:39	0315_SD121_231014_0....	✓	✓
EM2318619-026	12-Oct-2023 21:14	0315_SD127_231012_0....	✓	✓
EM2318619-027	12-Oct-2023 21:16	0315_SD136_231012_0....	✓	✓
EM2318619-028	12-Oct-2023 21:36	0315_QC100_231012	✓	✓
EM2318619-029	12-Oct-2023 21:37	0315_QC102_231012	✓	✓

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	(On Hold) WATER No analysis requested	WATER - EP231X PFAS - Full Suite (28 analytes)
EM2318619-001	12-Oct-2023 21:01	0315_MW008_231012		✓
EM2318619-002	12-Oct-2023 21:02	0315_MW103_231012		✓
EM2318619-003	12-Oct-2023 20:54	0315_MW104_231012		✓
EM2318619-004	12-Oct-2023 20:48	0315_MW107_231012 I...		✓
EM2318619-005	12-Oct-2023 21:10	0315_MW109_231012		✓
EM2318619-006	12-Oct-2023 21:07	0315_MW110_231012		✓
EM2318619-007	12-Oct-2023 20:50	0315_SW103_231012		✓
EM2318619-008	12-Oct-2023 20:59	0315_SW107_231012 I...		✓
EM2318619-009	12-Oct-2023 21:19	0315_SW108_231012		✓
EM2318619-010	12-Oct-2023 21:22	0315_SW111_231012		✓
EM2318619-011	12-Oct-2023 20:55	0315_SW118_231012		✓
EM2318619-012	14-Oct-2023 18:34	0315_SW121_231014		✓
EM2318619-013	12-Oct-2023 21:17	0315_SW127_231012		✓
EM2318619-014	12-Oct-2023 20:57	0315_SW136_231012		✓
EM2318619-015	12-Oct-2023 21:09	0315_SW140_231012		✓
EM2318619-016	12-Oct-2023 21:03	0315_SW144_231012		✓
EM2318619-017	12-Oct-2023 21:10	0315_SW148_231012		✓
EM2318619-018	12-Oct-2023 21:21	0315_SW149_231012		✓
EM2318619-030	12-Oct-2023 21:39	0315_QC300_231012		✓
EM2318619-031	12-Oct-2023 21:40	0315_QC301_231012		✓
EM2318619-032	12-Oct-2023 21:44	0315_QC101_231012		✓
EM2318619-034	12-Oct-2023 21:50	0315_QC104_231012		✓
EM2318619-035	13-Oct-2023 18:38	0315_QC302_231013		✓
EM2318619-036	14-Oct-2023 18:42	0315_WWDRUM_231014		✓
EM2318619-037	14-Oct-2023 18:47	0315_QC303_231014		✓
EM2318619-038	16-Oct-2023 18:15	0315_QC304_231016		✓
EM2318619-039	12-Oct-2023 14:05	0315_QC500_231012	✓	
EM2318619-040	13-Oct-2023 14:06	0315_QC501_231013		✓
EM2318619-041	14-Oct-2023 14:07	0315_QC502_231014		✓
EM2318619-042	16-Oct-2023 14:08	0315_QC503_231016		✓
EM2318619-043	12-Oct-2023 21:47	0315_QC103_231012		✓

Proactive Holding Time Report

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

Requested Deliverables

[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 - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

[redacted]
- A4 - AU Tax Invoice (INV) Email [redacted]

[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 - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) 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 - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2318619**	Page	: 1 of 9
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP_23	Date Samples Received	: 19-Oct-2023
Site	: BLAMEY BARRACKS	Issue Date	: 08-Nov-2023
Sampler	: [redacted]	No. of samples received	: 42
Order number	: -	No. of samples analysed	: 41

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: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	EM2318605--005	Anonymous	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

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	EM2318619--013	0315_SW127_231012	**Perfluorodecane sulfonic acid (PFDS)**	335-77-3	38.3 %	53.0-142%	**Recovery less than lower data quality objective**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2318619--013	0315_SW127_231012	**Perfluoroundecanoic acid (PFUnDA)**	2058-94-8	68.1 %	69.0-133%	**Recovery less than lower data quality objective**
EP231B: Perfluoroalkyl Carboxylic Acids	EM2318619--013	0315_SW127_231012	**Perfluorododecanoic acid (PFDoDA)**	307-55-1	40.6 %	72.0-134%	**Recovery less than lower data quality objective**
EP231C: Perfluoroalkyl Sulfonamides	EM2318619--013	0315_SW127_231012	**N-Ethyl perfluorooctane sulfonamide (EtFOSA)**	4151-50-2	50.7 %	70.0-130%	**Recovery less than lower data quality objective**
EP231C: Perfluoroalkyl Sulfonamides	EM2318619--013	0315_SW127_231012	**N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)**	1691-99-2	56.0 %	70.0-130%	**Recovery less than lower data quality objective**
EP231C: Perfluoroalkyl Sulfonamides	EM2318619--013	0315_SW127_231012	**N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)**	2355-31-9	45.0 %	65.0-136%	**Recovery less than lower data quality objective**
EP231C: Perfluoroalkyl Sulfonamides	EM2318619--013	0315_SW127_231012	**N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)**	2991-50-6	37.5 %	61.0-135%	**Recovery less than lower data quality objective**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
	3				
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	3	32	9.38	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; o hers 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: **SOIL**

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
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055)							
0315_SD103_231012_0.00-0.30, 0315_SD106_231012 _0 00-0.10, 0315_SD107_231012_0.00-0.30, 0315_SD108_231012_0.00-0.10, 0315_SD111_231012_0.00-0.10, 0315_SD118_231012_0.00-0.30, 0315_SD127_231012_0.00-0.10, 0315_SD136_231012_0.00-0.10, 0315_QC100_231012, 0315_QC102_231012	**12-Oct-2023**	**----**	----	----	**20-Oct-2023**	26-Oct-2023	✓
HDPE Soil Jar (EA055)							
0315_SD121_231014_0.00-0.10	**14-Oct-2023**	**----**	----	----	**20-Oct-2023**	28-Oct-2023	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X)							
0315 D103 231012 0 00 0 30, 0315 D106 231012 0 00 0 10, 0315_SD107_231012_0.00-0.30, 0315_SD108_231012_0.00-0.10, 0315 D111 231012 0 00 0 10, 0315 D118 231012 0 00 0 30, 0315_SD127_231012_0.00-0.10, 0315_SD136_231012_0.00-0.10, 0315 QC100 231012, 0315 QC102 231012	**12-Oct-2023**	**24-Oct-2023**	09-Apr-2024	✓	**25-Oct-2023**	03-Dec-2023	✓
HDPE Soil Jar (EP231X)							
0315_SD121_231014_0.00-0.10	**14-Oct-2023**	**24-Oct-2023**	11-Apr-2024	✓	**25-Oct-2023**	03-Dec-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X)							
0315_SD103_231012_0.00-0.30, 0315_SD106_231012 _0 00-0.10, 0315_SD107_231012_0.00-0.30, 0315_SD108_231012_0.00-0.10, 0315_SD111_231012_0.00-0.10, 0315_SD118_231012_0.00-0.30, 0315_SD127_231012_0.00-0.10, 0315_SD136_231012_0.00-0.10, 0315_QC100_231012, 0315_QC102_231012	**12-Oct-2023**	**24-Oct-2023**	09-Apr-2024	✓	**25-Oct-2023**	03-Dec-2023	✓
HDPE Soil Jar (EP231X)							
0315_SD121_231014_0.00-0.10	**14-Oct-2023**	**24-Oct-2023**	11-Apr-2024	✓	**25-Oct-2023**	03-Dec-2023	✓

Matrix: **SOIL**

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 Soil Jar (EP231X) 0315_SD103_231012_0.00-0.30, 0315_SD106_231012 _0 00-0.10, 0315_SD107_231012_0.00-0.30, 0315_SD108_231012_0.00-0.10, 0315_SD111_231012_0.00-0.10, 0315_SD118_231012_0.00-0.30, 0315_SD127_231012_0.00-0.10, 0315_SD136_231012_0.00-0.10, 0315_QC100_231012, 0315_QC102_231012	**12-Oct-2023**	**24-Oct-2023**	09-Apr-2024	✓	**25-Oct-2023**	03-Dec-2023	✓
HDPE Soil Jar (EP231X) 0315_SD121_231014_0.00-0.10	**14-Oct-2023**	**24-Oct-2023**	11-Apr-2024	✓	**25-Oct-2023**	03-Dec-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X) 0315_SD103_231012_0.00-0.30, 0315_SD106_231012 _0 00-0.10, 0315_SD107_231012_0.00-0.30, 0315_SD108_231012_0.00-0.10, 0315_SD111_231012_0.00-0.10, 0315_SD118_231012_0.00-0.30, 0315_SD127_231012_0.00-0.10, 0315_SD136_231012_0.00-0.10, 0315_QC100_231012, 0315_QC102_231012	**12-Oct-2023**	**24-Oct-2023**	09-Apr-2024	✓	**25-Oct-2023**	03-Dec-2023	✓
HDPE Soil Jar (EP231X) 0315_SD121_231014_0.00-0.10	**14-Oct-2023**	**24-Oct-2023**	11-Apr-2024	✓	**25-Oct-2023**	03-Dec-2023	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X) 0315_SD103_231012_0.00-0.30, 0315_SD106_231012 _0 00-0.10, 0315_SD107_231012_0.00-0.30, 0315_SD108_231012_0.00-0.10, 0315_SD111_231012_0.00-0.10, 0315_SD118_231012_0.00-0.30, 0315_SD127_231012_0.00-0.10, 0315_SD136_231012_0.00-0.10, 0315_QC100_231012, 0315_QC102_231012	**12-Oct-2023**	**24-Oct-2023**	09-Apr-2024	✓	**25-Oct-2023**	03-Dec-2023	✓
HDPE Soil Jar (EP231X) 0315_SD121_231014_0.00-0.10	**14-Oct-2023**	**24-Oct-2023**	11-Apr-2024	✓	**25-Oct-2023**	03-Dec-2023	✓

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

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) 0315_MW008_231012, 0315_MW103_231012, 0315_MW104_231012, 0315_MW107_231012 - Internal lab qc taken, 0315_MW109_231012, 0315_MW110_231012, 0315_SW103_231012, 0315_SW107_231012 - Internal lab qc, 0315_SW108_231012, 0315_SW111_231012, 0315_SW118_231012, 0315_SW127_231012, 0315_SW136_231012, 0315_SW140_231012, 0315_SW144_231012, 0315_SW148_231012, 0315_SW149_231012, 0315_QC300_231012, 0315_QC301_231012, 0315_QC101_231012, 0315_QC104_231012	**12-Oct-2023**	**23-Oct-2023**	09-Apr-2024	✓	**24-Oct-2023**	09-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0315_QC103_231012	**12-Oct-2023**	**27-Oct-2023**	09-Apr-2024	✓	**27-Oct-2023**	09-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0315_QC302_231013, 0315_QC501_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0315_SW121_231014, 0315_WWDRUM_231014, 0315_QC303_231014, 0315_QC502_231014	**14-Oct-2023**	**23-Oct-2023**	11-Apr-2024	✓	**24-Oct-2023**	11-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0315_QC304_231016, 0315_QC503_231016	**16-Oct-2023**	**23-Oct-2023**	13-Apr-2024	✓	**24-Oct-2023**	13-Apr-2024	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0315_MW008_231012, 0315_MW103_231012, 0315_MW104_231012, 0315_MW107_231012 - Internal lab qc taken, 0315_MW109_231012, 0315_MW110_231012, 0315_SW103_231012, 0315_SW107_231012 - Internal lab qc, 0315_SW108_231012, 0315_SW111_231012, 0315_SW118_231012, 0315_SW127_231012, 0315_SW136_231012, 0315_SW140_231012, 0315_SW144_231012, 0315_SW148_231012, 0315_SW149_231012, 0315_QC300_231012, 0315_QC301_231012, 0315_QC101_231012, 0315_QC104_231012	**12-Oct-2023**	**23-Oct-2023**	09-Apr-2024	✓	**24-Oct-2023**	09-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0315_QC103_231012	**12-Oct-2023**	**27-Oct-2023**	09-Apr-2024	✓	**27-Oct-2023**	09-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0315_QC302_231013, 0315_QC501_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0315_SW121_231014, 0315_WWDRUM_231014, 0315_QC303_231014, 0315_QC502_231014	**14-Oct-2023**	**23-Oct-2023**	11-Apr-2024	✓	**24-Oct-2023**	11-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0315_QC304_231016, 0315_QC503_231016	**16-Oct-2023**	**23-Oct-2023**	13-Apr-2024	✓	**24-Oct-2023**	13-Apr-2024	✓

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)								
0315_MW008_231012,	0315_MW103_231012,	**12-Oct-2023**	**23-Oct-2023**	09-Apr-2024	✓	**24-Oct-2023**	09-Apr-2024	✓
0315_MW104_231012,	0315_MW107_231012 - Internal lab qc taken,							
0315_MW109_231012,	0315_MW110_231012,							
0315_SW103_231012,	0315_SW107_231012 - Internal lab qc,							
0315_SW108_231012,	0315_SW111_231012,							
0315_SW118_231012,	0315_SW127_231012,							
0315_SW136_231012,	0315_SW140_231012,							
0315_SW144_231012,	0315_SW148_231012,							
0315_SW149_231012,	0315_QC300_231012,							
0315_QC301_231012,	0315_QC101_231012,							
0315_QC104_231012								
HDPE (no PTFE) (EP231X)								
0315_QC103_231012		**12-Oct-2023**	**27-Oct-2023**	09-Apr-2024	✓	**27-Oct-2023**	09-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0315_QC302_231013,	0315_QC501_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0315_SW121_231014,	0315_WWDRUM_231014,	**14-Oct-2023**	**23-Oct-2023**	11-Apr-2024	✓	**24-Oct-2023**	11-Apr-2024	✓
0315_QC303_231014,	0315_QC502_231014							
HDPE (no PTFE) (EP231X)								
0315_QC304_231016,	0315_QC503_231016	**16-Oct-2023**	**23-Oct-2023**	13-Apr-2024	✓	**24-Oct-2023**	13-Apr-2024	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0315_MW008_231012,	0315_MW103_231012,	**12-Oct-2023**	**23-Oct-2023**	09-Apr-2024	✓	**24-Oct-2023**	09-Apr-2024	✓
0315_MW104_231012,	0315_MW107_231012 - Internal lab qc taken,							
0315_MW109_231012,	0315_MW110_231012,							
0315_SW103_231012,	0315_SW107_231012 - Internal lab qc,							
0315_SW108_231012,	0315_SW111_231012,							
0315_SW118_231012,	0315_SW127_231012,							
0315_SW136_231012,	0315_SW140_231012,							
0315_SW144_231012,	0315_SW148_231012,							
0315_SW149_231012,	0315_QC300_231012,							
0315_QC301_231012,	0315_QC101_231012,							
0315_QC104_231012								
HDPE (no PTFE) (EP231X)								
0315_QC103_231012		**12-Oct-2023**	**27-Oct-2023**	09-Apr-2024	✓	**27-Oct-2023**	09-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0315_QC302_231013,	0315_QC501_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0315_SW121_231014,	0315_WWDRUM_231014,	**14-Oct-2023**	**23-Oct-2023**	11-Apr-2024	✓	**24-Oct-2023**	11-Apr-2024	✓
0315_QC303_231014,	0315_QC502_231014							
HDPE (no PTFE) (EP231X)								
0315_QC304_231016,	0315_QC503_231016	**16-Oct-2023**	**23-Oct-2023**	13-Apr-2024	✓	**24-Oct-2023**	13-Apr-2024	✓

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)								
0315_MW008_231012,	0315_MW103_231012,	**12-Oct-2023**	**23-Oct-2023**	09-Apr-2024	✓	**24-Oct-2023**	09-Apr-2024	✓
0315_MW104_231012,	0315_MW107_231012 - Internal lab qc taken,							
0315_MW109_231012,	0315_MW110_231012,							
0315_SW103_231012,	0315_SW107_231012 - Internal lab qc,							
0315_SW108_231012,	0315_SW111_231012,							
0315_SW118_231012,	0315_SW127_231012,							
0315_SW136_231012,	0315_SW140_231012,							
0315_SW144_231012,	0315_SW148_231012,							
0315_SW149_231012,	0315_QC300_231012,							
0315_QC301_231012,	0315_QC101_231012,							
0315_QC104_231012								
HDPE (no PTFE) (EP231X)								
0315_QC103_231012		**12-Oct-2023**	**27-Oct-2023**	09-Apr-2024	✓	**27-Oct-2023**	09-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0315_QC302_231013,	0315_QC501_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓
HDPE (no PTFE) (EP231X)								
0315_SW121_231014,	0315_WWDRUM_231014,	**14-Oct-2023**	**23-Oct-2023**	11-Apr-2024	✓	**24-Oct-2023**	11-Apr-2024	✓
0315_QC303_231014,	0315_QC502_231014							
HDPE (no PTFE) (EP231X)								
0315_QC304_231016,	0315_QC503_231016	**16-Oct-2023**	**23-Oct-2023**	13-Apr-2024	✓	**24-Oct-2023**	13-Apr-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within he 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: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	32	**9.38**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	32	**9.38**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	32	**9.38**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	32	**6.25**	**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
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
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
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
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	: **EM2318619**	Page	: 1 of 17
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP_23	Date Samples Received	: 19-Oct-2023
Order number	: -	Date Analysis Commenced	: 20-Oct-2023
C-O-C number	: 58637	Issue Date	: 08-Nov-2023
Sampler	: [redacted]		
Site	: BLAMEY BARRACKS		
Quote number	: SY/139/19 B		
No. of samples received	: 42		
No. of samples analysed	: 41		

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]	Non-Metals Team Leader	[redacted]
[redacted]	2IC Organic Chemist	[redacted]
[redacted]	2IC Organic Chemist	[redacted]

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: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5375087)									
EM2318605-004	Anonymous	EA055: Moisture Content	----	0.1	%	18.3	18.8	3.0	0% - 20%
EM2318619-027	0315_SD136_231012_0.00 -0.10	EA055: Moisture Content	----	0.1	%	23.6	22.6	4.3	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5380155)									
EM2318605-004	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0004	0.0004	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0175	0.0159	9.5	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EM2318619-027	0315_SD136_231012_0.00 -0.10	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355 46 4	0 0002	mg/kg	0 0005	0 0006	25 5	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0131	0.0136	3.9	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0004	0.0003	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5380155)									
EM2318605-004	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231 Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

				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: 5380155) - continued									
EM2318605-004	Anonymous	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EM2318619-027	0315_SD136_231012_0.00 -0.10	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5380155)									
EM2318605-004	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EM2318619-027	0315_SD136_231012_0.00 -0.10	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	0.0002	0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5380155) - continued									
EM2318619-027	0315_SD136_231012_0.00 -0.10	EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5380155)									
EM2318605-004	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EM2318619-027	0315_SD136_231012_0.00 -0.10	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 5380155)									
EM2318605-004	Anonymous	EP231X: Sum of PFAS	----	0.0002	mg/kg	0.0179	0.0163	9.4	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0179	0.0163	9.4	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0179	0.0163	9.4	0% - 20%
EM2318619-027	0315_SD136_231012_0.00 -0.10	EP231X: Sum of PFAS	----	0.0002	mg/kg	0.0142	0.0147	3.5	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0136	0.0142	4.3	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0136	0.0142	4.3	0% - 20%

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5377176)									
EM2318619-004	0315_MW107_231012 Internal lab qc taken	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.02	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: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5377176) - continued									
EM2318619-004	0315_MW107_231012 Internal lab qc taken	EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EM2318619-008	0315_SW107_231012 Internal lab qc	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.07	0.07	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.20	0.20	0.0	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: 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: 5377181)									
EM2318619-012	0315_SW121_231014	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.10	0.10	0.0	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.31	0.30	4.1	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: 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: 5377176)									
EM2318619-004	0315_MW107_231012 Internal lab qc taken	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.02	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
EM2318619-008	0315_SW107_231012 Internal 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	0.03	0.03	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

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5377176) - continued									
EM2318619-008	0315_SW107_231012 Internal lab qc	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: 5377181)									
EM2318619-012	0315_SW121_231014	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	0.03	0.03	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: 5377176)									
EM2318619-004	0315_MW107_231012 Internal lab qc taken	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
EM2318619-008	0315_SW107_231012 Internal 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: 5377176) - continued									
EM2318619-008	0315_SW107_231012 Internal lab qc	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: 5377181)									
EM2318619-012	0315_SW121_231014	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: 5377176)									
EM2318619-004	0315_MW107_231012 Internal lab qc taken	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
EM2318619-008	0315_SW107_231012 Internal 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: 5377181)									
EM2318619-012	0315_SW121_231014	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: 5377181) - continued									
EM2318619-012	0315_SW121_231014	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: 5377176)									
EM2318619-004	0315_MW107_231012 Internal lab qc taken	EP231X: Sum of PFAS	----	0.01	µg/L	0.12	0.11	8.7	0% - 50%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.10	0.10	0.0	0% - 50%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.12	0.11	8.7	0% - 50%
EM2318619-008	0315_SW107_231012 Internal lab qc	EP231X: Sum of PFAS	----	0.01	µg/L	0.31	0.31	0.0	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.27	0.27	0.0	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.31	0.31	0.0	0% - 20%
EP231P: PFAS Sums (QC Lot: 5377181)									
EM2318619-012	0315_SW121_231014	EP231X: Sum of PFAS	----	0.01	µg/L	0.45	0.44	2.2	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.41	0.40	2.5	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.45	0.44	2.2	0% - 20%

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: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5380155)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00111 mg/kg	92.4	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00118 mg/kg	90.4	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00114 mg/kg	95.2	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00119 mg/kg	95.8	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00116 mg/kg	103	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00121 mg/kg	89.7	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5380155)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	81.8	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.1	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.8	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.4	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.4	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.3	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.2	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.7	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.8	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	93.7	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5380155)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	100	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	117	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	89.5	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.8	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.9	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.6	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5380155)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5380155) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00117 mg/kg	95.0	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00119 mg/kg	102	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.0012 mg/kg	95.5	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00121 mg/kg	108	70.0	130
EP231P: PFAS Sums (QCLot: 5380155)								
EP231X: Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5377176)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	88.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	97.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	95.3	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	90.3	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	93.8	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	88.4	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5377181)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	83.1	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	86.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	88.7	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	94.5	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	85.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	87.2	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5387340)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	85.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	87.3	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	89.8	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	91.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	95.1	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	104	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5377176)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5377176) - continued								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	83.8	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.1	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	92.5	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	90.3	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	93.1	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	93.4	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	95.4	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	95.8	72.0	134
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	0.625 µg/L	89.7	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5377181)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	80.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	82.4	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	94.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	87.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	86.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	89.4	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	80.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	86.6	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	86.7	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	84.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	79.3	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5387340)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	84.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	89.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	86.2	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	91.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	86.6	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	86.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	93.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	93.3	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	97.0	65.0	144

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5387340) - continued								
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	96.4	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5377176)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	97.2	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	88.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	84.4	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	81.5	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	89.8	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	88.6	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	93.9	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5377181)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	84.4	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	86.9	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	76.6	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	79.0	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	82.1	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	87.3	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	80.2	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5387340)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	96.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	113	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	99.8	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.0	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	94.3	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	90.6	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	95.4	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5377176)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5377176) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	89.6	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	92.3	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	86.2	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	80.2	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5377181)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	88.0	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	93.6	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	92.2	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	71.5	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5387340)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	99.5	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	90.1	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	116	70.0	130
EP231P: PFAS Sums (QCLot: 5377176)								
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: 5377181)								
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: 5387340)								
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: **SOIL**

Matrix Spike (MS) Report		
Spike	SpikeRecovery(%)	Acceptable Limits (%)

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5380155)							
EM2318605-005	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00111 mg/kg	89 8	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00118 mg/kg	85 0	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00114 mg/kg	101	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00119 mg/kg	106	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00116 mg/kg	# Not Determined	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00121 mg/kg	101	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5380155)							
EM2318605-005	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	81 2	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	95 2	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	95 2	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	91.7	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	92 3	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	101	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	97.6	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	97 0	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	102	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	94.6	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	92 9	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5380155)							
EM2318605-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	102	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	104	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	102	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	95.6	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	86.4	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	99 0	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	85.4	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5380155)							
EM2318605-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00117 mg/kg	93 8	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00119 mg/kg	97 8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0012 mg/kg	102	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00121 mg/kg	97.1	70.0	130

Sub-Matrix: **WATER**

Matrix Spike (MS) Report

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Matrix Spike (MS) Report: Acceptable Limits (%) Low	Matrix Spike (MS) Report: Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5377176)							
EM2318619-004	0315_MW107_231012 Internal lab qc taken	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	90 3	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	91.6	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	102	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	97.1	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	83 2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	71 8	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5377181)							
EM2318619-013	0315_SW127_231012	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	99 8	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	75 2	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	85.6	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	98.6	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	83.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	# 38.3	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5377176)							
EM2318619-004	0315_MW107_231012 Internal lab qc taken	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	73 2	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	87 9	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	88.1	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	87.4	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	92.1	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	91.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	88.4	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	84 9	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	83 0	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	74.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	83 3	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5377181)							
EM2318619-013	0315_SW127_231012	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	93.7	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	73.1	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	84.6	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	91.1	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	88 2	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	100	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	76 0	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	# 68.1	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	# 40.6	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	# Not Determined	65.0	144

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: 5377181) - continued							
EM2318619-013	0315_SW127_231012	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	# Not Determined	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5377176)							
EM2318619-004	0315_MW107_231012 Internal lab qc taken	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	89 0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	80 2	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	73.1	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	82 3	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	72 9	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	66.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	65 0	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5377181)							
EM2318619-013	0315_SW127_231012	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	83.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	71.4	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	# 50.7	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	70 0	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	# 56.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	# 45.0	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	# 37.5	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5377176)							
EM2318619-004	0315_MW107_231012 Internal lab qc taken	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	86 9	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	92 2	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	86 9	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	76 3	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5377181)							
EM2318619-013	0315_SW127_231012	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	90 8	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	98 0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	88.4	67.0	138

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: 5377181) - continued							
EM2318619-013	0315_SW127_231012	EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	# Not Determined	70.0	130

CERTIFICATE OF ANALYSIS

Work Order	: **EM2318619**	Page	: 1 of 25
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP_23	Date Samples Received	: 19-Oct-2023 12:15
Order number	: -	Date Analysis Commenced	: 20-Oct-2023
C-O-C number	: 58637	Issue Date	: 08-Nov-2023 17:20
Sampler	[redacted]		
Site	: BLAMEY BARRACKS		
Quote number	: SY/139/19 B		
No. of samples received	: 42		
No. of samples analysed	: 41		

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	[redacted]
[redacted]	2IC Organic Chemist	[redacted]
[redacted]	2IC Organic Chemist	[redacted]

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 Contract 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.

- Amendment (26/10/2023): This report has been amended following the request to add PFAS (EP231X) to sample 043. All analysis results are as per the previous report.
- 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.
- EP231X: Poor matrix spike recovery for sample EM2318619-013 due to sample matrix interference.
- Amendment (08/11/2023):This report has been amended following the email from Matthew Barham Wed 8/11/2023 9:50 AM to amend project ID. 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 ini ial 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)

Compound	CAS Number	LOR	Unit	Sample ID	0315_MW008_231012	0315_MW103_231012	0315_MW104_231012	0315_MW107_231012 Internal lab qc taken	0315_MW109_231012
				Sampling date / time	12-Oct-2023 21:01	12-Oct-2023 21:02	12-Oct-2023 20:54	12-Oct-2023 20:48	12-Oct-2023 21:10
					EM2318619-001	EM2318619-002	EM2318619-003	EM2318619-004	EM2318619-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	**0.03**	<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	0.01	µg/L		**0.09**	**0.12**	<0.01	**0.08**	<0.01
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		**0.02**	**0.02**	<0.01	**0.02**	<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	**0.06**	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	**0.03**	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	**0.04**	<0.01	**0.02**	<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	0315_MW008_231012	0315_MW103_231012	0315_MW104_231012	0315_MW107_231012 Internal lab qc taken	0315_MW109_231012
				Sampling date / time	12-Oct-2023 21:01	12-Oct-2023 21:02	12-Oct-2023 20:54	12-Oct-2023 20:48	12-Oct-2023 21:10
Compound	CAS Number	LOR	Unit		EM2318619-001	EM2318619-002	EM2318619-003	EM2318619-004	EM2318619-005
					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		**0.11**	**0.32**	<0.01	**0.12**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.11**	**0.14**	<0.01	**0.10**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.11**	**0.32**	<0.01	**0.12**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**95.3**	**107**	**93.2**	**95.9**	**94.6**
13C8-PFOA	----	0.02	%		**101**	**104**	**103**	**104**	**99.8**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0315_MW110_231012	0315_QC104_231012	----	----	----
				Sampling date / time	12-Oct-2023 21:07	12-Oct-2023 21:50	----	----	----
Compound	CAS Number	LOR	Unit		EM2318619-006	EM2318619-034	--------	--------	--------
					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	0.01	µg/L		<0.01	<0.01	----	----	----
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	0315_MW110_231012	0315_QC104_231012	----	----	----
				Sampling date / time	12-Oct-2023 21:07	12-Oct-2023 21:50	----	----	----
Compound	CAS Number	LOR	Unit		EM2318619-006	EM2318619-034	--------	--------	--------
					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	%		**91.3**	**105**	----	----	----
13C8-PFOA	----	0.02	%		**100**	**100**	----	----	----

Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0315_QC300_231012	0315_QC301_231012	0315_QC302_231013	0315_QC303_231014	0315_QC304_231016
				Sampling date / time	12-Oct-2023 21:39	12-Oct-2023 21:40	13-Oct-2023 18:38	14-Oct-2023 18:47	16-Oct-2023 18:15
Compound	CAS Number	LOR	Unit		EM2318619-030	EM2318619-031	EM2318619-035	EM2318619-037	EM2318619-038
					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	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
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: RINSATE (Matrix: WATER)				Sample ID	0315_QC300_231012	0315_QC301_231012	0315_QC302_231013	0315_QC303_231014	0315_QC304_231016
				Sampling date / time	12-Oct-2023 21:39	12-Oct-2023 21:40	13-Oct-2023 18:38	14-Oct-2023 18:47	16-Oct-2023 18:15
Compound	CAS Number	LOR	Unit		EM2318619-030	EM2318619-031	EM2318619-035	EM2318619-037	EM2318619-038
					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	%		**97.9**	**99.3**	**103**	**114**	**105**
13C8-PFOA	----	0.02	%		**98.8**	**98.3**	**96.9**	**99.2**	**101**

Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0315_QC502_231014	0315_QC503_231016	----	----	----
				Sampling date / time	14-Oct-2023 14:07	16-Oct-2023 14:08	----	----	----
Compound	CAS Number	LOR	Unit		EM2318619-041	EM2318619-042	--------	--------	--------
					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	0.01	µg/L		<0.01	<0.01	----	----	----
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: RINSATE (Matrix: WATER)			Sample ID	0315_QC502_231014	0315_QC503_231016	----	----	----
			Sampling date / time	14-Oct-2023 14:07	16-Oct-2023 14:08	----	----	----
Compound	CAS Number	LOR	Unit	EM2318619-041	EM2318619-042	--------	--------	--------
				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	%	**105**	**99.2**	----	----	----
13C8-PFOA	----	0.02	%	**100**	**95.9**	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)

Compound	CAS Number	LOR	Unit	Sample ID	0315_SD103_231012_ 0.00-0.30	0315_SD106_231012 _0.00-0.10	0315_SD107_231012_ 0.00-0.30	0315_SD108_231012_ 0.00-0.10	0315_SD111_231012_ 0.00-0.10
				Sampling date / time	12-Oct-2023 20:56	12-Oct-2023 21:20	12-Oct-2023 20:51	12-Oct-2023 21:33	12-Oct-2023 21:32
					EM2318619-019	EM2318619-020	EM2318619-021	EM2318619-022	EM2318619-023
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**20.6**	**24.2**	**22.9**	**26.1**	**25.0**
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		**0.0004**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0132**	**0.0036**	**0.0064**	**0.0005**	**0.0012**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		**0.0011**	<0.0002	**0.0002**	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		**0.0005**	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0315_SD103_231012_ 0.00-0.30	0315_SD106_231012 _0.00-0.10	0315_SD107_231012_ 0.00-0.30	0315_SD108_231012_ 0.00-0.10	0315_SD111_231012_ 0.00-0.10
				Sampling date / time	12-Oct-2023 20:56	12-Oct-2023 21:20	12-Oct-2023 20:51	12-Oct-2023 21:33	12-Oct-2023 21:32
Compound	CAS Number	LOR	Unit		EM2318619-019	EM2318619-020	EM2318619-021	EM2318619-022	EM2318619-023
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0152**	**0.0036**	**0.0066**	**0.0005**	**0.0012**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0136**	**0.0036**	**0.0064**	**0.0005**	**0.0012**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0136**	**0.0036**	**0.0064**	**0.0005**	**0.0012**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**105**	**114**	**107**	**109**	**112**
13C8-PFOA	----	0.0002	%		**102**	**108**	**106**	**103**	**104**

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)

Compound	CAS Number	LOR	Unit	Sample ID	0315_SD118_231012_ 0.00-0.30	0315_SD121_231014_ 0.00-0.10	0315_SD127_231012_ 0.00-0.10	0315_SD136_231012_ 0.00-0.10	0315_QC100_231012
				Sampling date / time	12-Oct-2023 21:19	14-Oct-2023 18:39	12-Oct-2023 21:14	12-Oct-2023 21:16	12-Oct-2023 21:36
					EM2318619-024	EM2318619-025	EM2318619-026	EM2318619-027	EM2318619-028
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**21.8**	**20.6**	**21.8**	**23.6**	**26.7**
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**0.0005**	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0016**	**0.0010**	<0.0002	**0.0131**	**0.0012**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**0.0004**	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**0.0002**	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)

Compound	CAS Number	LOR	Unit	Sample ID	0315_SD118_231012_ 0.00-0.30	0315_SD121_231014_ 0.00-0.10	0315_SD127_231012_ 0.00-0.10	0315_SD136_231012_ 0.00-0.10	0315_QC100_231012
				Sampling date / time	12-Oct-2023 21:19	14-Oct-2023 18:39	12-Oct-2023 21:14	12-Oct-2023 21:16	12-Oct-2023 21:36
					EM2318619-024	EM2318619-025	EM2318619-026	EM2318619-027	EM2318619-028
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0016**	**0.0010**	<0.0002	**0.0142**	**0.0012**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0016**	**0.0010**	<0.0002	**0.0136**	**0.0012**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0016**	**0.0010**	<0.0002	**0.0136**	**0.0012**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**108**	**111**	**110**	**101**	**110**
13C8-PFOA	----	0.0002	%		**109**	**102**	**105**	**102**	**96.7**

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0315_QC102_231012	----	----	----	----
				Sampling date / time	12-Oct-2023 21:37	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2318619-029	--------	--------	--------	--------
					Result	---	---	---	---
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**26.0**	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0004**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	----	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0315_QC102_231012	----	----	----	----
				Sampling date / time	12-Oct-2023 21:37	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2318619-029	--------	--------	--------	--------
					Result	---	---	---	---
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	----	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0004**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0004**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0004**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**104**	----	----	----	----
13C8-PFOA	----	0.0002	%		**100**	----	----	----	----

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0315_SW103_231012	0315_SW107_231012 Internal lab qc	0315_SW108_231012	0315_SW111_231012	0315_SW118_231012
				Sampling date / time	12-Oct-2023 20:50	12-Oct-2023 20:59	12-Oct-2023 21:19	12-Oct-2023 21:22	12-Oct-2023 20:55
Compound	CAS Number	LOR	Unit		EM2318619-007	EM2318619-008	EM2318619-009	EM2318619-010	EM2318619-011
					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	0.01	µg/L		**0.28**	**0.07**	**0.01**	**0.02**	**0.09**
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		**0.88**	**0.20**	**0.01**	**0.02**	**0.38**
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**	**0.03**	<0.02	<0.02	**0.03**
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	**0.02**
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: SURFACE WATER (Matrix: WATER)				Sample ID	0315_SW103_231012	0315_SW107_231012 Internal lab qc	0315_SW108_231012	0315_SW111_231012	0315_SW118_231012
				Sampling date / time	12-Oct-2023 20:50	12-Oct-2023 20:59	12-Oct-2023 21:19	12-Oct-2023 21:22	12-Oct-2023 20:55
Compound	CAS Number	LOR	Unit		EM2318619-007	EM2318619-008	EM2318619-009	EM2318619-010	EM2318619-011
					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		**1.25**	**0.31**	**0.02**	**0.04**	**0.52**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**1.16**	**0.27**	**0.02**	**0.04**	**0.47**
Sum of PFAS (WA DER List)	---	0.01	µg/L		**1.25**	**0.31**	**0.02**	**0.04**	**0.52**
EP231S: PFAS Surrogate									
13C4-PFOS	---	0.02	%		**93.7**	**96.9**	**94.2**	**104**	**96.2**
13C8-PFOA	---	0.02	%		**103**	**100**	**97.7**	**104**	**98.8**

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0315_SW121_231014	0315_SW127_231012	0315_SW136_231012	0315_SW140_231012	0315_SW144_231012
				Sampling date / time	14-Oct-2023 18:34	12-Oct-2023 21:17	12-Oct-2023 20:57	12-Oct-2023 21:09	12-Oct-2023 21:03
Compound	CAS Number	LOR	Unit		EM2318619-012	EM2318619-013	EM2318619-014	EM2318619-015	EM2318619-016
					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	**0.05**	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.10**	<0.01	**0.70**	**0.02**	<0.01
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		**0.31**	<0.01	**1.21**	**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	**0.04**	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.03**	<0.02	**0.12**	<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	**0.04**	<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	0315_SW121_231014	0315_SW127_231012	0315_SW136_231012	0315_SW140_231012	0315_SW144_231012
			Sampling date / time	14-Oct-2023 18:34	12-Oct-2023 21:17	12-Oct-2023 20:57	12-Oct-2023 21:09	12-Oct-2023 21:03
Compound	CAS Number	LOR	Unit	EM2318619-012	EM2318619-013	EM2318619-014	EM2318619-015	EM2318619-016
				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	**0.45**	<0.01	**2.24**	**0.03**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.41**	<0.01	**1.91**	**0.03**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.45**	<0.01	**2.17**	**0.03**	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**108**	**103**	**89.9**	**96.7**	**96.7**
13C8-PFOA	----	0.02	%	**100**	**97.7**	**103**	**98.9**	**99.9**

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)

Compound	CAS Number	LOR	Unit	Sample ID	0315_SW148_231012	0315_SW149_231012	0315_QC101_231012	0315_WWDRUM_231014	0315_QC103_231012
				Sampling date / time	12-Oct-2023 21:10	12-Oct-2023 21:21	12-Oct-2023 21:44	14-Oct-2023 18:42	12-Oct-2023 21:47
					EM2318619-017	EM2318619-018	EM2318619-032	EM2318619-036	EM2318619-043
					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	**0.06**	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	**0.01**	**0.02**	**0.45**	**0.01**
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		**0.02**	**0.01**	**0.01**	**0.62**	**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	**0.03**	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	<0.02	**0.14**	<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	**0.03**	<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
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	0315_SW148_231012	0315_SW149_231012	0315_QC101_231012	0315_WWDRUM_231014	0315_QC103_231012
				Sampling date / time	12-Oct-2023 21:10	12-Oct-2023 21:21	12-Oct-2023 21:44	14-Oct-2023 18:42	12-Oct-2023 21:47
Compound	CAS Number	LOR	Unit		EM2318619-017	EM2318619-018	EM2318619-032	EM2318619-036	EM2318619-043
					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		**0.02**	**0.02**	**0.03**	**1.36**	**0.02**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.02**	**0.02**	**0.03**	**1.07**	**0.02**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.02**	**0.02**	**0.03**	**1.27**	**0.02**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**95.7**	**93.4**	**138**	**110**	**93.0**
13C8-PFOA	----	0.02	%		**102**	**99.8**	**100**	**98.0**	**104**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_QC501_231013	----	----	----	----
				Sampling date / time	13-Oct-2023 14:06	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2318619-040	--------	--------	--------	--------
					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	0.01	µg/L		<0.01	----	----	----	----
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	0315_QC501_231013	----	----	----	----
				Sampling date / time	13-Oct-2023 14:06	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2318619-040	--------	--------	--------	--------
					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	%		**96.8**	----	----	----	----

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: RINSATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Sub-Matrix: SEDIMENT		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	68	136
13C8-PFOA	----	69	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

Cardno

Chain of Custody

Sheet 1 of 1

PM Name: [redacted]

Phone: [redacted]

Address: [redacted]

PM Email: [redacted]

Results Email (please email results to all listed): [redacted]

Project Number: NSW_0315_PFASOMP

Laboratory (name, phone,fax no & contact person) : **Eurofins** [redacted]

Sample ID	Laboratory ID	Container	Sampling		Sample Matrix					Sample preservation				Analysis										
			Date	Time	Water	Soil				Ice				PFAS Standard Suite										HOLD
0315_QC200_20230411		1	12-10-23			X				X				X										
0315_QC201_20230411		2	12-10-23		X					X				X										
0315_QC202_20230412		1	12-10-23			X				X				X										
0315_QC203_20230412		2	12-10-23		X					X				X										
0315_QC204_20230413		2	12-10-23		X					X				X										

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples.

Sampler name: (print and signature) Date: 4/11/2022

Relinquished by (Sampler): (print and signature)	Date	Time	Received by: [redacted]	Date	Time
				14/10/23	11:40
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date	Time

[redacted]

[redacted]

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

[redacted]

From: [redacted]
Sent:
To:
Cc:
Subject:
Attachments:

Follow Up Flag: Follow up
Flag Status: Flagged

CAUTION: EXTERNAL EMAIL - Sent from an email domain that is not formally trusted by Eurofins. Do not click on links or open attachments unless you recognise the sender and are certain that the content is safe.

[redacted]

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[redacted]

Cardno

Chain of Custody

PM Name: [redacted]

Phone: [redacted]

Address: [redacted]

PM Email [redacted]

Results Email (please email results to **all** listed):

[redacted]

Project Number: NSW_0315_PFASOMP

Laboratory (name, phone,fax no & contact person) : **Eurofins**

[redacted]

Sample ID	Laboratory ID	Container	Sampling		Sample Matrix					Sample preservation				Analysis										
			Date	Time	Water	Soil				Ice				PFAS Standard Suite										HOLD
0315_QC200_231012		1	12-10-23			X				X				X										
0315_QC201_231012		2	12-10-23		X					X				X										
0315_QC202_231012		1	12-10-23			X				X				X										
0315_QC203_231012		2	12-10-23		X					X				X										
0315_QC204_231012		2	12-10-23		X					X				X										

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples.

Sampler name: (print and signature)

Date: 4/11/2022

Relinquished by (Sampler): (print and signature)	Date	Time	Received by (Courier/Lab): (print and signature)	Date			Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date			Time
Relinquished by: (print and signature)	Date	Time	Received by: (print and signature)	Date			Time

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (24 hour/48 hour/3 days/5 days) Please circle

[redacted]

From: [redacted]
Sent:
To:
Cc:
Subject:
Attachments:

Follow Up Flag: Follow up
Flag Status: Flagged

CAUTION: EXTERNAL EMAIL - Sent from an email domain that is not formally trusted by Eurofins. Do not click on links or open attachments unless you recognise the sender and are certain that the content is safe.

[redacted]

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[redacted]

Eurofins Environment Testing Australia Pty Ltd

Eurofins ARL Pty Ltd

Eurofins Environment Testing NZ Ltd

Sample Receipt Advice

Company name:	Stantec Australia Pty Ltd (VIC)
Contact name:	
Project name:	Not provided
Project ID:	NSW_0315_PFASOMP
Turnaround time:	5 Day
Date/Time received	Oct 19, 2023 11:40 AM
Eurofins reference	1036476

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Results will be delivered electronically via email to

Note: A copy of these results will also be delivered to the general Stantec Australia Pty Ltd (VIC) email address.

Eurofins Environment Testing Australia Pty Ltd [redacted]

Eurofins ARL Pty Ltd [redacted]

Eurofins Environment Testing NZ Ltd [redacted]

Company Name:	Stantec Australia Pty Ltd (VIC)	**Order No.:**	
Address:	[redacted]	**Report #:**	1036476
		Phone:	
		Fax:	
Project Name:			
Project ID:	NSW_0315_PFASOMP_23		

Received:	Oct 19, 2023 11:40 AM
Due:	Oct 26, 2023
Priority:	5 Day
Contact Name:	[redacted]

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	0315_QC200_231012	Oct 12, 2023		Soil	M23-Oc0044491	X	X
2	0315_QC201_231012	Oct 12, 2023		Water	M23-Oc0044492		X
3	0315_QC202_231012	Oct 12, 2023		Soil	M23-Oc0044493	X	X
4	0315_QC203_231012	Oct 12, 2023		Water	M23-Oc0044494		X
5	0315_QC204_231012	Oct 12, 2023		Water	M23-Oc0044495		X
Test Counts						2	5

Stantec Australia Pty Ltd
[redacted]

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: [redacted]

Report **1036476-S-V2**
Project name
Project ID NSW_0315_PFASOMP_23
Received Date Oct 19, 2023

Client Sample ID			0315_QC200_231012	0315_QC202_231012
Sample Matrix			Soil	Soil
Eurofins Sample No.			M23-Oc0044491	M23-Oc0044493
Date Sampled			Oct 12, 2023	Oct 12, 2023
Test/Reference	LOR	Unit		
Sample Properties				
% Moisture	1	%	23	25
Perfluoroalkyl carboxylic acids (PFCAs)				
Perfluorobutanoic acid (PFBA)[N11]	5	ug/kg	< 5	< 5
Perfluoropentanoic acid (PFPeA)[N11]	5	ug/kg	< 5	< 5
Perfluorohexanoic acid (PFHxA)[N11]	5	ug/kg	< 5	< 5
Perfluoroheptanoic acid (PFHpA)[N11]	5	ug/kg	< 5	< 5
Perfluorooctanoic acid (PFOA)[N11]	5	ug/kg	< 5	< 5
Perfluorononanoic acid (PFNA)[N11]	5	ug/kg	< 5	< 5
Perfluorodecanoic acid (PFDA)[N11]	5	ug/kg	< 5	< 5
Perfluoroundecanoic acid (PFUnDA)[N11]	5	ug/kg	< 5	< 5
Perfluorododecanoic acid (PFDoDA)[N11]	5	ug/kg	< 5	< 5
Perfluorotridecanoic acid (PFTrDA)[N15]	5	ug/kg	< 5	< 5
Perfluorotetradecanoic acid (PFTeDA)[N11]	5	ug/kg	< 5	< 5
13C4-PFBA (surr.)	1	%	83	84
13C5-PFPeA (surr.)	1	%	89	89
13C5-PFHxA (surr.)	1	%	73	78
13C4-PFHpA (surr.)	1	%	72	75
13C8-PFOA (surr.)	1	%	66	71
13C5-PFNA (surr.)	1	%	74	77
13C6-PFDA (surr.)	1	%	69	74
13C2-PFUnDA (surr.)	1	%	89	90
13C2-PFDoDA (surr.)	1	%	80	90
13C2-PFTeDA (surr.)	1	%	61	69
Perfluoroalkyl sulfonamido substances				
Perfluorooctane sulfonamide (FOSA)[N11]	5	ug/kg	< 5	< 5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	5	ug/kg	< 5	< 5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	5	ug/kg	< 5	< 5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	5	ug/kg	< 5	< 5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	5	ug/kg	< 5	< 5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	10	ug/kg	< 10	< 10
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	10	ug/kg	< 10	< 10

Client Sample ID			0315_QC200_231012	0315_QC202_231012
Sample Matrix			Soil	Soil
Eurofins Sample No.			M23-Oc0044491	M23-Oc0044493
Date Sampled			Oct 12, 2023	Oct 12, 2023
Test/Reference	LOR	Unit		
Perfluoroalkyl sulfonamido substances				
13C8-FOSA (surr.)	1	%	60	61
D3-N-MeFOSA (surr.)	1	%	87	93
D5-N-EtFOSA (surr.)	1	%	100	106
D7-N-MeFOSE (surr.)	1	%	79	70
D9-N-EtFOSE (surr.)	1	%	59	64
D5-N-EtFOSAA (surr.)	1	%	102	111
D3-N-MeFOSAA (surr.)	1	%	111	126
Perfluoroalkyl sulfonic acids (PFSAs)				
Perfluorobutanesulfonic acid (PFBS)[N11]	5	ug/kg	< 5	< 5
Perfluorononanesulfonic acid (PFNS)[N15]	5	ug/kg	< 5	< 5
Perfluoropropanesulfonic acid (PFPrS)[N15]	5	ug/kg	< 5	< 5
Perfluoropentanesulfonic acid (PFPeS)[N15]	5	ug/kg	< 5	< 5
Perfluorohexanesulfonic acid (PFHxS)[N11]	5	ug/kg	< 5	< 5
Perfluoroheptanesulfonic acid (PFHpS)[N15]	5	ug/kg	< 5	< 5
Perfluorooctanesulfonic acid (PFOS)[N11]	5	ug/kg	[N09]< 5	< 5
Perfluorodecanesulfonic acid (PFDS)[N15]	5	ug/kg	< 5	< 5
13C3-PFBS (surr.)	1	%	66	72
18O2-PFHxS (surr.)	1	%	61	62
13C8-PFOS (surr.)	1	%	59	64
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	5	ug/kg	< 5	< 5
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	10	ug/kg	< 10	< 10
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	5	ug/kg	< 5	< 5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	5	ug/kg	< 5	< 5
13C2-4:2 FTSA (surr.)	1	%	88	93
13C2-6:2 FTSA (surr.)	1	%	98	98
13C2-8:2 FTSA (surr.)	1	%	102	124
13C2-10:2 FTSA (surr.)	1	%	113	105
PFASs Summations				
Sum (PFHxS + PFOS)*	5	ug/kg	< 5	< 5
Sum of US EPA PFAS (PFOS + PFOA)*	5	ug/kg	< 5	< 5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	5	ug/kg	< 5	< 5
Sum of WA DWER PFAS (n=10)*	10	ug/kg	< 10	< 10
Sum of PFASs (n=30)*	50	ug/kg	< 50	< 50

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Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
% Moisture	Melbourne	Oct 19, 2023	14 Days
- Method: LTM-GEN-7080 Moisture			
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Melbourne	Oct 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Melbourne	Oct 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Melbourne	Oct 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Melbourne	Oct 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
PFASs Summations	Melbourne	Oct 19, 2023	
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

[redacted]

Company Name:	Stantec Australia Pty Ltd (VIC)	**Order No.:**		**Received:**	Oct 19, 2023 11:40 AM
Address:	[redacted]	**Report #:**	1036476	**Due:**	Oct 26, 2023
		Phone:		**Priority:**	5 Day
		Fax:		**Contact Name:**	[redacted]
Project Name:					
Project ID:	NSW_0315_PFASOMP				

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	0315_QC200_20230411	Oct 12, 2023		Soil	M23-Oc0044491	X	X
2	0315_QC201_20230411	Oct 12, 2023		Water	M23-Oc0044492		X
3	0315_QC202_20230412	Oct 12, 2023		Soil	M23-Oc0044493	X	X
4	0315_QC203_20230412	Oct 12, 2023		Water	M23-Oc0044494		X
5	0315_QC204_20230413	Oct 12, 2023		Water	M23-Oc0044495		X
Test Counts						2	5

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Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry weight basis unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion unless otherwise stated.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with blue colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is 7 days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg milligrams per kilogram
mg/L milligrams per litre
µg/L micrograms per litre
ppm parts per million
ppb parts per billion
% Percentage
org/100 mL Organisms per 100 millilitres
NTU Nephelometric Turbidity Units
MPN/100 mL Most Probable Number of organisms per 100 millilitres
CFU Colony forming unit

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6 2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30%; however the following acceptance guidelines are equally applicable: Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR: RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%

PFAS field samples that contain surrogate recoveries above the QC limit designated in QSM 5.4, where no positive PFAS results have been reported, have been reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term " NT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/kg	< 5			5	Pass	
Perfluoropentanoic acid (PFPeA)	ug/kg	< 5			5	Pass	
Perfluorohexanoic acid (PFHxA)	ug/kg	< 5			5	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/kg	< 5			5	Pass	
Perfluorooctanoic acid (PFOA)	ug/kg	< 5			5	Pass	
Perfluorononanoic acid (PFNA)	ug/kg	< 5			5	Pass	
Perfluorodecanoic acid (PFDA)	ug/kg	< 5			5	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/kg	< 5			5	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/kg	< 5			5	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/kg	< 5			5	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/kg	< 5			5	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/kg	< 5			5	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/kg	< 5			5	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/kg	< 5			5	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	ug/kg	< 5			5	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	ug/kg	< 5			5	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/kg	< 10			10	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/kg	< 10			10	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/kg	< 5			5	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/kg	< 5			5	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/kg	< 5			5	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/kg	< 5			5	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	< 5			5	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	< 5			5	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/kg	< 5			5	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/kg	< 5			5	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/kg	< 5			5	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	ug/kg	< 10			10	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/kg	< 5			5	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/kg	< 5			5	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	68			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	71			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	68			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	69			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	67			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	77			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	73			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	74			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	74			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	66			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	82			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	73			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	81			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	64			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	%	60			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	%	81			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	68			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	73			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	68			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	88			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	69			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	76			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	71			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	62			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	71			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	89			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	67			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	%	68			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	76			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	84			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	M23-Oc0044193	NCP	%	79			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	M23-Oc0044193	NCP	%	70			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	M23-Oc0044193	NCP	%	77			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	M23-Oc0044193	NCP	%	79			50-150	Pass	
Perfluorooctanoic acid (PFOA)	M23-Oc0044193	NCP	%	76			50-150	Pass	
Perfluorononanoic acid (PFNA)	M23-Oc0044193	NCP	%	90			50-150	Pass	
Perfluorodecanoic acid (PFDA)	M23-Oc0044193	NCP	%	83			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	M23-Oc0044193	NCP	%	77			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	M23-Oc0044193	NCP	%	87			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	M23-Oc0044193	NCP	%	82			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M23-Oc0044193	NCP	%	89			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	M23-Oc0044193	NCP	%	75			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M23-Oc0044193	NCP	%	93			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M23-Oc0044193	NCP	%	59			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	M23-Oc0044193	NCP	%	59			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	M23-Oc0044193	NCP	%	87			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M23-Oc0044193	NCP	%	71			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M23-Oc0044193	NCP	%	87			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	M23-Oc0044193	NCP	%	77			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	M23-Oc0044193	NCP	%	71			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	M23-Oc0044193	NCP	%	69			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M23-Oc0044193	NCP	%	96			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M23-Oc0044193	NCP	%	84			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M23-Oc0044193	NCP	%	70			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	M23-Oc0044193	NCP	%	88			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	M23-Oc0044193	NCP	%	82			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	M23-Oc0044193	NCP	%	78			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	M23-Oc0044193	NCP	%	75			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	M23-Oc0044193	NCP	%	73			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	M23-Oc0044193	NCP	%	93			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	M23-Oc0044491	CP	%	23	24	2.9	30%	Pass	
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M23-Oc0043330	NCP	ug/kg	< 10	< 10	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M23-Oc0043330	NCP	ug/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	M23-Oc0043330	NCP	ug/kg	< 10	< 10	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	M23-Oc0043330	NCP	ug/kg	< 5	< 5	<1	30%	Pass	

Comments

This report has been revised (V2) to correct project name to NSW_0315_PFASOMP_23, per client request.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised by:

[redacted]

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Stantec Australia Pty Ltd
[redacted]

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: [redacted]

Report **1036476-W-V2**
Project name
Project ID NSW_0315_PFASOMP_23
Received Date Oct 19, 2023

Client Sample ID			**0315_QC201_231012**	**0315_QC203_231012**	**0315_QC204_231012**
Sample Matrix			**Water**	**Water**	**Water**
Eurofins Sample No.			**M23-Oc0044492**	**M23-Oc0044494**	**M23-Oc0044495**
Date Sampled			**Oct 12, 2023**	**Oct 12, 2023**	**Oct 12, 2023**
Test/Reference	LOR	Unit			
Perfluoroalkyl carboxylic acids (PFCAs)					
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	< 0.01	0.03	< 0.01
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	< 0.01	0.01	< 0.01
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	< 0.01	0.01	< 0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
13C4-PFBA (surr.)	1	%	64	64	94
13C5-PFPeA (surr.)	1	%	95	114	111
13C5-PFHxA (surr.)	1	%	130	149	125
13C4-PFHpA (surr.)	1	%	135	147	118
13C8-PFOA (surr.)	1	%	100	112	131
13C5-PFNA (surr.)	1	%	128	132	106
13C6-PFDA (surr.)	1	%	99	115	98
13C2-PFUnDA (surr.)	1	%	60	71	73
13C2-PFDoDA (surr.)	1	%	45	54	77
13C2-PFTeDA (surr.)	1	%	30	36	60
Perfluoroalkyl sulfonamido substances					
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
13C8-FOSA (surr.)	1	%	82	102	85
D3-N-MeFOSA (surr.)	1	%	31	62	32

Client Sample ID			0315_QC201_231012	0315_QC203_231012	0315_QC204_231012
Sample Matrix			**Water**	**Water**	**Water**
Eurofins Sample No.			**M23-Oc0044492**	**M23-Oc0044494**	**M23-Oc0044495**
Date Sampled			**Oct 12, 2023**	**Oct 12, 2023**	**Oct 12, 2023**
Test/Reference	LOR	Unit			
Perfluoroalkyl sulfonamido substances					
D5-N-EtFOSA (surr.)	1	%	21	49	29
D7-N-MeFOSE (surr.)	1	%	34	50	58
D9-N-EtFOSE (surr.)	1	%	31	43	57
D5-N-EtFOSAA (surr.)	1	%	55	63	67
D3-N-MeFOSAA (surr.)	1	%	69	76	76
Perfluoroalkyl sulfonic acids (PFSAs)					
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	< 0.01	[N09]0.01	< 0.01
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	[N09]0.02	[N09]0.02	< 0.01
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	[N09]0.02	[N09]0.02	< 0.01
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
13C3-PFBS (surr.)	1	%	137	149	137
18O2-PFHxS (surr.)	1	%	117	120	126
13C8-PFOS (surr.)	1	%	113	118	111
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
13C2-4:2 FTSA (surr.)	1	%	149	154	70
13C2-6:2 FTSA (surr.)	1	%	137	132	65
13C2-8:2 FTSA (surr.)	1	%	92	99	121
13C2-10:2 FTSA (surr.)	1	%	52	60	69
PFASs Summations					
Sum (PFHxS + PFOS)*	0.01	ug/L	0.04	0.04	< 0.01
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	0.02	0.03	< 0.01
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	0.04	0.05	< 0.01
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	< 0.05	0.1	< 0.05
Sum of PFASs (n=30)*	0.1	ug/L	< 0.1	0.1	< 0.1

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Melbourne	Oct 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Melbourne	Oct 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Melbourne	Oct 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Melbourne	Oct 20, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
PFASs Summations	Melbourne	Oct 19, 2023	
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

[redacted]

Company Name: Stantec Australia Pty Ltd (VIC)
Address: [redacted]

Order No.:
Report #: 1036476
Phone:
Fax:

Received: Oct 19, 2023 11:40 AM
Due: Oct 26, 2023
Priority: 5 Day
Contact Name: [redacted]

Project Name:
Project ID: NSW_0315_PFASOMP

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	0315_QC200_20230411	Oct 12, 2023		Soil	M23-Oc0044491	X	X
2	0315_QC201_20230411	Oct 12, 2023		Water	M23-Oc0044492		X
3	0315_QC202_20230412	Oct 12, 2023		Soil	M23-Oc0044493	X	X
4	0315_QC203_20230412	Oct 12, 2023		Water	M23-Oc0044494		X
5	0315_QC204_20230413	Oct 12, 2023		Water	M23-Oc0044495		X
Test Counts						2	5

eurofins | Environment Testing

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry weight basis unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion unless otherwise stated.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with blue colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is 7 days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg milligrams per kilogram
mg/L milligrams per litre
µg/L micrograms per litre
ppm parts per million
ppb parts per billion
% Percentage
org/100 mL Organisms per 100 millilitres
NTU Nephelometric Turbidity Units
MPN/100 mL Most Probable Number of organisms per 100 millilitres
CFU Colony forming unit

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6 2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30%; however the following acceptance guidelines are equally applicable: Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR: RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%

PFAS field samples that contain surrogate recoveries above the QC limit designated in QSM 5.4, where no positive PFAS results have been reported, have been reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term " NT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.05			0.05	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.01			0.01	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.01			0.01	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.01			0.01	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.01			0.01	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.05			0.05	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.05			0.05	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.05			0.05	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	ug/L	< 0.05			0.05	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	ug/L	< 0.05			0.05	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.05			0.05	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.05			0.05	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.01			0.01	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/L	< 0.01			0.01	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/L	< 0.01			0.01	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.01			0.01	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	ug/L	< 0.05			0.05	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	81			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	82			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	88			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	84			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	104			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	90			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	85			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	90			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	92			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	72			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	87			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	83			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	83			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	83			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	%	111			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	%	109			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	76			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	88			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	84			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	99			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	79			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	75			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	93			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	80			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	76			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	92			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	76			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	%	83			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	84			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	75			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorotridecanoic acid (PFTrDA)	M23-Oc0045729	NCP	%	59			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	M23-Oc0044495	CP	%	75			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	M23-Oc0044495	CP	%	76			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	M23-Oc0044495	CP	%	79			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	M23-Oc0044495	CP	%	72			50-150	Pass	
Perfluorooctanoic acid (PFOA)	M23-Oc0044495	CP	%	97			50-150	Pass	
Perfluorononanoic acid (PFNA)	M23-Oc0044495	CP	%	92			50-150	Pass	
Perfluorodecanoic acid (PFDA)	M23-Oc0044495	CP	%	82			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	M23-Oc0044495	CP	%	80			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	M23-Oc0044495	CP	%	84			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M23-Oc0044495	CP	%	78			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	M23-Oc0044495	CP	%	76			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M23-Oc0044495	CP	%	93			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M23-Oc0044495	CP	%	82			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	M23-Oc0044495	CP	%	100			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	M23-Oc0044495	CP	%	95			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M23-Oc0044495	CP	%	72			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M23-Oc0044495	CP	%	77			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	M23-Oc0044495	CP	%	75			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	M23-Oc0044495	CP	%	78			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	M23-Oc0044495	CP	%	70			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M23-Oc0044495	CP	%	63			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M23-Oc0044495	CP	%	84			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M23-Oc0044495	CP	%	70			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	M23-Oc0044495	CP	%	70			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	M23-Oc0044495	CP	%	64			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	M23-Oc0044495	CP	%	73			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	M23-Oc0044495	CP	%	84			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	M23-Oc0044495	CP	%	82			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	M23-Oc0044495	CP	%	69			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	M23-Oc0043367	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	M23-Oc0043367	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	M23-Oc0043367	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	M23-Oc0043367	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	M23-Oc0043367	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	M23-Oc0043367	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	M23-Oc0043367	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	M23-Oc0043367	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	M23-Oc0043367	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	M23-Oc0043367	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M23-Oc0043367	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	M23-Oc0043367	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M23-Oc0043367	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M23-Oc0043367	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	M23-Oc0043367	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	M23-Oc0043367	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M23-Oc0043367	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M23-Oc0043367	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	M23-Oc0043367	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	M23-Oc0043367	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	M23-Oc0043367	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M23-Oc0043367	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M23-Oc0043367	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M23-Oc0043367	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	M23-Oc0043367	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	M23-Oc0043367	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	M23-Oc0043367	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	M23-Oc0043367	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	M23-Oc0043367	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	M23-Oc0043367	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised by:

[redacted]

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

CHAIN OF CUSTODY

(ALS) COC#: 58471 *ALS Laboratory:* EM Melbourne Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	[redacted] DATE TIME: 19/10/23 1215	DATE TIME:	DATE TIME:

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0315_PFASOMP

SITE: [redacted]

ORDER NO:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: [redacted]

QUOTE NO: SY/139/19 B

SAMPLER MOBILE: [redacted] / EM2022MWHAUS0006

EMAIL REPORTS TO: [redacted]

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	SW (PFAS Full)(Std Level) WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0315_SW680_231013		13/10/2023 06:34 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division
Melbourne
Work Order Reference
EM2318603

Telephone : [redacted]

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EM2318603**		
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Me bourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NSW_0315_PFASOMP_23	Page	: 1 of 2
Order number	: -	Quote number	: ES2022MWHAUS0002 (SY/139/19 B)
C-O-C number	: 58471	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: GILMOUR		
Sampler	: [redacted]		

Dates

Date Samples Received	: 19-Oct-2023 12:15	Issue Date	: 08-Nov-2023
Client Requested Due Date	: 26-Oct-2023	Scheduled Reporting Date	: **26-Oct-2023**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 4	Temperature	: 15°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)
EM2318603-001	13-Oct-2023 18:34	0315_SW680_231013	✓

Proactive Holding Time Report

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

Requested Deliverables

[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 - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

[redacted]
- A4 - AU Tax Invoice (INV) Email [redacted]

[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 - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) 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 - ESDAT (ESDAT) Email
- EDI Format - XTab (XTAB) Email

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2318603**	Page	: 1 of 4
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP_23	Date Samples Received	: 19-Oct-2023
Site	: [redacted]	Issue Date	: 08-Nov-2023
Sampler	: [redacted]	No. of samples received	: 1
Order number	: -	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.**
- **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							
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EM2318605--003	Anonymous	**10:2 Fluorotelomer sulfonic acid (10:2 FTS)**	120226-60-0	48.7 %	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
Method	QC	Regular	Actual	Expected	
	1				
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	1	20	5.00	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; o hers 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) 0315_SW680_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0315_SW680_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0315_SW680_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0315_SW680_231013	**13-Oct-2023**	**23-Oct-2023**	10 Apr 2024	✓	**24-Oct-2023**	10 Apr 2024	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0315_SW680_231013	**13-Oct-2023**	**23-Oct-2023**	10-Apr-2024	✓	**24-Oct-2023**	10-Apr-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within he 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		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**10.00**	✖	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	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
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
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	: **EM2318603**	Page	: 1 of 6
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP_23	Date Samples Received	: 19-Oct-2023
Order number	: -	Date Analysis Commenced	: 23-Oct-2023
C-O-C number	: 58471	Issue Date	: 08-Nov-2023
Sampler	: [redacted]		
Site	: [redacted]		
Quote number	: SY/139/19 B		
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]	2IC Organic Chemist	[redacted]

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: 5376007)									
EM2318605-003	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.07	0.07	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: 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: 5376007)									
EM2318605-003	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: 5376007)									
EM2318605-003	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

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: 5376007) - continued									
EM2318605-003	Anonymous	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: 5376007)									
EM2318605-003	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: 5376007)									
EM2318605-003	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.08	0.08	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 Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5376007)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	90.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	95.7	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	95.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	94.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.9	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	88.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5376007)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	86.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.1	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	96.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	96.1	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	93.0	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.1	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	90.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5376007)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	97.7	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	97.9	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	101	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.1	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	97.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	82.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376007)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376007) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	92.3	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	91.8	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	93.1	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	86.4	70.0	130
EP231P: PFAS Sums (QCLot: 5376007)								
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	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5376007)							
EM2318605-003	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	88.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	79 3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	86 3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	111	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	90.7	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	71.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5376007)							
EM2318605-003	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	88.7	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	90 9	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	92.6	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	96.6	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	90 5	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	84 9	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	90 5	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	74.1	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	79 2	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5376007)							

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: 5376007) - continued							
EM2318605-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	93.7	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	99 0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.1	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	92 5	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	97.7	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	92 0	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91 3	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376007)							
EM2318605-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	93 5	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	93 0	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	# 48.7	70.0	130

CERTIFICATE OF ANALYSIS

Work Order	: **EM2318603**	Page	: 1 of 5
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP_23	Date Samples Received	: 19-Oct-2023 12:15
Order number	: -	Date Analysis Commenced	: 23-Oct-2023
C-O-C number	: 58471	Issue Date	: 08-Nov-2023 17:28
Sampler	: [redacted]		
Site	: [redacted]		
Quote number	: SY/139/19 B		
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]	2IC Organic Chemist	[redacted]

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 Contract 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: Poor matrix spike recovery for sample EM2318605-003 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 (08/11/2023):This report has been amended following the email from Matthew Barham Wed 8/11/2023 9:50 AM to amend project ID. All analysis results are as per the previous report.
- Amendment (08/11/2023):This report has been amended following the email from Matthew Barham Wed 8/11/2023 9:50 AM to amend project ID but did not update so had to check out again to amend. 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 ini ial 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: SURFACE WATER (Matrix: WATER)				Sample ID	0315_SW680_231013	----	----	----	----
				Sampling date / time	13-Oct-2023 18:34	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2318603-001	--------	--------	--------	--------
					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	0.01	µg/L		**0.05**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.13**	----	----	----	----
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: SURFACE WATER (Matrix: WATER)				Sample ID	0315_SW680_231013	----	----	----	----
				Sampling date / time	13-Oct-2023 18:34	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2318603-001	--------	--------	--------	--------
					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		**0.18**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.18**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.18**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**112**	----	----	----	----
13C8-PFOA	----	0.02	%		**101**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

CHAIN OF CUSTODY

ALS COC#: 58470 ALS Laboratory: EM Melbourne Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 19/10/23 12:15	DATE TIME:	DATE TIME:

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0315_PFASOMP

SITE: LLS

ORDER NO:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: [redacted]

SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 B

EM2022MWHAUS0006

EMAIL REPORTS TO: [redacted]

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	GW (PFAS Full/Std Level) WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0315_MW625_231012		12/10/2023 09:13 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division
Melbourne
Work Order Reference
EM2318601

Telephone : [redacted]

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2318601**	Page	: 1 of 4
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP	Date Samples Received	: 19-Oct-2023
Site	: LLS	Issue Date	: 30-Oct-2023
Sampler	: [redacted]	No. of samples received	: 1
Order number	: -	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.**
- **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							
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EM2318605--003	Anonymous	**10:2 Fluorotelomer sulfonic acid (10:2 FTS)**	120226-60-0	48.7 %	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
Method	QC	Regular	Actual	Expected	
	1				
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	1	20	5.00	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; o hers 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) 0315_MW625_231012	**12-Oct-2023**	**23-Oct-2023**	09-Apr-2024	✓	**24-Oct-2023**	09-Apr-2024	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0315_MW625_231012	**12-Oct-2023**	**23-Oct-2023**	09-Apr-2024	✓	**24-Oct-2023**	09-Apr-2024	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0315_MW625_231012	**12-Oct-2023**	**23-Oct-2023**	09-Apr-2024	✓	**24-Oct-2023**	09-Apr-2024	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0315_MW625_231012	**12-Oct-2023**	**23-Oct-2023**	09 Apr 2024	✓	**24-Oct-2023**	09 Apr 2024	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0315_MW625_231012	**12-Oct-2023**	**23-Oct-2023**	09-Apr-2024	✓	**24-Oct-2023**	09-Apr-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within he 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		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**10.00**	✖	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	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*
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*
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	: **EM2318601**	Page	: 1 of 6
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP	Date Samples Received	: 19-Oct-2023
Order number	: -	Date Analysis Commenced	: 20-Oct-2023
C-O-C number	: 58470	Issue Date	: 30-Oct-2023
Sampler	: [redacted]		
Site	: LLS		
Quote number	: SY/139/19 B		
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]	2IC Organic Chemist	[redacted]

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: 5376007)									
EM2318605-003	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.07	0.07	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: 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: 5376007)									
EM2318605-003	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: 5376007)									
EM2318605-003	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

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: 5376007) - continued									
EM2318605-003	Anonymous	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: 5376007)									
EM2318605-003	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: 5376007)									
EM2318605-003	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.08	0.08	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 Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5376007)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	90.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	95.7	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	95.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	94.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.9	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	88.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5376007)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	86.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.1	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	96.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	96.1	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	93.0	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.1	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	90.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5376007)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	97.7	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	97.9	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	101	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.1	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	97.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	82.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376007)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376007) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	92.3	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	91.8	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	93.1	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	86.4	70.0	130
EP231P: PFAS Sums (QCLot: 5376007)								
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	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5376007)							
EM2318605-003	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	88.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	79 3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	86 3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	111	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	90.7	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	71.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5376007)							
EM2318605-003	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	88.7	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	90 9	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	92.6	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	96.6	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	90 5	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	84 9	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	90 5	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	74.1	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	79 2	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5376007)							

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: 5376007) - continued							
EM2318605-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	93.7	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	99 0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.1	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	92 5	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	97.7	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	92 0	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91 3	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376007)							
EM2318605-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	93 5	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	93 0	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	# 48.7	70.0	130

CERTIFICATE OF ANALYSIS

Work Order	: **EM2318601**	Page	: 1 of 5
Amendment	: **2**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP	Date Samples Received	: 19-Oct-2023 12:15
Order number	: -	Date Analysis Commenced	: 20-Oct-2023
C-O-C number	: 58470	Issue Date	: 30-Oct-2023 12:18
Sampler	: [redacted]		
Site	: LLS		
Quote number	: SY/139/19 B		
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]	2IC Organic Chemist	[redacted]

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 Contract 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: Poor matrix spike recovery for sample EM2318605-003 due to sample matrix interference.
- Amendment (30/10/2023): This report has been amended following the request to reissue the SRN.
- 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 ini ial 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	0315_MW625_231012	----	----	----	----
				Sampling date / time	12-Oct-2023 21:13	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2318601-001	--------	--------	--------	--------
					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	0.01	µg/L		<0.01	----	----	----	----
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	0315_MW625_231012	----	----	----	----
				Sampling date / time	12-Oct-2023 21:13	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2318601-001	--------	--------	--------	--------
					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	%		**106**	----	----	----	----
13C8-PFOA	----	0.02	%		**94.3**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

CHAIN OF CUSTODY

(ALS) COC#: 58472 *ALS Laboratory:* EM Melbourne Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	[redacted] DATE TIME: 19/10/23 1215	DATE TIME:	DATE TIME:

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0315_PFASOMP

SITE: Wagga Council

ORDER NO:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: [redacted] SAMPLER MOBILE: [redacted]

QUOTE NO: SY/139/19 B / EM2022MWHAUS0006

EMAIL REPORTS TO: [redacted]

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	GW (PFAS Full/Std Level) WATER	SED (PFAS Full/Std Level) SOIL	SW (PFAS Full/Std Level) WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0315_MW601_231012		12/10/2023 08:53 PM	WATER	ALS: 2 Non ALS: 0	No	X				
002	0315_MW624_231012		12/10/2023 08:58 PM	WATER	ALS: 2 Non ALS: 0	No	X				
003	0315_SW614_231016		16/10/2023 05:55 PM	WATER	ALS: 6 Non ALS: 0	No			X	Internal lab qc	
004	0315_SD614_231013_0.00-0.30		13/10/2023 08:21 PM	SOIL	ALS: 1 Non ALS: 0	No		X			
005	0315_SD677_231014_0.00-0.30		14/10/2023 06:37 PM	SOIL	ALS: 1 Non ALS: 0	No		X			

Environmental Division
Melbourne
Work Order Reference
EM2318605

Telephone : [redacted]

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EM2318605**		
Amendment	: **1**		
Client	: **STANTEC 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	: NSW_0315_PFASOMP_23	Page	: 1 of 3
Order number	: -	Quote number	: ES2022MWHAUS0002 (SY/139/19 B)
C-O-C number	: 58472	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Wagga Council		
Sampler	: [redacted]		

Dates

Date Samples Received	: 19-Oct-2023 12:15	Issue Date	: 08-Nov-2023
Client Requested Due Date	: 26-Oct-2023	Scheduled Reporting Date	: **26-Oct-2023**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 4	Temperature	: 15°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 5 / 5

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.**

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

EM2318605-004 : 13-Oct-2023 20:21 : 0315_SD614_231013_0.00-0.30
EM2318605-005 : 14-Oct-2023 18:37 : 0315_SD677_231014_0.00-0.30

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: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
EM2318605-004	13-Oct-2023 20:21	0315_SD614_231013_0....	✓	✓
EM2318605-005	14-Oct-2023 18:37	0315_SD677_231014_0....	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
EM2318605-001	12-Oct-2023 20:53	0315_MW601_231012	✓
EM2318605-002	12-Oct-2023 20:58	0315_MW624_231012	✓
EM2318605-003	16-Oct-2023 17:55	0315_SW614_231016	✓

Proactive Holding Time Report

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

Requested Deliverables

[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 - ESDAT (ESDAT)	Email	
- EDI Format - XTab (XTAB)	Email	

[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	
- *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 - ESDAT (ESDAT)	Email	
- EDI Format - XTab (XTAB)	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 - ESDAT (ESDAT)	Email	
- EDI Format - XTab (XTAB)	Email	

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2318605**	Page	: 1 of 6
Amendment	: **1**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP_23	Date Samples Received	: 19-Oct-2023
Site	: Wagga Council	Issue Date	: 08-Nov-2023
Sampler	: [redacted]	No. of samples received	: 5
Order number	: -	No. of samples analysed	: 5

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: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	EM2318605--005	0315_SD677_231014_0.00-0.3	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EM2318605--003	0315_SW614_231016	**10:2 Fluorotelomer sulfonic acid (10:2 FTS)**	120226-60-0	48.7 %	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
Method	QC 1	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	1	20	5.00	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: **SOIL**

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*
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055) 0315_SD614_231013_0.00-0.30	**13-Oct-2023**	**----**	----	----	**20-Oct-2023**	27-Oct-2023	✓
HDPE Soil Jar (EA055) 0315_SD677_231014_0.00-0.30	**14-Oct-2023**	**----**	----	----	**20-Oct-2023**	28-Oct-2023	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X) 0315_SD614_231013_0.00-0.30	**13-Oct-2023**	**24-Oct-2023**	10-Apr-2024	✓	**25-Oct-2023**	03-Dec-2023	✓
HDPE Soil Jar (EP231X) 0315_SD677_231014_0.00-0.30	**14-Oct-2023**	**24-Oct-2023**	11-Apr-2024	✓	**25-Oct-2023**	03-Dec-2023	✓

Matrix: **SOIL**

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 Soil Jar (EP231X) 0315_SD614_231013_0.00-0.30	13-Oct-2023	24-Oct-2023	10-Apr-2024	✓	25-Oct-2023	03-Dec-2023	✓
HDPE Soil Jar (EP231X) 0315_SD677_231014_0.00-0.30	14-Oct-2023	24-Oct-2023	11-Apr-2024	✓	25-Oct-2023	03-Dec-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X) 0315_SD614_231013_0.00-0.30	13-Oct-2023	24-Oct-2023	10-Apr-2024	✓	25-Oct-2023	03-Dec-2023	✓
HDPE Soil Jar (EP231X) 0315_SD677_231014_0.00-0.30	14-Oct-2023	24-Oct-2023	11-Apr-2024	✓	25-Oct-2023	03-Dec-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X) 0315_SD614_231013_0.00-0.30	13-Oct-2023	24-Oct-2023	10-Apr-2024	✓	25-Oct-2023	03-Dec-2023	✓
HDPE Soil Jar (EP231X) 0315_SD677_231014_0.00-0.30	14-Oct-2023	24-Oct-2023	11-Apr-2024	✓	25-Oct-2023	03-Dec-2023	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X) 0315_SD614_231013_0.00-0.30	13-Oct-2023	24-Oct-2023	10-Apr-2024	✓	25-Oct-2023	03-Dec-2023	✓
HDPE Soil Jar (EP231X) 0315_SD677_231014_0.00-0.30	14-Oct-2023	24-Oct-2023	11-Apr-2024	✓	25-Oct-2023	03-Dec-2023	✓

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) 0315_MW601_231012, 0315_MW624_231012	12-Oct-2023	23-Oct-2023	09-Apr-2024	✓	24-Oct-2023	09-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0315_SW614_231016	16-Oct-2023	23-Oct-2023	13-Apr-2024	✓	24-Oct-2023	13-Apr-2024	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0315_MW601_231012, 0315_MW624_231012	12-Oct-2023	23-Oct-2023	09-Apr-2024	✓	24-Oct-2023	09-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0315_SW614_231016	16-Oct-2023	23-Oct-2023	13-Apr-2024	✓	24-Oct-2023	13-Apr-2024	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0315_MW601_231012, 0315_MW624_231012	12-Oct-2023	23-Oct-2023	09-Apr-2024	✓	24-Oct-2023	09-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0315_SW614_231016	16-Oct-2023	23-Oct-2023	13-Apr-2024	✓	24-Oct-2023	13-Apr-2024	✓

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) 0315_MW601_231012, 0315_MW624_231012	**12-Oct-2023**	**23-Oct-2023**	09-Apr-2024	✓	**24-Oct-2023**	09-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0315_SW614_231016	**16-Oct-2023**	**23-Oct-2023**	13-Apr-2024	✓	**24-Oct-2023**	13-Apr-2024	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0315_MW601_231012, 0315_MW624_231012	**12-Oct-2023**	**23-Oct-2023**	09-Apr-2024	✓	**24-Oct-2023**	09-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0315_SW614_231016	**16-Oct-2023**	**23-Oct-2023**	13-Apr-2024	✓	**24-Oct-2023**	13-Apr-2024	✓

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: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	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*
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
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*
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
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	: **EM2318605**	Page	: 1 of 11
Amendment	: **1**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP_23	Date Samples Received	: 19-Oct-2023
Order number	: -	Date Analysis Commenced	: 20-Oct-2023
C-O-C number	: 58472	Issue Date	: 08-Nov-2023
Sampler	: [redacted]		
Site	: Wagga Council		
Quote number	: SY/139/19 B		
No. of samples received	: 5		
No. of samples analysed	: 5		

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]	2IC Organic Chemist	[redacted]
[redacted]	2IC Organic Chemist	[redacted]

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: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5375087)									
EM2318605-004	0315_SD614_231013_0.00 -0.30	EA055: Moisture Content	----	0.1	%	18.3	18.8	3.0	0% - 20%
EM2318619-027	Anonymous	EA055: Moisture Content	----	0.1	%	23.6	22.6	4.3	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5380155)									
EM2318605-004	0315_SD614_231013_0.00 -0.30	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0004	0.0004	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0175	0.0159	9.5	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EM2318619-027	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0005	0.0006	25.5	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0131	0.0136	3.9	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0004	0.0003	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5380155)									
EM2318605-004	0315_SD614_231013_0.00 -0.30	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

				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: 5380155) - continued									
EM2318605-004	0315_SD614_231013_0.00 -0.30	EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EM2318619-027	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5380155)									
EM2318605-004	0315_SD614_231013_0.00 -0.30	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EM2318619-027	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	0.0002	0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5380155) - continued									
EM2318619-027	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5380155)									
EM2318605-004	0315_SD614_231013_0.00 -0.30	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EM2318619-027	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 5380155)									
EM2318605-004	0315_SD614_231013_0.00 -0.30	EP231X: Sum of PFAS	----	0.0002	mg/kg	0.0179	0.0163	9.4	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0179	0.0163	9.4	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0179	0.0163	9.4	0% - 20%
EM2318619-027	Anonymous	EP231X: Sum of PFAS	----	0.0002	mg/kg	0.0142	0.0147	3.5	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0136	0.0142	4.3	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0136	0.0142	4.3	0% - 20%

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5376007)									
EM2318605-003	0315_SW614_231016	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.07	0.07	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

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: 5376007) - continued									
EM2318605-003	0315_SW614_231016	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: 5376007)									
EM2318605-003	0315_SW614_231016	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: 5376007)									
EM2318605-003	0315_SW614_231016	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: 5376007)									
EM2318605-003	0315_SW614_231016	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: 5376007)									
EM2318605-003	0315_SW614_231016	EP231X: Sum of PFAS	----	0.01	µg/L	0.08	0.08	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 (%)*
EP231P: PFAS Sums (QC Lot: 5376007) - continued									
EM2318605-003	0315_SW614_231016	EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.08	0.08	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: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5380155)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00111 mg/kg	92.4	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00118 mg/kg	90.4	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00114 mg/kg	95.2	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00119 mg/kg	95.8	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00116 mg/kg	103	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00121 mg/kg	89.7	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5380155)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	81.8	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.1	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.8	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.4	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.4	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.3	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.2	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.7	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.8	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	93.7	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5380155)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	100	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	117	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	89.5	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.8	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.9	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.6	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5380155)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5380155) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00117 mg/kg	95.0	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00119 mg/kg	102	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.0012 mg/kg	95.5	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00121 mg/kg	108	70.0	130
EP231P: PFAS Sums (QCLot: 5380155)								
EP231X: Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5376007)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	90.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	95.7	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	95.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	94.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	99.9	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	88.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5376007)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	86.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.1	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	96.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	96.1	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	93.0	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.1	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	90.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5376007)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	97.7	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	97.9	68.0	141

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5376007) - continued								
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	101	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.1	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	97.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	82.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376007)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	92.3	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	91.8	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	93.1	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	86.4	70.0	130
EP231P: PFAS Sums (QCLot: 5376007)								
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: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5380155)							
EM2318605-005	0315_SD677_231014_0.00-0.30	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00111 mg/kg	89.8	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00118 mg/kg	85.0	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00114 mg/kg	101	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00119 mg/kg	106	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00116 mg/kg	# Not Determined	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00121 mg/kg	101	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5380155)							
EM2318605-005	0315_SD677_231014_0.00-0.30	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	81.2	71.0	135

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Matrix Spike (MS) Report: Acceptable Limits (%) Low	Matrix Spike (MS) Report: Acceptable Limits (%) High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5380155) - continued							
EM2318605-005	0315_SD677_231014_0.00-0.30	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	95.2	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	95.2	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	91.7	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	92.3	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	101	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	97.6	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	97.0	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	102	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	94.6	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	92.9	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5380155)							
EM2318605-005	0315_SD677_231014_0.00-0.30	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	102	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	104	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	102	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	95.6	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	86.4	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	99.0	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	85.4	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5380155)							
EM2318605-005	0315_SD677_231014_0.00-0.30	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00117 mg/kg	93.8	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00119 mg/kg	97.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0012 mg/kg	102	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00121 mg/kg	97.1	70.0	130

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Matrix Spike (MS) Report: Acceptable Limits (%) Low	Matrix Spike (MS) Report: Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5376007)							
EM2318605-003	0315_SW614_231016	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	88.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	79.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	86.3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	111	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	90.7	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	71.7	53.0	142

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: 5376007)							
EM2318605-003	0315_SW614_231016	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	88.7	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	90.9	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	92.6	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	96.6	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	90.5	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	84.9	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	90.5	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	74.1	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	79.2	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5376007)							
EM2318605-003	0315_SW614_231016	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	93.7	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	99.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.1	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	92.5	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	97.7	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	92.0	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.3	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5376007)							
EM2318605-003	0315_SW614_231016	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	93.5	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	93.0	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	# 48.7	70.0	130

CERTIFICATE OF ANALYSIS

Work Order	: **EM2318605**	Page	: 1 of 9
Amendment	: **1**		
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP_23	Date Samples Received	: 19-Oct-2023 12:15
Order number	: -	Date Analysis Commenced	: 20-Oct-2023
C-O-C number	: 58472	Issue Date	: 08-Nov-2023 17:35
Sampler	: [redacted]		
Site	: Wagga Council		
Quote number	: SY/139/19 B		
No. of samples received	: 5		
No. of samples analysed	: 5		

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]	2IC Organic Chemist	[redacted]
[redacted]	2IC Organic Chemist	[redacted]

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 Contract 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: Poor matrix spike recovery for sample EM2318605-003 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.
- EP231X: Sample EM2318605-002 positive for 6:2 FTS result has been confirmed by direct injection method using second container.
- Amendment (08/11/2023):This report has been amended following the email from Matthew Barham Wed 8/11/2023 9:50 AM to amend project ID. 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	0315_MW601_231012	0315_MW624_231012	----	----	----
				Sampling date / time	12-Oct-2023 20:53	12-Oct-2023 20:58	----	----	----
Compound	CAS Number	LOR	Unit		EM2318605-001	EM2318605-002	--------	--------	--------
					Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.03**	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.03**	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.42**	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		**0.04**	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.37**	<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	0315_MW601_231012	0315_MW624_231012	----	----	----
				Sampling date / time	12-Oct-2023 20:53	12-Oct-2023 20:58	----	----	----
Compound	CAS Number	LOR	Unit		EM2318605-001	EM2318605-002	--------	--------	--------
					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	**0.49**	----	----	----
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		**0.91**	**0.49**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.79**	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.84**	**0.49**	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**119**	**113**	----	----	----
13C8-PFOA	----	0.02	%		**99.3**	**98.6**	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0315_SD614_231013_ 0.00-0.30	0315_SD677_231014_ 0.00-0.30	----	----	----
				Sampling date / time	13-Oct-2023 20:21	14-Oct-2023 18:37	----	----	----
Compound	CAS Number	LOR	Unit		EM2318605-004	EM2318605-005	--------	--------	--------
					Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**18.3**	**21.3**	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		**0.0004**	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0175**	**0.0064**	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0315_SD614_231013_ 0.00-0.30	0315_SD677_231014_ 0.00-0.30	----	----	----
				Sampling date / time	13-Oct-2023 20:21	14-Oct-2023 18:37	----	----	----
Compound	CAS Number	LOR	Unit		EM2318605-004	EM2318605-005	--------	--------	--------
					Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0179**	**0.0064**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0179**	**0.0064**	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0179**	**0.0064**	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**115**	**105**	----	----	----
13C8-PFOA	----	0.0002	%		**102**	**103**	----	----	----

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0315_SW614_231016	----	----	----	----
				Sampling date / time	16-Oct-2023 17:55	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2318605-003	--------	--------	--------	--------
					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	0.01	µg/L		**0.01**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.07**	----	----	----	----
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: SURFACE WATER (Matrix: WATER)				Sample ID	0315_SW614_231016	----	----	----	----
				Sampling date / time	16-Oct-2023 17:55	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2318605-003	--------	--------	--------	--------
					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		**0.08**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.08**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.08**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**119**	----	----	----	----
13C8-PFOA	----	0.02	%		**101**	----	----	----	----

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: SEDIMENT		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	68	136
13C8-PFOA	----	69	133

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

APPENDIX

D

FIELD RECORDS & CALIBRATION CERTIFICATES

Cardno

now

Stantec

Bore ID	Property	Easting	Northing	Monitoring Date	Bore Depth (m)	Top of casing (mAHD)	Top of Screen (mBTOC)	Bottom of Screen (mBTOC)	SWL (mbTOC)[1]	RL (mAHD)	Water Colour	Turbidity
MW008	On-Base	524926.6	6114754.4	12-10-2023	13.5	-	-	-	6.331	-	Clear	No
MW103	On-Base	526845.6	6110958.8	11-10-2023	52.00	225.8	49	52	22.614	203.19	Clear	No
MW104	On-Base	526597.8	6111277.7	11-10-2023	54.00	231.87	38	53	33.541	198.33	Generally clear	Low
MW107	On-Base	526628.4	6111282.8	11-10-2023	15.5	230.54	12.5	15.5	10.44	220.10	Slightly cloudy	Low
MW109	On-Base	525096.0	6114455.5	12-10-2023	33.50	193.62	24.4	33.4	22.023	171.60	Clear	Low
MW110	On-Base	525327.6	6114785.0	12-10-2023	22.30	180.29	17.4	20.9	9.373	170.92	Clear	Low
MW601	On-Base	527164.1	6112666.0	11-10-2023	17.00	205.3	10	16	4.967	200.33	Clear	Low
MW624	Off-Base	527138.1	6112814.3	12-10-2023	53.00	205.92	29	51	8.334	197.59	Clear	No
MW625	Off-Base	[redacted]		12-10-2023	22.25	174.572	15.5	21.5	4.917	169.66	Generally clear	Medium

1. A consolidated gauging round was completed on 11 October 2023.
2. As measured from the top of the Hydrasleeve.

Bore ID	Property	Easting	Northing	Monitoring Date	Other Observations on Bore/Site	Hydrasleeve Deployment Depth (mBTOC)[2]	Duplicate Samples	Bore ID	Temp (C^0)	DO (mg/L)	EC (Specific) (US/Cm)	EC (Non-Specific) (US/Cm)	EC (ms/Cm)	TDS (mg/L)	pH	Eh (mV)
MW008	On-Base	524926.6	6114754.4	12-10-2023	Sampled using Low Flow	N/A	-	MW008	16.7	4.13	1780	1527.0	1.53	1157.0	7.23	89.1
MW103	On-Base	526845.6	6110958.8	11-10-2023	-	50.5	-	MW103	20.0	3.31	449.9	391.4	0.39	292.5	8.50	36.9
MW104	On-Base	526597.8	6111277.7	11-10-2023	Clear at top of sleeve, slightly brown at bottom of sleeve	45.6	0315_QC104_231012 & 0315_QC204_231012	MW104	18.7	2.12		5103.0	4.49	3265.9	6.02	90.9
MW107	On-Base	526628.4	6111282.8	11-10-2023	-	14.5	Internal lab QC taken	MW107	18.6	1.66	1858.0	1630.9	1.63	1043.8	6.66	-8
MW109	On-Base	525096.0	6114455.5	12-10-2023	-	28.2	-	MW109	22.1	0.00	668	630.0	0.63	435.5	6.81	-7.9
MW110	On-Base	525327.6	6114785.0	12-10-2023	-	17.1	-	MW110	20.9	5.48	1288	1186.0	1.19	838.5	6.64	42.4
MW601	On-Base	527164.1	6112666.0	11-10-2023	Minor suspended solids present	12.1	-	MW601	20.0	2.33	723	654.0	0.65	418.5	6.97	81.5
MW624	Off-Base	527138.1	6112814.3	12-10-2023	Minor suspended solids present	45.2	-	MW624	19.9	0.68	4748	4285.5	4.27	2742.7	6.69	-81.1
MW625	Off-Base	[redacted]		12-10-2023	-	17.7	-	MW625	20.1	0.6	905	821.0	0.82	585.0	6.32	-7.4

1. A consolidated gauging round was completed on 11 October 2023
2. As measured from the top of the Hydrasleeve.

Sample ID	Property	Easting	Northing	Monitoring Date	Sample Depth (m)	Water Body Depth (m)	Flow Rate (Qualitative) (m/s)	Flow Rate	Water Colour	Turbidity	Channel Width (m)	Water Body Condition	Other Observations	Duplicate Samples	Temp (C^0)	DO (mg/L)	EC (Specific) (US/Cm)	EC (Non-Specific) (US/Cm)	TDS (mg/L)	pH	Eh (mV)
SW103	On-Base	526271.4	6110348.6	12-10-2023	0.1	0.3	0	No	Slightly cloudy	Low	0.3	Overland stormwater channel	No foaming, no microorganisms, no algae, sheen, no odour	-	16.4	3.45	267.30	223.39	143.0	6.94	43
SW106	On-Base	526717.6	6109926.1	Dry.																	
SW107	On-Base	526752.7	6110464.8	12-10-2023	0.1	0.3	0	No	Clear	No	NA	Overland stormwater channel - concrete overflow	No foaming, no microorganisms, no algae, no sheen, slight organic odour	Internal lab QC taken	24.7	4.49	525.00	521.99	334.1	7.15	93.5
SW108	On-Base	526719.2	6110895.1	11-10-2023	0.2	1.5	Nil	No	Clear	No	NA	Wastewater Treatment Pland Pond	No foaming, no microorganisms, no algae, no sheen, slight sewage odour	0315_QC103_231012 & 0315_QC203_231012	18.4	5.08	517.51	449.20	287.5	8.51	35.6
SW111	On-Base	526686.5	6111169.2	11-10-2023	0.1	1.5	Nil	No	Clear	No	NA	Wastewater Treatment Pland Pond	No foaming, no microorganisms, algae, no sheen, no odour	0315_QC101_231012 & 0315_QC201_231012	18.5	4.29	318.90	279.10	207.4	8.09	27.4
SW118	On-Base	526946.5	6110587.0	12-10-2023	0.15	0.4	0	No	Slightly cloudy	Low	1	Overland drainage channel	No foaming, no microorganisms, no algae, sheen, no odour	-	17.6	4.66	540.00	463.68	296.8	7.52	56.4
SW121	On-Base	527077.5	6111316.7	13-10-2023	0.05	0.1	None - stagnant	No	Muddy brown	High	1	Overland drainage channel	No foaming, microorganisms, no algae, no sheen, no odour	Internal lab QC taken	15.4	2.82	359.30	193.50	233.4	7.49	64.1
SW127	On-Base	524610.6	6108182.2	11-10-2023	0.2	0.4	0	No	Brown	Low	NA	Pond	No foaming, microorganisms, no algae, no sheen, no odour	Internal lab QC taken	17.4	4.51	73.20	62.50	47.5	6.93	48.1
SW136	On-Base	526132.2	6110304.8	12-10-2023	0.1	0.3	0	No	Cloudy	Low	1	Overland stormwater channel	No foaming, no microorganisms, no algae, sheen, slight organic odour	-	16.4	4.01	236.00	197.23	126.2	6.68	90.1
SW140	On-Base	526449.8	6109549.2	12-10-2023	0.1	2?	0	No	Clear	No	NA	Sewage channel	No foaming, no microorganisms, no algae, no sheen, slight organic odour	-	16.6	5.13	328.70	275.96	176.6	7.25	104.7
SW144	On-Base	526185.0	6110390.0	12-10-2023	0.1	0.15	1	High	Slightly cloudy	Low	NA	Sewage channel	No foaming, no microorganisms, no algae, no sheen, sewage odour	-	17.8	1.28	906.00	781.41	500.1	8.39	-100.7
SW148	On-Base	526404.5	6110931.5	12-10-2023	0.1	0.2	30	Medium	Clear with organic particles	Low	NA	Sewage channel	No foaming, no microorganisms, no algae, no sheen, sewage odour	-	21	1.53	386.20	356.69	228.3	7.54	-55.3
SW149	On-Base	526455.0	6111012.0	11-10-2023	From inlet pipe, trickle only	-	0.01	Low	Pale yellow	Medium	NA	Sewage channel	No foaming, microorganisms, algae, no sheen, strong sewage odour	-	16.5	4.03	841.00	709.00	546.0	8	39.8
SW614	Off-Base	527151.5	6112749.5	13-10-2023	0.05	0.1	0	No	Cloudy brown	Low	Minimal water present, ponding only.	Overland drainage channel	No foaming, no microorganisms, no algae, no sheen, no odour	Internal lab QC taken	16.2	5.29	120.60	100.40	64.3	6.64	77.1
SW677	Off-Base	526647.3	6114308.7	Dry.																	
SW680	Off-Base	[redacted]		13-10-2023	0.3	Unknown	No flow	No	Light brown	Low	NA	Pond	No foaming, no microorganisms, algae, no sheen, no odour, minor vegetation present	-	18.5	5.33	119.40	104.60	77.4	7.18	35.2

1. Some co-ordinates are not shown due to privacy reasons

Location ID	Property	Easting	Northing	Monitoring Date	Observations	Duplicate Samples
SD103	On-Base	526271.4	6110348.6	12-10-2023	Light brown gravelly sandy clay, organic matter present, roots present, no odour, medium coarse grained, low plasticity.	-
SD106	On-Base	526717.6	6109926.1	12-10-2023	Dark brown silty Clay, dark brown, fine to medium grained, moist, organic matter present, no odour, soft, roots present.	-
SD107	On-Base	526752.7	6110464.8	12-10-2023	Brown silty sandy Clay, mottled with red brown, fine to medium grained, low to medium plasticity, trace gravels, root material present.	-
SD108	On-Base	526719.2	6110895.1	11-10-2023	Light brown silty sandy Clay, organic material, light brown, med plasticity, fine medium grained, slight orange mottle.	0315_QC102_231012 & 0315_QC202_231012
SD111	On-Base	526686.5	6111169.2	11-10-2023	Light brown silty sandy clay, no odour, organic material present, plant roots, low to moderate plasticity, moist to wet, trace gravel present, fine to medium grained.	0315_QC100_231012 & 0315_QC200_231012
SD118	On-Base	526946.5	6110587.0	12-10-2023	Light red-brown silty sandy Clay, soft, medium plasticity, fine to medium grained, organic matter present, root matter, sampled at 0.2m.	-
SD121	On-Base	527077.5	6111316.7	13-10-2023	Orangey brown silty Clay, high plasticity, no odour, moist, no organic material.	Internal lab QC taken
SD127	On-Base	524610.6	6108182.2	11-10-2023	Pale brown silty Clay, high plasticity, trace organic matter (roots), no odour, minor orange mottle. Sediment sampled using sediment sampler.	Internal lab QC taken
SD136	On-Base	526133.0	6110304.1	12-10-2023	Brown sandy Silt, high volume of organic matter, roots and reeds, brown, soft, medium grained, low plasticity, moist to wet.	-
SD614	Off-Base	527151.5	6112749.5	13-10-2023	Brown sandy silty Clay, fine, with orange mottle, organic plant roots, dry, no odour.	-
SD677	Off-Base	526647.3	6114308.7	13-10-2023	Light brown silty Clay, moderate to high plasticity, dry, no odour, roots present.	-

F3.04 – Groundwater Sampling Field Record

Site / Project: PFAS Investigation and Management Plan		Bore ID Number: MW008
Client: Department of Defence		Job No. DEF19008
Person Sampling:		Initials: [redacted]
Bore / Site Details		
Bore Condition: Good Locked? No	Type Protect. Cap / Cover: Unknown	Bore Depth (bTOC): 13.5m
Inner casing/screen type & diameter: 1.0m	Screen interval (bgl): Unknown	SWL (bTOC) 6.331
WL Measurement Point: TOC	RL of measurement point (mAHD): NA	SWL Date/Time: 12 October, 2023
Other Observations on Bore/Site		
Bore Purge Data		
Purge method: Low FLow	Bore Volume (L): -	Purge Date: 12 October, 2023
Purge rate (L/min): 0.3	Total Purge volume (L): -	LNAPL / PSH Thickness (mm): NA

Purge Field Physicochemical Measurements:

	Reading1	Reading 2	Reading 3	Reading 4	Reading 5	Reading 6	Reading 7	Reading 8
Start Time:	12:46	12:51	12:56	13:01	13:06			
DO (mg/L) ±10% (or ±0.2 if DO<2 mg/L)	0.00	1.6	1.54	1.53	1.49			
EC (µS/Cm) ±3%	1559	1548	1545	1535	1531			
pH ±0.1	6.9	6.93	6.93	6.92	6.91			
Eh (mV) ±10mV	71.2	79.6	84.8	87.4	87.8			
Temp (°C)	18.3	18.1	18.1	17.7	17.6			
SWL (m) after	6.333	6.311	6.321	6.325	6.325			
Cum. Volume (L)	8							
Water Colour	Clear	No odour, no sheen, no microorganisms, no vegetation	No odour, no sheen, no microorganisms, no vegetation	No odour, no sheen, no microorganisms, no vegetation	No odour, no sheen, no microorganisms, no vegetation			
Turbidity ±10%								
Other Observations / Notes								

Sample Container & Preservation Data

Number of sample container: (Include QC samples)	1	2	3	4	5

Container Volume	20mL	20mL			
Container Type	PFAS	PFAS			
Filtration	No	No			
Preservation	Ice	Ice			
Sample Number (for Lab ID): 0315_MW008_231012					
QC Dup Sample No.: Not taken					

QC Dup Sample No.: NA

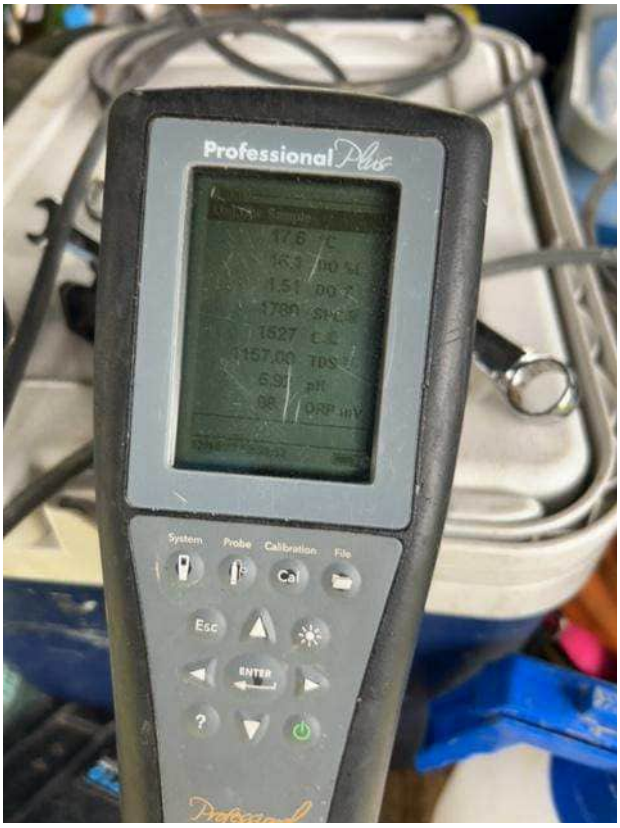

Figure 1: Stabilised Water Quality Parameters

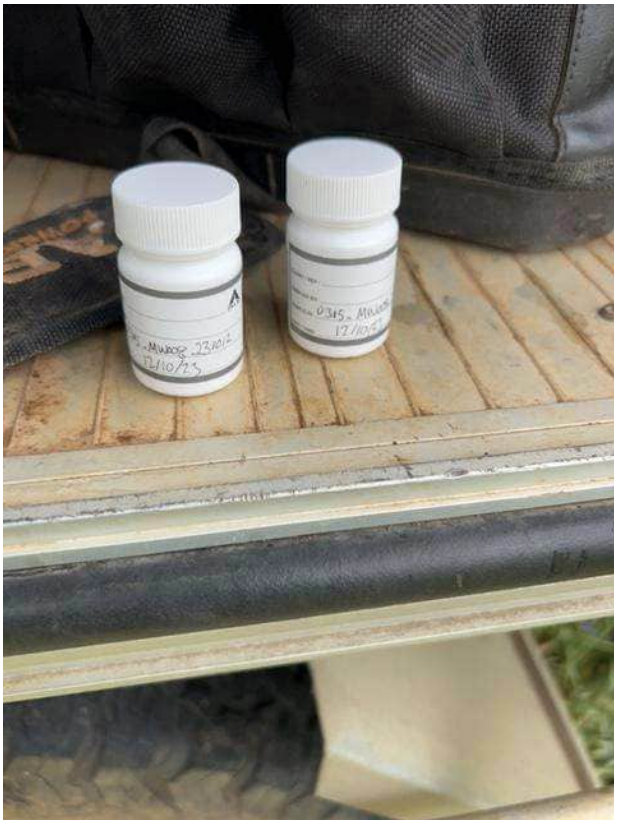

Figure 2: Collected Samples

Figure 3: Low Flow Controller Settings

Figure 4: MW008

Figure 5: Example of Water Collected

Figure 6: Close-up of MW008

DEF19008
0315 / 0906

F3.01 Equipment Calibration Report
YSI ProPlus Water Quality Meter

This YSI ProPlus Water Quality Meter has been performance checked as per the manufacturer's guidelines[1].

Unit Type: YSI ProPlus
Serial Number: 22D104337

The unit has been checked for and comprises of the following items:

Item	Present	Damaged or Absent?
Carry case	☑	☐
Attached sensors (x4)	☑	☐
Spare Batteries	☑	☐
Connector Cable	☑	☐
Instruction Manual	☑	☐

The following tests and operational checks have been conducted on the unit:

Item	Test Completed	Test Passed
WQM unit electrodes cleaned and checked	☑	☑
Operations check (screen functions)	☑	☑
Temperature check	☑	☑

Calibration:

Sensor	Cal. Solution	Value	Reading
pH	pH: Buffer Solution 4.00	4.00	4.08
pH	pH: Buffer Solution 7.00	7.00	7.08
pH	pH: Buffer Solution 10.00	10.00	10.11
Redox	Standard ORP solution	251 mV @ 15°c	255 mV @ 13 °c
O_2	Ambient Air for 100% Dissolved Oxygen	100%	100.%
O_2	Sodium Sulphite for 0% Dissolved Oxygen	0%	0%
Conductivity	Standard Conductivity Solution	2.76 ~~uS/cm~~ mS/cm @ 25 °c	2.76 ~~mV~~ mS/cm @ 25 °c

Checked/ Calibrated by: [redacted]

Signed: [redacted]

Date:

[1] YSI Professional Plus – Calibration Tips; Rev A, December 2010.

Unit Type: YSI ProPlus
Serial Number: 19H102165
Job Number: DEK19008 - Wagga / Kapooka

Date of Bump Test	Ambient Air Oxygen Calibration	Zero % Oxygen Solution Calibration	Standard Concentrations	Bump Test Reading	Bump Test Readings Accepted?	Test by (Name)	(Signature)
12/10/23	100% Saturation? (Y) N	0% Calibration? (Y) N	pH 4.00 (Y) / N pH 7.00 (Y) / N pH 10.00 (Y) / N EC: 1413 µS/cm @ 25 °C (Y) / N Redox: 249 mV @ 15 °c (Y) / N	pH 4.00: 4.02 pH 7.00: 7.06 pH 10.00: 10.10 EC: 2.76 mS/cm Redox: 262.3	(Y) / N (Y) / N (Y) / N (Y) / N (Y) / N	[redacted]	[redacted]
13/10/23	100% Saturation? (Y) N	0% Calibration? (Y) N	pH 4.00 (Y) / N pH 7.00 (Y) / N pH 10.00 (Y) / N EC: 2.76 mS/cm @ 25 °C (Y) / N Redox: 268 mV @ 8 °c (Y) / N	pH 4.00: 4.00 pH 7.00: 7.00 pH 10.00: 10.12 EC: 2.77 mS/cm Redox: 265.1	(Y) / N (Y) / N (Y) / N (Y) / N (Y) / N		
14/10/23	100% Saturation? (Y) N	0% Calibration? (Y) N	pH 4.00 (Y) / N pH 7.00 (Y) / N pH 10.00 (Y) / N EC: 2.76 mS/cm @ 25 °C (Y) / N Redox: 255 mV @ 12 °c (Y) / N	pH 4.00: 4.05 pH 7.00: 7.02 pH 10.00: 10.15 EC: 2.75 mS/cm Redox: 255.6 mV	(Y) / N (Y) / N (Y) / N (Y) / N (Y) / N		
265 15/10/23	100% Saturation? (Y) N	0% Calibration? (Y) N	pH 4.00 (Y) / N pH 7.00 (Y) / N pH 10.00 mS (Y) / N EC: 2.76 mS/cm @ 25 °C (Y) / N Redox: 266 mV @ 12 °c (Y) / N	pH 4.00: 3.70 pH 7.00: 7.03 pH 10.00: 10.08 EC: 2.75 mS/cm Redox: 253 mV	Y / (N) Recal (Y) / N (Y) / N (Y) / N (Y) / N		
257. 16/10/23	100% Saturation? (Y) N	0% Calibration? (Y) N	pH 4.00 (Y) / N pH 7.00 (Y) / N pH 10.00 mS/cm (Y) / N EC: 2.76 mS/cm @ 25 °C (Y) / N Redox 255 mV @ 12 °c (Y) / N	pH 4.00: 4.04 pH 7.00: 7.04 pH 10.00: 10.11 EC: 2.78 mS/cm Redox: 256.8 mV	(Y) / N (Y) / N (Y) / N (Y) / N (Y) / N		
	100% Saturation? Y N	0% Calibration? Y N	pH 4.00 Y / N pH 7.00 Y / N pH 10.00 Y / N EC: 2.76 mS/cm @ 25 °C Y / N Redox: ___ mV @ __°c Y / N	pH 4.00: 3.99 pH 7.00: 6.98 pH 10.00: 10.06 EC: Redox:	Y / N Y / N Y / N Y / N Y / N		
	100% Saturation? Y N	0% Calibration? Y N	pH 4.00 Y / N pH 7.00 Y / N pH 10.00 Y / N EC: __µS/cm @ __°C Y / N Redox: ___ mV @ __°c Y / N	pH 4.00: pH 7.00: pH 10.00: EC: Redox:	Y / N Y / N Y / N Y / N Y / N		
	100% Saturation? Y N	0% Calibration? Y N	pH 4.00 Y / N pH 7.00 Y / N pH 10.00 Y / N EC: __µS/cm @ __°C Y / N Redox: ___ mV @ __°c Y / N	pH 4.00: pH 7.00: pH 10.00: EC: Redox:	Y / N Y / N Y / N Y / N Y / N		

DEF19008
0315 / 09106

F3.01 Equipment Calibration Report
YSI ProPlus Water Quality Meter

This YSI ProPlus Water Quality Meter has been performance checked as per the manufacturer's guidelines[1].

Unit Type: YSI ProPlus
Serial Number: 22104337

The unit has been checked for and comprises of the following items:

Item	Present	Damaged or Absent?
Carry case	☑	☐
Attached sensors (x4)	☑	☐
Spare Batteries	☑	☐
Connector Cable	☑	☐
Instruction Manual	☑	☐

The following tests and operational checks have been conducted on the unit:

Item	Test Completed	Test Passed
WQM unit electrodes cleaned and checked	☑	☑
Operations check (screen functions)	☑	☑
Temperature check	☑	☑

Calibration:

Sensor	Cal. Solution	Value	Reading
pH	pH: Buffer Solution 4.00	4.00	4.08
pH	pH: Buffer Solution 7.00	7.00	7.08
pH	pH: Buffer Solution 10.00	10.00	10.11
Redox	Standard ORP solution	251 mV @ 15 °c	255 mV @ 13 °c
O_2	Ambient Air for 100% Dissolved Oxygen	100%	100.%
O_2	Sodium Sulphite for 0% Dissolved Oxygen	0%	0%
Conductivity	Standard Conductivity Solution	2.76 ~~uS/cm~~ mS/cm @ 25 °c	2.76 ~~mV~~ mS/cm @ 25 °c

Checked/ Calibrated by: [redacted]

Signed: [redacted]

Date:

[1] YSI Professional Plus – Calibration Tips; Rev A, December 2010.

F3.01 Equipment Calibration Report
YSI ProPlus Water Quality Meter

This YSI ProPlus Water Quality Meter has been performance checked as per the manufacturer's guidelines[1].

Unit Type: YSI ProPlus
Serial Number: 19H102165

The unit has been checked for and comprises of the following items:

Item	Present	Damaged or Absent?
Carry case	☑	☐
Attached sensors (x4)	☑	☐
Spare Batteries	☑	☐
Connector Cable	☑	☐
Instruction Manual	☑	☐

The following tests and operational checks have been conducted on the unit:

Item	Test Completed	Test Passed
WQM unit electrodes cleaned and checked	☑	☑
Operations check (screen functions)	☑	☑
Temperature check	☑	☑

Calibration:

Sensor	Cal. Solution	Value	Reading
pH	pH: Buffer Solution 4.00	4.00	4.02
pH	pH: Buffer Solution 7.00	7.00	7.00
pH	pH: Buffer Solution 10.00	10.00	10.05
Redox	Standard ORP solution	251 mV @ 15 °c	251 mV @ 15 °c
O_2	Ambient Air for 100% Dissolved Oxygen	100%	100%
O_2	Sodium Sulphite for 0% Dissolved Oxygen	0%	0%
Conductivity	Standard Conductivity Solution	2.76 ~~µS/cm~~ mS/cm @ 25 °c	2.76 ~~µS/cm~~ mS/cm @ 25 °c

Checked/ Calibrated by: [redacted]

Signed: [redacted]

Date: [redacted]

[1] YSI Professional Plus – Calibration Tips; Rev A, December 2010.

APPENDIX

E

DATA QUALITY REVIEW

Cardno

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Data Quality Review
Blamey Barracks, Kapooka, NSW

This Appendix reviews the Quality Assurance (QA) and Quality Control (QC) documentation. Quality assurance encompasses the actions, procedures, checks and decisions undertaken to ensure sample integrity and representativeness, and the reliability and accuracy of analysis results. The QA documentation should also include an indication of the Data Quality Objectives sought in relation to each significant action, test or process involved in the Assessment.

QC activities measure the effectiveness of the QA procedures by undertaking testing, and then comparing results to previously established objectives. QC work will include the internal laboratory testing as well as results of QC samples submitted such as trip blanks and duplicates. The quality of the information and/or data is deemed satisfactory when the QC results demonstrate that agreed objectives have been met.

Cardno undertook a review of its QA/QC as part of the data validation exercise. The findings are summarised below.

QA/QC Aspects	Evidence and Evaluation
	QA Documentation
Sampling and Analysis Quality Plan and Data Quality Objectives	Cardno was engaged by Department of Defence (the client) to carry out the PFAS Ongoing Monitoring Plan (OMP) at Blamey Barracks Kapooka, Kapooka, NSW, 2661 (the site). The monitoring event was conducted from 11 October 2023 until 16 October 2023, and was in general accordance with the scope and limitations presented in Cardno's Sampling and Analysis Quality Plan (SAQP) of 27 October 2023 (Our Ref: OMP002.6.5_Kapooka_SAQP_Rev5). The assessment was carried out in general compliance with the following: ▪ Australian Standard AS 4482-2005 Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 - Non-volatile and semi-volatile compounds. ▪ Department of Defence (2019), Pollution Prevention Management Manual – Annex 1L: Pollution Prevention Guidance - Routine Water Quality Monitoring. ▪ Department of Defence, Department of Energy, 2018, Quality System Manual Schedule B15. ▪ Department of Defence (2021), Defence Contamination Management Manual (DCMM), Annex L – Data Management, August 2018, Amended June 2021. ▪ NSW EPA (2002), The NSW State Groundwater Dependant Ecosystems Policy, April 2002. ▪ NSW EPA (2004), Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales, Publication 1669.2, March 2004 ▪ NSW EPA (2016), Designing Sampling Programs for Sites Potentially Contaminated by PFAS. ▪ NSW EPA (2014), Waste Classification Guidelines – Part 1: Classification of Waste, November 2014. ▪ EPA Victoria (2009), Industrial Waste Resources Guidelines, Sampling and Analysis of Waters, Wastewaters, Soils and Wastes, Publication 701. ▪ Heads of Environmental Protection Authority's Australia and New Zealand (HEPA) (2020), PFAS National Environmental Management Plan (NEMP) Version 2.0, January 2020.

QA/QC Aspects	Evidence and Evaluation
	▪ National Environment Protection Council (NEPC), 1999, National Environmental Protection (Assessment of Site Contamination) Measure (as amended 2013) (ASC NEPM). ▪ National Health and Medical Research Council (NHMRC) (2019), Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water, August 2019. ▪ USEPA (2006), Guidance for the Data Quality Objectives Process (EPA QA/G-4). A quality control program was implemented during the investigation and the quality assurance procedures used have been reiterated in the report. The investigation was carried out in accordance with the Safe Work method Statements (SWMS) and Health, Safety and Environmental Management Plan (HSEMP) for the site. Detailed work plans were also provided for each phase of investigation and are outlined in the SAQP. The Data Quality Objectives were expressed in terms of the purpose of the assessment and the relevant assessment criteria.
Data Validation Report	This review constitutes a data validation review. This was supported by an ESdat generated "QAQC Checker" excel report, summarised in Tables B4 and B5, Appendix B.
Data Representativeness	
Holding Times	Groundwater, surface water and sediment sample analysis holding times were in conformance with EPA Publication IWRG701 2009 *'Sampling and Analysis of Waters, Wastewaters, Soils and Wastes*.
Background Samples	No background samples were collected as part of this assessment.
Equipment Decontamination	The decontamination methodology conducted during this investigation is documented in the body of the report, and was in general conformance with the SAQP. All re-usable sampling equipment was thoroughly washed using "PFAS-free" & phosphate-free detergent (Liquinox), then double rinsed with clean water before the sample collection.
Data Precision and Accuracy	
QC Testing – Blind Replicates (Primary Lab)	***Groundwater*** ▪ Acceptance Criteria: RPD < 30% ▪ Groundwater Samples Analysed: 9 ▪ Blind Replicate Samples Analysed: 1 ▪ Blind Replicate Analyte Pairs: 28 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 0 ▪ Percentage of Analyte Pairs Exceeding Criteria: 0% There were no RPD exceedances observed for PFAS compounds. RPD results are presented in Table B4, Appendix B. ***Surface water*** ▪ Acceptance Criteria: RPD < 30 % ▪ Surface water Samples Analysed: 14 ▪ Blind Replicate Samples Analysed: 2 ▪ Blind Replicate Analyte Pairs: 56 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 1 ▪ Percentage of Analyte Pairs Exceeding Criteria: 1.79% There was one RPD exceedances observed for PFAS compounds reported in QC101. RPD results are presented in Table B4, Appendix B. ***Sediment***

QA/QC Aspects	Evidence and Evaluation
	▪ Acceptance Criteria: RPD < 30 % ▪ Soil Samples Analysed: 11 ▪ Blind Replicate Samples Analysed: 2 ▪ Blind Replicate Analyte Pairs: 56 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 0 ▪ Percentage of Analyte Pairs Exceeding Criteria: 0% There were no RPD exceedances observed for PFAS compounds. RPD results are presented in Table B5, Appendix B.
QC Testing – Field Splits (Secondary Lab)	***Groundwater*** ▪ Acceptance Criteria: RPD < 30% ▪ Groundwater Samples Analysed: 9 ▪ Field Split Samples Analysed: 1 ▪ Field Split Analyte Pairs: 28 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 0 ▪ Percentage of Analyte Pairs Exceeding Criteria: 0% There were no RPD exceedances observed for PFAS compounds. RPD results are presented in Table B4, Appendix B. ***Surface water*** ▪ Acceptance Criteria: RPD < 30 % ▪ Surface water Samples Analysed: 14 ▪ Field Split Samples Analysed: 2 ▪ Field Split Analyte Pairs: 56 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 7 ▪ Percentage of Analyte Pairs Exceeding Criteria: 12.5% The RPD exceedances associated with PFAS compounds are considered to be minor and likely attributed to low concentrations of analyte pairs. Analyte concentrations from the primary sample and their corresponding field split sample pairs were all within the same order of magnitude. The RPD exceedances may also be attributed to interlaboratory differences, which can be common and significant, based on a study done by the Queensland Department of Environment and Science and the Victorian Environment Protection Authority Vardy et al, 2018). Overall, these RPD exceedances are not considered to impact the results of the investigation. RPD results are presented in Table B4, Appendix B. ***Sediment*** ▪ Acceptance Criteria: RPD < 30 % ▪ Soil Samples Analysed: 11 ▪ Field Split Samples Analysed: 2 ▪ Field Split Analyte Pairs: 56 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 0 ▪ Percentage of Analyte Pairs Exceeding Criteria: 0% There were no RPD exceedances observed for PFAS compounds. RPD results are presented in Table B5, Appendix B.
Trip Blanks	Three (3) trip blanks were collected and laboratory tested for PFAS. All analytes were reported below the limit of reporting (LOR). Trip blank results are presented in Table B6, Appendix B.

QA/QC Aspects	Evidence and Evaluation
Laboratory Internal QC	Evidence of the laboratories internal QC testing is present and complete. Both ALS (the primary laboratory) and Eurofins-mgt performed internal QC with adequate testing and mostly satisfactory results for matrix spikes, method blanks and laboratory duplicates.
Laboratory Method Detection Limit	Laboratory reports indicate the method detection limits were lower than the respective assessment criteria.
NATA endorsement of laboratory reports	Laboratory reports were stamped with the NATA endorsement stamp and signature. Laboratory reports are included in Appendix C of this report.
Calibration of Field Equipment	All field equipment used was calibrated by the equipment supplier. Additionally, daily bump tests were performed of the water quality meter throughout the monitoring event. Certificates are included in Appendix D of this report.
Decontamination and Equipment Blanks	All re-usable sampling equipment was thoroughly washed using PFAS & phosphate-free detergent, then double rinsed with clean water before the sample collection. Five (5) rinsate blank samples were tested for PFAS, of which all reported PFAS concentrations below the laboratory LOR. Results are shown in Table B6, Appendix B.
Data Comparability	
Full Review of Data	Once all results have been received, Cardno undertook a full review of the data for any anomalies in consideration of historical data at each location (where available), such as first-time detections or new exceedances of adopted criteria being reported at locations which have not had detections or exceedances previously. Where potentially anomalous data is identified or suspected, further confirmatory measures were undertaken such as re-extraction and reanalysis of the sample by the laboratory and/or additional data quality review. The samples from the following monitoring locations were re-extracted and re-analysed by the laboratory: MW103. All originally reported results were confirmed through re-extraction and re-analysis.
Standard Procedures	Fieldwork procedures are detailed in the report and followed the work methods outlined in the SAQP.
Qualified Personnel	Staff involved in managing and reviewing the project and those involved in fieldwork are qualified personnel.
Volatile Losses	Volatile losses are not applicable to PFAS.
Sample Integrity	Field Chain of Custody forms are included in Appendix C of this report and demonstrate sample integrity.
Data Completeness	
Completeness of Test Program	The scope of work undertaken was generally consistent with that set out in the SAQP. Variations to the SAQP are detailed in the Factual Report.
Validity of Data Set	The data quality review indicates no significant systematic errors in the data collection process for surface water, groundwater or sediment and therefore, the data set used as the basis for the assessment is considered valid and complete.

APPENDIX

F

INFORMATION ABOUT ENVIRONMENTAL REPORTS

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About Site Environmental Assessment Reports

1. Introduction

This document explains the Environmental Site Assessment (ESA) process and the context that applies to the use of Environmental Reports issued by Cardno now Stantec.

2. What is an ESA?

Environmental Site Assessments (ESA) are undertaken for a range of purposes, specific to the brief issued by the client in each case. The scope may include one or a combination of any of the following:

- A factual report of the condition of a portion of the site or one aspect of an entire site.
- Assessment of the contamination levels in soil to be removed from a site – a waste classification assessment.
- Validation of the success of remediation of a site or a portion of a site.
- Provision of a professional opinion about the suitability of a site for one or more uses, in terms of its contamination status.

The scope of any ESA needs to be defined at the outset.

An ESA is not an Environmental Audit. Such audits are undertaken in accordance with the provisions of regulations enacted in various states of Australia, and are referred to as Site Audits in some jurisdictions. Statutory audits provide certification by EPA accredited auditors that a site is suitable for one or more uses. An ESA may provide similar advice but cannot be used in place of an audit if the latter is required by regulation in any instance. However in some circumstances and jurisdictions an ESA is sufficient to provide "environmental sign-off" of a site.

An ESA may be undertaken for due diligence purposes, to establish whether the site has been impacted to the extent that some beneficial uses of the site may be precluded. Due diligence audits in many cases may be completed as non-statutory Audits, although in some jurisdictions they can also be statutory audits, if defined as such at the outset.

3. The ESA Process

The Client generally initiates the ESA process by specifying a brief which identifies the specific objectives of the assessment. If not, it is the consultants' duty to so specify the ESA

In the case of an ESA to provide an opinion about the suitability of the site for use, it would be conducted in accordance with NEPM (Site Assessment). Such ESA would not commence until a thorough site history assessment (Phase 1 Assessment: to identify the potential for significant contamination at a site) is conducted. However, where the history is unclear, a broad screening of chemical parameters can be used to test environmental media. This normally includes a broad range of organic and inorganic compounds and elements, often referred to as an Environmental Screen.

(In the case of an ESA for a purpose other than to provide an opinion about the suitability of the site for use, it is not always necessary to undertake a Phase 1 assessment.)

The ESA requires sampling of soil at representative locations across the site. A NATA accredited laboratory performs the analysis of soil. It is impractical for all of the soil to be assessed. The ESA is often based on a statistical method of grid or random sampling, augmented by targeted sampling at locations known or suspected to be contaminated. Guidance on sampling strategy and density is provided in Australian Standard AS4482.1–2005. However, some considerable degree of judgement is still required in the application of any sampling and testing strategy. For example the blanket application of the "hot spot" method presented in this standard is often inappropriate given its limitations.

The field program also investigates the likelihood of contamination below the site surface. Field investigations must sample and test fill as well as the natural soils. If contamination is found then it is common for further work to be undertaken to characterise, to the extent practical, its vertical and horizontal extent. However, where fill is encountered and testing shows it to be uncontaminated, it must be realised that the heterogeneous nature of the material might mean that not all pockets of contaminated material can be detected using normal sampling regimes.

EPA guidelines for auditors, that may be relevant for an ESA, indicate the need in all cases to consider the potential for groundwater contamination in any site. This does not mean all sites need to be drilled to sample groundwater, but it is most often the case. Most hydrogeological settings and groundwater conditions are complex and vary in space and time. The condition of groundwater is investigated to identify if any beneficial use or environmental value of groundwater is precluded due to contamination.

As previously stated for soil, all groundwater at the site cannot be tested. The environmental investigations are conducted in accordance with industry standards and guidelines (e.g. EPA Vic Pub 668). This provides a level of confidence that a sufficiently comprehensive assessment of the groundwater at the site is achieved.

Where an investigation shows that groundwater is polluted, consideration should be given to assessing the risks and the need for and practicality of any clean up.

4. Environmental Assessment Report

The ESA Report details the findings of the ESA. It provides summary information on the site definition, the reasons for the assessment and other relevant facts. It reviews the scope and quality of the site investigations, laboratory testing and data analyses undertaken. These reports also present a review of the contamination status of the site, the need for any further clean up, and an opinion on the suitability of the site for a range of beneficial uses and land uses such as "residential – low density", "commercial" etc, as appropriate.

However, as noted above, some ESA have a narrow scope such as for classification of waste soil for removal from site, and do not make conclusions on suitability of site for use.

The ESA Report generally includes copies of other documents and reports, necessary to support the assessment findings, presented as appendices. These can contain more detailed information than the body of the ESA Report. Care should be taken to also read the appended documents and the ESA report in full.

Cardno now Stantec generally issues reports in electronic form (e-Report) on CD ROM. ESA Reports are issued in this format as Adobe Acrobat™ PDF files. However, a paper copy of the executive summary of the ESA Report is generally issued to the client, and others as required by the brief or by regulation.

5. Limitations of Environmental Assessment Report

The ESA Report is prepared in a manner that can be easily read by a lay person with a legitimate interest in the contamination status of the site, such as the site owner or occupier, EPA and Local Planning Authority. The ESA report is not intended for use by other parties or for other purposes. Anyone who uses the assessment report for purposes other than specified in the report, does so at their own risk.

The site should only be used for one or more of the beneficial uses and land uses identified in the ESA as suitable.

The conditions and qualifications may apply to the suitability of the site for use, and it is the responsibility of the Client to be cognizant of and accept these in accepting the report. Cardno now Stantec are only responsible for the issuing of the ESA report but accepts no liability for the costs incurred in the implementation of ESA findings.

The ESA provides a "snapshot" of the site conditions at the time of the site investigation. Consequently, the report may not be valid at a later time if there has been any change to the contamination status of the site in that time. Verification of the status of the site may be required in cases where a significant time has elapsed, or site conditions have changed since the assessment and audit.

The ESA is necessarily limited by constraints such as time, cost and available information; although normal professional practice at the time has been applied with all due care to prepare the report. A necessary requirement of this process is the horizontal and vertical interpolation of data from discrete locations. However, site conditions are generally not homogenous and some discrepancies will occur between the actual and predicted results at locations not directly sampled. There is a risk that contamination may occur at the site and not be identified by a competent investigation and assessment. The approach adopted in sampling (a combination of statistically based grid and judgmental sampling) seeks to reduce, but cannot eliminate, this risk.

Where unexpected occurrences of contamination arise, subsequent to the issue of the ESA Report, Cardno now Stantec should be permitted to make an interpretation of these facts in relation to the ESA Report findings. Consequently, the Client should inform Cardno now Stantec and seek their opinion. Cardno now Stantec accepts no liability for costs incurred due to such unexpected

occurrences, given the inherent uncertainties in the assessment process.

Cardno now Stantec uses information provided by other parties as the basis for the ESA, and reliance on this information is at the discretion of Cardno now Stantec. However, however Cardno now Stantec cannot guarantee any of the facts, findings or conclusions presented by other parties. Cardno now Stantec will not be liable for the use of information, provided by others that is subsequently found to be intentionally misleading.

The ESA Report is not and does not purport to be anything other than a contaminated land ESA. It is not a geotechnical report and bore logs reproduced are for interpretation of the likely distribution of contamination. They are not intended for geotechnical interpretations and may not be adequate for this purpose.

The ESA Report is not intended to be a comprehensive analysis of the presence and associated risk of asbestos in buildings and services. Where asbestos in buildings and services is known or likely, the report may only caution that an appropriately qualified person be engaged to undertake demolition to avoid contamination of the site.

Cardno now Stantec

19 August 2022

Appendix E. Stantec (2024b). Blamey Barracks Kapooka, Biannual Sampling Event Report (April 2024)

PFAS OMP Factual Report

Biannual Sampling Event April 2024

Blamey Barracks Kapooka

DEF19008

Prepared for

Department of Defence

29 July 2024

Cardno

now

Stantec

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List of Abbreviations and Units

Chemical Names

DO	Dissolved Oxygen
PFAS	Per- and Poly-fluoroalkyl Substances
PFHxS	Perfluorohexane sulfonate, or perfluorohexane sulfonic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonate, or perfluorooctane sulfonic acid
TDS	Total Dissolved Solids (salinity of water)

Technical Terms

AFFF	Aqueous Film-Forming Foam
AHD	Australian Height Datum
ANZECC	Australian and New Zealand Environment and Conservation Council
AS	Australian Standard
BGL	Below Ground Level
CoC	Chain of Custody
DCMM	Defence Contamination Management Manual
EC	Electrical Conductivity
EPA	Environment Protection Authority
HDPE	High-density polyethylene
HHERA	Human Health and Ecological Risk Assessment
HSL	Health Screening Level
LOR	Limit of Reporting
N/A	Not Applicable
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council
NEPM	National Environmental Protection Measure
ORP	Oxidation Reduction Potential
QA	Quality Assurance
QC	Quality Control
RPD	Relative Percentage Difference
SAQP	Sampling and Analysis Quality Plan
SWL	Standing Water Level
WTP	Wastewater Treatment Plant

Units

cm	Centimetre
Ha	Hectares
m	Metres
mAHD	Metres above Australian Height Datum
mBGL	Metres Below Ground Level
mbTOC	Metres below Top of Casing
mg/kg	Milligrams per Kilogram (approximately equivalent to ppm)
mg/L	Milligrams per Litre
mm	Millimetre
mV	Millivolt
ppm	Parts per Million
µg/L	Micrograms per Litre
µS/cm	Micro Siemens per Centimetre (Electrical Conductivity – Water)

Base Specific

ESdat	Environmental data management software
MA	Management Area
OMP	Ongoing Monitoring Plan
PMAP	PFAS Management Area Plan

1 Introduction

1.1 Background

Cardno, now Stantec (Cardno) was engaged by the Department of Defence ("Defence") to carry out the Per- and Poly-fluoroalkyl Substances (PFAS) Ongoing Monitoring Plan (OMP) at Blamey Barracks Kapooka ("the Base"). The location of the Base is displayed in Figure 1 of Appendix A.

The OMP was carried out in accordance with the scope and limitations presented in Cardno's Sampling and Analysis Quality Plan (SAQP):

- Cardno, 8 April 2024, Reference: DEF19008, *PFAS Ongoing Monitoring Plan Sampling and Analysis Quality Plan (SAQP), Rev6*, Blamey Barracks Kapooka

For the purposes of this report:

- The "On-Base Management Area" is defined as a portion of the Base including the eastern built-up portion of the Base from the Former Quarry in the south to the Wastewater Treatment Plant (WTP) in the north. It extends as far west as the natural ridgeline that runs north-south through the middle of the Base and to the east to include the Kapooka Creek flow pathway (Figure 1, Appendix A);
- The "Off-Base Management Area" includes the Kapooka Creek flow pathway on public land and all private properties which have some portion of the flow pathway passing through them. This area stretches from the Base, north all the way to the Murrumbidgee River (Figure 1, Appendix A);
- The "Management Area" (MA) is comprised of the "On-Base Management Area" and the "Off-Base Management Area" (Figure 1, Appendix A).
- The "Monitoring Area" is defined as the Base and the surrounding Off-Base areas that collectively encompasses the network of OMP monitoring locations (Figure 2, Appendix A).

1.2 Purpose & Objectives

The objective of the OMP is to assess the changes in the nature and extent of PFAS in groundwater, surface water and sediment, specifically where there is an identified potentially elevated risk to a receptor or a potential future risk to a receptor associated with Defence's historical use of Aqueous Film-Forming Foam (AFFF) including PFAS. The OMP will also provide confirmation of our current understanding of risk.

The purpose of this PFAS OMP factual report is to provide an up-to-date status of the condition of the Base as it is currently understood in relation to the most recent sampling event.

The objectives of the report are:

- To provide a succinct summary of the April 2024 sampling event and provision of analytical results with supporting tables and figures.
- To provide confirmation of the current understanding of risk.
- To provide supporting data for the assessment of management actions, where relevant.

1.3 Relevant Guidelines

This assessment has been undertaken in general accordance with applicable industry standards for a site investigation for the purpose, objectives and scope identified in this report. These standards are set out in:

- Australian and New Zealand Guidelines, (2018), *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*.
- Australian Standard AS 4482-2005, *Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 - Non-volatile and semi-volatile compounds*.[1]

[1] AS 4482.1-2005 is currently 'Withdrawn', but the assessment will consider it still to be suitable as a state of knowledge document until superseded.

> Department of Defence, (2019a), *Contamination Management Manual* (DCMM), August 2019.
> Department of Defence, (2019b), *Pollution Prevention Management Manual – Annex 1L: Pollution Prevention Guidance - Routine Water Quality Monitoring*.
> EPA NSW, (2002), *The NSW State Groundwater Dependant Ecosystems Policy*, April 2002.
> EPA NSW, (2004), *Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales*, Publication 1669.2, March 2004
> NSW EPA, (2016), Designing Sampling Programs for Sites Potentially Contaminated by PFAS.
> Heads of Environmental Protection Authority's Australia and New Zealand (HEPA), (2020), *PFAS National Environmental Management Plan (NEMP)*, Version 2.0, January 2020.
> National Environment Protection Council (NEPC), (1999), *National Environmental Protection (Assessment of Site Contamination) Measure (as amended 2013) (ASC NEPM)*.
> National Health and Medical Research Council (NHMRC), (2019), *Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water*, August 2019.
> Standards Australia, (1998), *AS/NZ 5667:1998, Water quality – sampling*.
> U.S. Environmental Protection Agency (EPA), (2000), *Guidance for the Data Quality Objectives Process (EPA QA/G-4)*.
> USEPA, (2002), *Guidance on Environmental Data Verification and Data Validation (EPA QA/G-8)*.

2 Scope of Work

Cardno carried out the following tasks in order to satisfy the purpose and objectives of this assessment.

2.1 Review / Revision of the SAQP

Cardno undertook a review of the SAQP prior to commencement of sampling to ensure it was consistent with the *PFAS Ongoing Monitoring Program Sampling, Analysis and Quality Plan Guidance* (2024) document and that it was suitable for the April 2024 monitoring event.

2.2 Groundwater Monitoring

Sampling of groundwater monitoring wells was performed in accordance with the SAQP, applying methods set out in Section 3.1 of this report. The groundwater monitoring wells monitored as part of the OMP biannual event are presented in Table 2-1, and are shown in Figure 2, Appendix A.

Table 2-1 Groundwater Monitoring Locations

Monitoring Area	Location ID	Total
WTP	On-Base: MW103, MW104, MW107	Three Location IDs
Former Commandants House	On-Base: MW008, MW109, MW110 Off-Base: MW625	Four Location IDs
Kapooka Creek flow pathway	Off-Base: MW601, MW624	Two Location IDs

2.3 Surface Water Monitoring

Sampling of surface water locations was performed in general accordance with the SAQP, applying methods set out in Section 3.2 of this report. The surface water sampling locations monitored as part of the OMP are presented in Table 2-2, and are shown in Figure 2, Appendix A.

Table 2-2 Surface Water Monitoring Locations

Monitoring Area	Location ID	Total
Overland drainage pathways On-Base	On-Base: SW103, SW106, SW107, SW118, SW136	Five Location IDs
Kapooka Creek	On-Base: SW121	Four Location IDs

Monitoring Area	Location ID	Total
	Off-Base: SW614, SW677, SW680	
Sewer	On-Base: SW140, SW144, SW148, SW149	Four Location IDs
WTP ponds	On-Base: SW108, SW111	Two Location IDs
Overland drainage pathways – Former Quarry	On-Base: SW127	One Location ID

2.4 Sediment Monitoring

Sampling of sediment locations was performed in accordance with the SAQP, applying methods set out in Section 3.3 of this report. The sediment sampling locations monitored as part of the OMP are presented in Table 2-3, and are shown in Figure 2, Appendix A.

Table 2-3 Sediment Monitoring Locations

Monitoring Area	Location ID	Total
Overland drainage pathways On-Base	SD103, SD106, SD107, SD118, SD136	Five Location IDs
Kapooka Creek	On-Base: SD121 Off-Base: SD614, SD677	Three Location IDs
WTP ponds	On-Base: SD108, SD111	Two Location IDs
Overland drainage pathways – Former Quarry	On-Base: SD127	One Location ID

2.5 Data Management

All the data included in the report has been collected, uploaded to the ESdat database and reviewed according to the data management requirements of the DCMM Annex L (Defence, 2021b).

2.6 Deviations from the OMP SAQP

Deviations from the SAQP were attributed to a lack of sampling media, as summarised in Table 2-4. On-Base and Off-Base sampling and testing was undertaken at nine groundwater monitoring wells, nine surface water monitoring locations and 11 sediment monitoring locations.

Table 2-4 Deviations from the SAQP

Location	Deviation	Comment/Justification	Impact on Existing Dataset
Surface Water			
SW106	Not Sampled.	Location dry	Minor impact - the Sum of PFHxS and PFOS has been above the LOR in both the October 2022 and April 2023 events, with PFOS detected above the LOR for the first time in the April 2023 event. Downstream locations were unable to be sampled this event, presenting a potential data gap.
SW118	Not Sampled.	Location dry	Low impact – the Sum of PFHxS and PFOS exceeded criteria last event and has been reported above LOR in all previous events. Location has been sampled in all previous events.
SW121	Not Sampled.	Location dry	Potential minor data gap – the Sum of PFHxS and PFOS exceeded criteria in all previous events and location has been sampled in all previous events. SW121 is intended to monitor PFAS in surface water discharging off-site along Kapooka Creek. However,

Location	Deviation	Comment/Justification	Impact on Existing Dataset
			SW680 downstream of SW121 was sampled as part of this event.
SW127	Not Sampled.	Location dry	Low impact – the Sum of PFHxS and PFOS has reported below LOR for all previous sampled events and location was sampled last event in October 2023.
SW149	Not Sampled.	Location dry	Low impact – location was sampled in the previous event and all events prior. Sum of PFHxS and PFOS was reported above LOR in October 2023.
SW614	Not Sampled.	Location dry	Potential minor data gap – Location was reported in the previous event, where the Sum of PFHxS and PFOS was exceeding criteria. April 2023 and November 2022 events reported results below criteria but above LOR. SW614 monitors PFAS along the Kapooka Creek pathway. SW677, which is further downstream, was also dry.
SW677	Not Sampled.	Location dry	Potential minor data gap – historically, location is dry with only one sample collected in November 2022. PFOS and Sum of PFHxS and PFOS results were reported above LOR but below criteria. This location is the most down-stream monitoring location along the Kapooka Creek pathway and thus closest to down-stream receptors.

3 Methodology

3.1 Groundwater Sampling Methodology

Groundwater monitoring was undertaken as detailed in Table 3-1.

Table 3-1 Groundwater Sampling Method

Activity	Details
Dates of Field Activity	15 to 16 April 2024
Well Gauging	Standing Water Levels (SWL) were gauged using an interface probe. All wells were measured against a specified mark at the top of the well casing.

Activity	Details
Groundwater Water Quality Parameters	Groundwater water quality parameters were recorded with a water quality meter after sample collection using extra sample water from within the HydraSleeve® decanted into a clean jar. With the exception of MW008, sampling was completed via HydraSleeve® technique. MW008 was sampled by low-flow micropurge as specified in the OMP (Jacobs, 2021c), which states that "MW008 is not suitable for sampling with HydraSleeve® due to the approximate one-metre diameter of the well". Groundwater quality parameters were monitored and recorded during groundwater removal (purging), prior to collecting groundwater samples for laboratory analysis. The following water quality parameters were recorded using a water quality meter: ▪ pH. ▪ Electrical conductivity (EC). ▪ Oxidation reduction potential (ORP). ▪ Dissolved oxygen (DO). ▪ Temperature. Water quality parameters measured by the water quality meter were recorded on field data records. All field instruments (e.g. water quality meter) were calibrated to verify the accuracy of the measurements taken. Bump tests were also completed daily by field staff during the monitoring event. Calibration certificates and bump test records have been provided in Appendix D.
Deployment of HydraSleeve®	The HydraSleeves® were deployed with attached weights in order for sample collection to begin at the lowest point of the well screen. All existing HydraSleeves® were replaced following sampling during the previous monitoring event (October 2023). HydraSleeve® were left in wells for a minimum of 24 hours to allow restabilisation of the well following the slight disturbance caused by sampler deployment, before sampling.
Retrieval of HydraSleeves® (Sample Collection)	Samples were collected via continuous pull method at a rate allowing the water to pass through the check valve into the sample sleeve. Samples were discharged into laboratory sample bottles immediately (to minimise changes in chemistry) via a discharge tube.
Sample collection by low-flow Micropurge (MW008)	Groundwater sampling commenced once the water quality parameters had stabilised, indicating that they represent groundwater in the aquifer. Samples were collected directly into appropriately preserved laboratory supplied bottles and packed in chilled containers for delivery to the laboratory under Chain of Custody (CoC) documentation. Disposable High-Density Polyethylene (HDPE) tubing was utilised for sampling and was taken Off-Base for disposal following completion of sampling.
Decontamination procedure	New HydraSleeves® were used at each groundwater monitoring well, thus removing the need for decontamination. All re-usable sampling equipment and down-hole equipment (interface probe and low flow pump) were thoroughly washed using phosphate-free detergent (Liquinox), then double rinsed with de-ionised water before the sample collection.
Sample identification, preservation transport and holding times	Each sample was labelled with the sample location, date, project identification number and sampler's initials. Samples were collected directly into appropriately preserved laboratory supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under CoC documentation. Sample containers, preservation procedures, sample storage requirements and holding times were undertaken in accordance with those recommended by Standards Australia (AS/NZS 5667.1:1998).

Activity	Details
Laboratory Testing	All groundwater samples were analysed for the full PFAS analytical suite (see SAQP for full list of analytes). The primary laboratory was ALS Global Laboratories (Springvale), and the secondary laboratory (quality control) was Eurofins (Dandenong South). Both laboratories are National Association of Testing Authorities (NATA)-accredited for the parameters tested. Copies of the NATA stamped laboratory reports and CoC documentation are included in Appendix C.
Laboratory Testing – Quality Control	Groundwater quality control samples were collected as follows and analysed for the full PFAS analytical suite: ▪ Field duplicate (intra-laboratory) samples at one per 10 water samples (one sample). ▪ Field triplicate (inter-laboratory) samples at one per 10 water samples (one sample). ▪ Rinsate blank samples at one per day [collected off re-used sampling/down-hole equipment] (four samples total). ▪ Trip blank samples of one per shipment included in the chilled sample containers upon transport to the laboratory (three samples total).

3.2 Surface Water Sampling Methodology

Surface water monitoring was undertaken using a grab method as detailed in Table 3-2.

Table 3-2 Surface Water Sampling Method

Item	Details
Dates of Field Activity	15 to 16 April 2024
Water Level Gauging	Water depths were measured where relevant with a measuring pole following sample collection.
Water Quality Parameters	Surface water quality parameters (i.e. pH, EC, ORP, DO, and temperature) were recorded at the time of sampling using a pre-calibrated water quality meter. Field observations such colour, odours, suspended solids, sheen presence, condition of the water body that was sampled from such as the type (lake, stream etc.) and channel width were also recorded on field sampling sheets.
Sampling Method	Where possible, the samples were collected directly into sample containers. The sample bottles were positioned at least 10 cm below the surface water level and above the sediment bed and orientated with the opening facing downwards to avoid the collection of surface films. Where access to surface water samples was difficult, the samples were collected by attaching the sample bottles to a long-handled sampling device (telescopic pole) which was directly filled by lowering the sample bottle into the surface water body. The sample bottles were attached so that the telescopic pole was not in direct contact with the opening of the sample bottle. Samples were collected in accordance with Australian/New Zealand Standards (AS/NZS 5667.1:1998) '*Water quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples*'.
Decontamination	All re-usable sampling equipment (telescopic pole) were thoroughly washed using phosphate-free detergent (Liquinox), and subsequently double rinsed with clean water before the sample collection.
Sample identification, preservation, transport and holding times.	Each sample was labelled with the sample location, date, project identification number and sampler's initials. Sample labelling and naming was in accordance with Annex L of the DCMM (Defence, 2021b). Samples were contained in appropriately preserved laboratory supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under CoC documentation. Sample containers, preservation procedures, sample storage requirements and holding times were undertaken in accordance with those recommended by Standards Australia (AS/NZS 5667.1:1998).

Item	Details
Laboratory Testing	All surface water samples were analysed for the full PFAS analytical suite (see SAQP for full list of analytes). The primary laboratory was ALS Global Laboratories (Springvale), and the secondary laboratory (quality control) was Eurofins (Dandenong South). Both laboratories are NATA-accredited for the parameters tested. Copies of the NATA stamped laboratory reports and CoC documentation are included in Appendix C.
Laboratory Testing – Quality Control	Surface water quality control samples were collected as follows and analysed for the full PFAS analytical suite: ▪ Field duplicate (intra-laboratory) samples at one per 10 water samples (one sample). ▪ Field triplicate (inter-laboratory) samples at one per 10 water samples (one sample). ▪ Rinsate blank samples at one per day [collected off re-used sampling equipment] (four samples total). ▪ Trip blank samples of one per shipment included in the chilled sample containers upon transport to the laboratory (three samples total).

3.3 Sediment Sampling Methodology

Sediment monitoring was undertaken as detailed in Table 3-3.

Table 3-3 Sediment Sampling Method

Item	Details
Dates of Field Activity	15 to 16 April 2024
Sample Collection	Sediment samples were collected from the approximate midpoint of the flow pathway and collected from the top 10 centimetres after removal of the immediate surface material using the required hand tools (e.g. hand trowel, sediment corer or hand auger), with samples placed directly into appropriately labelled, laboratory supplied sample containers and packed in chilled containers for delivery to the laboratory under CoC documentation. Sediment samples were collected after the co-located surface water sample was collected to prevent agitating sediments into the water body and surface water sample matrix. At each sampling location, the sediment sample was visually assessed and observations (physical description including makeup, colour, visible signs of contamination and moisture) recorded on field data sheets.
Decontamination	All re-usable sampling equipment (hand trowel or sediment corer) were thoroughly washed using phosphate-free detergent (Liquinox), and subsequently double rinsed with clean water before the sample collection.
Sample identification, preservation, transport and holding times.	Each sample was labelled with the sample location, date, project identification number and sampler's initials. Sample labelling and naming was in accordance with Annex L of the DCMM (Defence, 2021b). Samples were contained in appropriately preserved laboratory supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under CoC documentation. Sample containers, preservation procedures, sample storage requirements and holding times were undertaken in accordance with those recommended by Standards Australia (AS/NZS 5667.1:1998).
Laboratory Testing	All sediment samples were analysed for the full PFAS analytical suite (see SAQP for full list of analytes). The primary laboratory was ALS Global Laboratories (Springvale), and the secondary laboratory (quality control) was Eurofins (Dandenong South). Both laboratories are NATA-accredited for the parameters tested. Copies of the NATA stamped laboratory reports and CoC documentation are included in Appendix C.

Item	Details
Laboratory Testing – Quality Control	Sediment quality control samples were collected as follows and analysed for the full PFAS analytical suite: ▪ Field duplicate (intra-laboratory) samples at one per 10 sediment samples (one sample). ▪ Field triplicate (inter-laboratory) samples at one per 10 sediment samples (one sample). ▪ Rinsate blank samples at one per day [collected off re-used sampling equipment] (four samples total). ▪ Trip blank samples of one per shipment included in the chilled sample containers upon transport to the laboratory (three samples total).

3.4 Quality Control (QC) / Quality Assurance (QA)

A critical aspect of site assessments is the demonstration of the quality of the data used as the basis for the assessment. This is achieved through a Data Validation process which includes a review of the following data quality indicators, as described in the SAQP:

- QA documentation.
- Bias.
- Data Representativeness.
- Data Precision & Accuracy.
- Data Comparability.
- Data Set Completeness.

A detailed review of these aspects has been undertaken, the results of which are presented in Appendix E. A summary of the data validation from the QA/QC review is included in Section 4.5 below.

3.5 Assessment Criteria

3.5.1 Groundwater and Surface Water

The adopted assessment criteria for groundwater and surface water are detailed in Table 3-4. The assessment levels adopted for groundwater and surface water are based upon the PFAS screening criteria specified in the OMP (Jacobs, 2021c), which were adopted based on the guidance in the PFAS NEMP (HEPA, 2020).

Table 3-4 Criteria for Groundwater and Surface Water

Exposure Scenario	Adopted Assessment Criteria		Guidance
	PFHxS / PFOS	PFOA	
	µg/L		
Human Health - Drinking Water Quality Guideline[1]	0.07[2]	0.56	HEPA 2020
Human Health - Surface Water Recreational	2[2]	10	HEPA 2020
Ecological (95% species protection)	0.13[3]	220	HEPA 2020

1. Drinking Water screening guidelines have been adopted for screening purposes for Industrial Water use, Stock Water use and Agriculture/Parks/Gardens Water use.
2. Combined PFOS and PFHxS.
3. PFOS only. 95% species protection guideline values adopted for screening of results, in accordance with the OMP (Jacobs, 2021c).

3.5.2 Sediment

There are currently no Australian regulatory endorsed assessment levels for risk posed to ecology or human health by PFAS in sediment.

4 Field Observations and Results

4.1 Conditions Impacting the Sampling Event

In the seven days prior to the sampling event, 0.2 mm of rain was recorded at the nearest weather station (74272), located on the Kapooka Base. 0 mm of rainfall was recorded at the time of the event. April 2024 rainfall was 41.6 mm, which is lower than the monthly April average between 2018 and 2023 of 44.0 mm.

No On-Base activities with the potential to impact sample collection or the results were noted.

4.2 Groundwater

4.2.1 Summary of Field Observations

4.2.1.1 Water quality parameter measurements

Stabilised water quality parameters, water colour and turbidity observations recorded during the groundwater sampling program are presented in Appendix D. Water quality parameters for conductivity at MW103 reported an increase from 391.4 µs/cm in October 2023 to 2166.0 µs/cm within this event. MW107 and MW109 reported increases in ORP compared to the previous event: MW107 reported an increase from -8.0 mV in October 2023 to 156 mV within this event, this result is inconsistent with historical data. MW109 reported an increase from -7.9 mV in October 2023 to 115.9 mV within this event. Whilst showing changes from the previous event, water quality parameters for MW103 and MW109 from this event remain consistent with the historical data.

Water quality parameters for all other locations were generally consistent with historical data. Groundwater varied from clear to cloudy with no to low turbidity.

4.2.1.2 Groundwater Elevation and Flow Direction

Groundwater elevation during this sampling event ranged from 168.52 metres Australian Height Datum (mAHD) (MW625) to 219.30 mAHD (MW107), which is generally consistent with previous monitoring events.

Regional groundwater flow is inferred to be in a north-westerly direction, towards the Murrumbidgee River, consistent with previous monitoring events.

Groundwater elevation contours and flow directions are shown in Figure 3, Appendix A. Gauging records are presented in Appendix D.

4.2.2 Groundwater Laboratory Results

The results of laboratory analysis have been compared against adopted assessment criteria, and are presented in Table B1, Appendix B, and summarised in Table 4-1 below. Of the nine primary samples that were tested, PFOA was reported above the LOR in two samples, and PFOS+PFHxS in four samples.

Table 4-1 Summary of Groundwater Results Exceeding Adopted Criteria

Analytes	Locations Exceeding Criteria	Lowest Criteria (µg/L)	Max Conc. (µg/L)	No. Analytical Results >LOR	No. Results Above Criteria	Significant Concentration Changes[3]
PFOS	MW601	0.13[2]	0.27	4	1	-
PFOA	NA	0.56[1]	0.06	2	0	-
PFOS+PFHxS	MW008, MW103, MW107, MW601	0.07[1]	0.56	4	4	-

1. Drinking water assessment criteria
2. Ecological assessment criteria
3. Significant concentration change defined as an order of magnitude increase or decrease

Results have also been compared against available historical data and reported no significant concentration changes.

No first-time detections or new exceedances of guideline values were reported for PFOS, PFOA or PFOS+PFHxS.

4.2.3 Summary of Monitoring Network Condition and Repairs

No changes to the monitoring network condition were noted during the fieldwork.

4.3 Surface Water

4.3.1 Summary of Field Observations

4.3.1.1 Water quality parameter measurements

Water quality parameters, water colour and turbidity observations recorded during the surface water sampling program are presented in Appendix D. Field observations indicated that sampled locations generally had similar water levels and flow rates compared with the previous monitoring event in October 2023. SW144 reported an increase in ORP, from -100.4 mV to 29.2 mV. The increased ORP measurement for SW144 is still consistent with historical data. Surface water varied from clear to brown with low to medium turbidity.

Water quality parameters for all locations were generally consistent with historical data. Groundwater varied from clear to cloudy with no to low turbidity.

4.3.2 Laboratory Results

The results of laboratory analysis have been compared against adopted assessment criteria, presented in Table B2, Appendix B, and summarised in Table 4-2 below. Of the nine primary samples that were tested, PFOA was reported above the LOR for three samples, with PFOS+PFHxS reported above the LOR in seven samples.

Table 4-2 Summary of Surface Water Results Exceeding Adopted Criteria

Analytes	Locations Exceeding Criteria	Lowest Criteria (µg/L)	Max Conc. (µg/L)	No. Analytical Results >LOR	No. Results Above Criteria	Significant Concentration Changes[3]
PFOS	SW103, SW107, SW136, SW680	0.13[2]	0.78	6	4	-
PFOA	NA	0.56[1]	0.03	3	0	-
PFOS+PFHxS	SW103, SW107, SW136, SW680	0.07[1]	1.38	7	4	-

1. Drinking water assessment criteria
2. Ecological assessment criteria
3. Significant concentration change defined as an order of magnitude increase or decrease

All concentrations reported during this event were generally consistent with previous sampling events.

No first-time detections of PFOS, PFOA or PFOS+PFHxS were reported at any locations during this sampling event.

A summary of locations where a first-time detection of PFOS, PFOS+PFHxS or PFOA or a new exceedance of guideline values were reported, is provided in Table 4-3 below. The laboratory reports are provided in Appendix C.

Table 4-3 Summary of Surface Water Results with First-time Detections or New Exceedances

Deviation Type	Surface Water Location	PFOS+PFHxS concentration (µg/L)		PFOA concentration (µg/L)		PFOS concentration (µg/L)	
		April 2024	Previous Maximum	April 2023	Previous Maximum	April 2024	Previous Maximum
New exceedance	SW680	0.23	0.18	<0.01	<0.01	0.18	0.13

Note:
Location with first-time detection of PFOS+PFHxS, PFOA or PFOS in latest monitoring round
Location with a new exceedance of lowest adopted guideline values in latest monitoring round
Bold: Exceedance of lowest adopted guideline values

Findings are summarised as follows:

> One surface water monitoring location (SW680) reported a new exceedance of the lowest adopted criteria for PFOS.

4.4 Sediment

4.4.1 Summary of Field Observations

Odour, colour and other observations recorded during the sediment sampling program are presented in Appendix D. Field observations were generally consistent with the previous monitoring event in October 2023.

4.4.2 Laboratory Results

National assessment criteria have not been established for PFAS in sediment. The results of laboratory analysis have been compared against historical results, presented in Table B3, Appendix B and summarised below:

> Of the 11 primary samples analysed, 11 samples reported PFOS+PFHxS concentrations above the LOR. One sample reported PFOA concentration above the LOR.

> No locations reported a significant change in concentration for this monitoring event.

> No first-time detections of PFOA, PFOS or PFOS+PFHxS were reported.

4.5 Data Validation

The data validation process has concluded that there are no significant systematic errors in the data collection process. Therefore, the data set used as the basis for the surface water, groundwater and sediment assessment is considered valid and complete. A detailed Data Quality Review is included in Appendix E.

5 Summary and Conclusions

Cardno conducted the April 2024 biannual groundwater, surface water and sediment monitoring event at Blamey Barracks Kapooka as part of the PFAS OMP. On-Base and Off-Base sampling and testing was undertaken at nine groundwater monitoring wells, nine surface water locations and 11 sediment locations.

Groundwater levels were gauged in all accessible wells before sampling. Regional groundwater flow is inferred to be in a north-westerly direction, towards the Murrumbidgee River, consistent with the previous monitoring event.

Table 5-1 Summary of Results

Activity	Details
Deviations from OMP SAQP	> Seven surface water locations (SW106, SW118, SW121, SW127, SW149, SW614 and SW677) could not be sampled as the locations were dry.
Groundwater Analytical Results	> Nine groundwater samples were collected in total. > No locations reported a first-time detection or new exceedance for PFOS, PFOS+PFHxS or PFOA. > All results were generally consistent with results retorted in the previous event.

Activity	Details
Surface Water Analytical Results	> Nine surface water samples were collected in total. > No locations reported a first-time detection for PFOS+PFHxS, PFOS or PFOA. > One surface water monitoring location (SW680) reported a new exceedance of the lowest adopted criteria for PFOS. > All other results were generally consistent with results reported in the previous event.
Sediment Analytical Results	> 11 sediment samples were collected in total. > No sediment locations reported a first-time detection for PFOS, PFOA or PFOS+PFHxS. > No significant concentration changes were reported, and results were generally consistent with results reported in the previous event.
Next Scheduled Monitoring Event	> The next OMP monitoring event is scheduled for October 2024. > A groundwater monitoring well will be installed adjacent to MW008 to improve the confidence of groundwater monitoring results from this area. > Consideration should be given by Defence, the PMAP Lead Consultant and the OMP Service Provider, on an alternative location to sample in the future should SW677 continue to be found to be dry. > No other actions which require completion prior to the next monitoring round have been identified.

6 References

General References

1. Australian and New Zealand Guidelines, (2018), *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*.
2. Department of Defence (2019b), *Pollution Prevention Management Manual – Annex 1L: Pollution Prevention Guidance - Routine Water Quality Monitoring*.
3. Department of Defence, Department of Energy, 2018, *Quality System Manual Schedule B15*.
4. Department of Defence (2021a) *Defence OMP Factual Report Preparation Guidance*, Revised May 2021.
5. Department of Defence (2021b), *Defence Contamination Management Manual (DCMM), Annex L – Data Management*, August 2018, Amended June 2021.
6. Directorate of PFAS Investigation and Remediation Infrastructure Division (2023), *PFAS Ongoing Monitoring Program Sampling, Analysis and Quality Plan Guidance*, Version 0.1, January 2023, Department of Defence.
7. National Environment Protection Council (2013), *National Environment Protection (Assessment of Site Contamination) Measure,* December 1999, Amended April 2013.
8. NSW EPA (2002), The NSW State Groundwater Dependant Ecosystems Policy, April 2002.
9. NSW EPA (2004), Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales, Publication 1669.2, March 2004.
10. NSW EPA (2016), Designing Sampling Programs for Sites Potentially Contaminated by PFAS.
11. NSW EPA (2014), Waste Classification Guidelines – Part 1: Classification of Waste, November 2014.
12. Environmental Protection Agency (United States EPA; 2002) EPA/240/R-02/004 *Guidance on Environmental Data Verification and Data Validation,* November 2002.
13. The Heads of EPAs Australia and New Zealand (HEPA; 2020) *PFAS National Environmental Management Plan (NEMP) Version 2.0*, January 2020.
14. National Environment Protection Council (NEPC; 1999 - amended 2013) *National Environmental Protection (Assessment of Site Contamination) Measure (as amended),* registered May 2013.
15. National Health and Medical Research Council (2011 – updated 2018) *National Water Quality Management Strategy Australian Drinking Water Guidelines*, 6 August 2018.
16. Nation Health and Medical Research Council (NHMRC; 2019) *Guidance on Per and Poly-fluoroalkyl Substances (PFAS) in Recreational Water,* August 2019.
17. Standards Australia/Standards New Zealand (1998) AS5667.1:1998 *Water Quality – Sampling, Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples*.
18. US EPA (2006) *Guidance for the Data Quality Objectives Process* (EPA QA/G-4), United States Environmental Protection Agency.
19. US EPA (2002) *Guidance on Environmental Data Verification and Data Validation,* Reference: EPA/240/R-02/004, United States Environmental Protection Agency, November 2002.

Base Specific References

20. Jacobs (2019) Blamey Barracks *Comprehensive PFAS Investigation. Detailed Site Investigation (DSI)*, September 2019.
21. Jacobs (2021a) Blamey Barracks *Comprehensive PFAS Investigation. Human Health and Ecological Risk Assessment (HHERA)*, 23 June 2021.
22. Jacobs (2021b) *Blamey Barracks Kapooka; PFAS Management Area Plan (PMAP)*, June 2021.
23. Jacobs (2021c) *PFAS Ongoing Monitoring Plan*, June 2021.
24. Cardno (2024) *PFAS Ongoing Monitoring Plan Sampling and Analysis Quality Plan (SAQP),* Rev6, Blamey Barracks Kapooka. Prepared for Department of Defence, 8 April 2024.

APPENDIX

A

FIGURES

Cardno

now

Stantec

FIGURE 1

1:40,000 Scale at A3

Metres

0 1,000 2,000

Site Locality Plan & Management Areas

BIANNUAL SAMPLING EVENT
BLAMEY BARRACKS KAPOOKA
DEPARTMENT OF DEFENCE

N

Map Produced by Cardno now Stantec
Date: 2023-03-24 | Project: DEF19008
Coordinate System: GDA2020 MGA Zone 55
Map: DEF19008-GS-0164-SiteLocalityPlan_K.mxd 02
Aerial Imagery Supplied by Metromap (February, 2022)

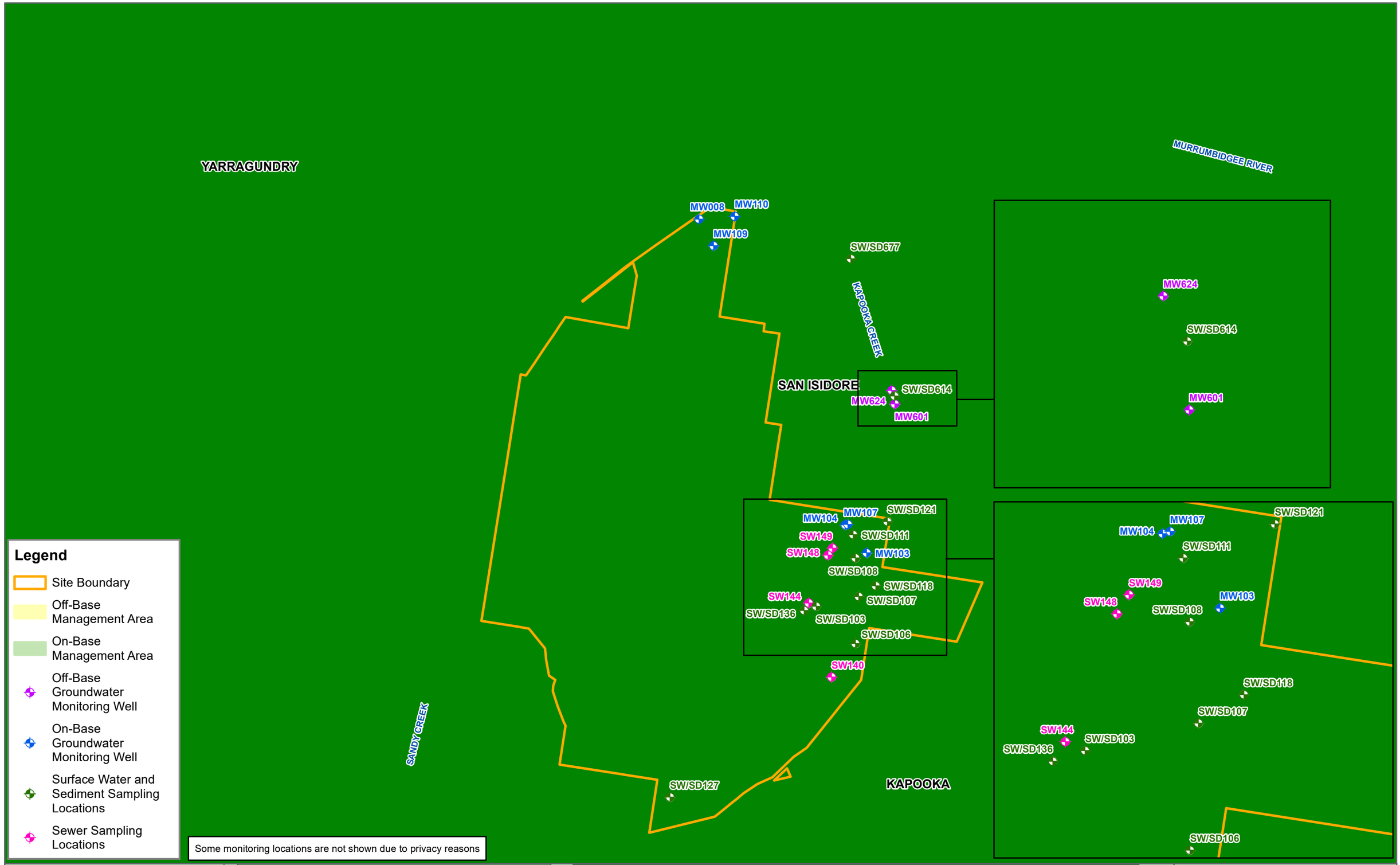


FIGURE 2

1:40,000 Scale at A3

Metres

0 1,000 2,000

Sampling Locations

BIANNUAL SAMPLING EVENT
BLAMEY BARRACKS KAPOOKA
DEPARTMENT OF DEFENCE

N

Map Produced by Cardno now Stantec
Date: 2023-11-15 | Project: DEF19008
Coordinate System: GDA2020 MGA Zone 55
Map: DEF19008-GS-0166-SampleLocationsN_K.mxd 02
Aerial Imagery Supplied by Metromap (February, 2022)

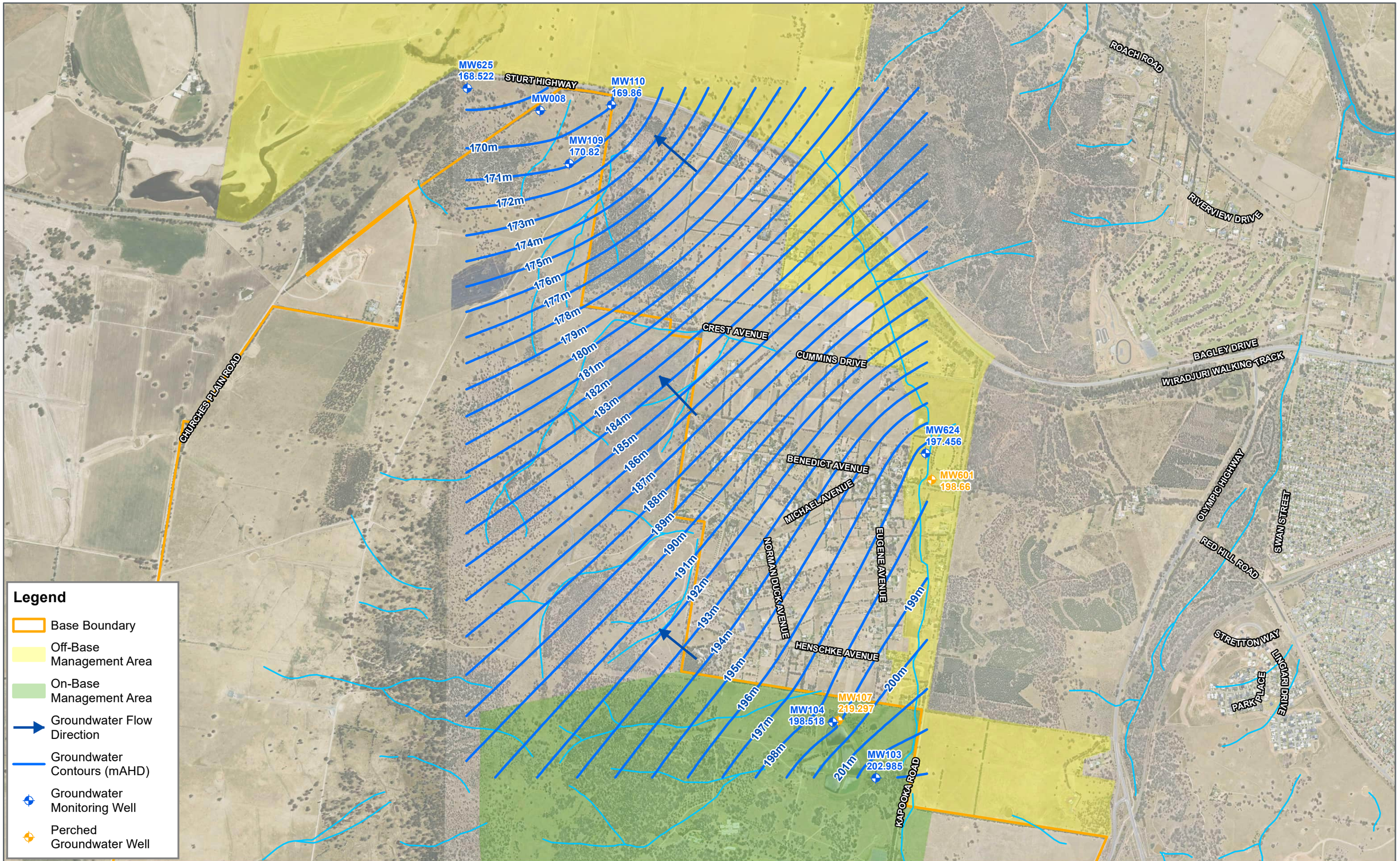


FIGURE 3

1:20,000 Scale at A3

Metres

0 500 1,000

Groundwater Elevation Contours (April, 2024)

BIANNUAL REPORT
BLAMEY BARRACKS KAPOOKA
DEPARTMENT OF DEFENCE

N

Cardno now Stantec

Map Produced by Cardno now Stantec
Date: 2024-05-28 | Project: DEF19008
Coordinate System: GDA2020 MGA Zone 55
Map: DEF19008-GS-0456-GW_Contours_E6_K.mxd 01
Aerial Imagery Supplied by Metromap

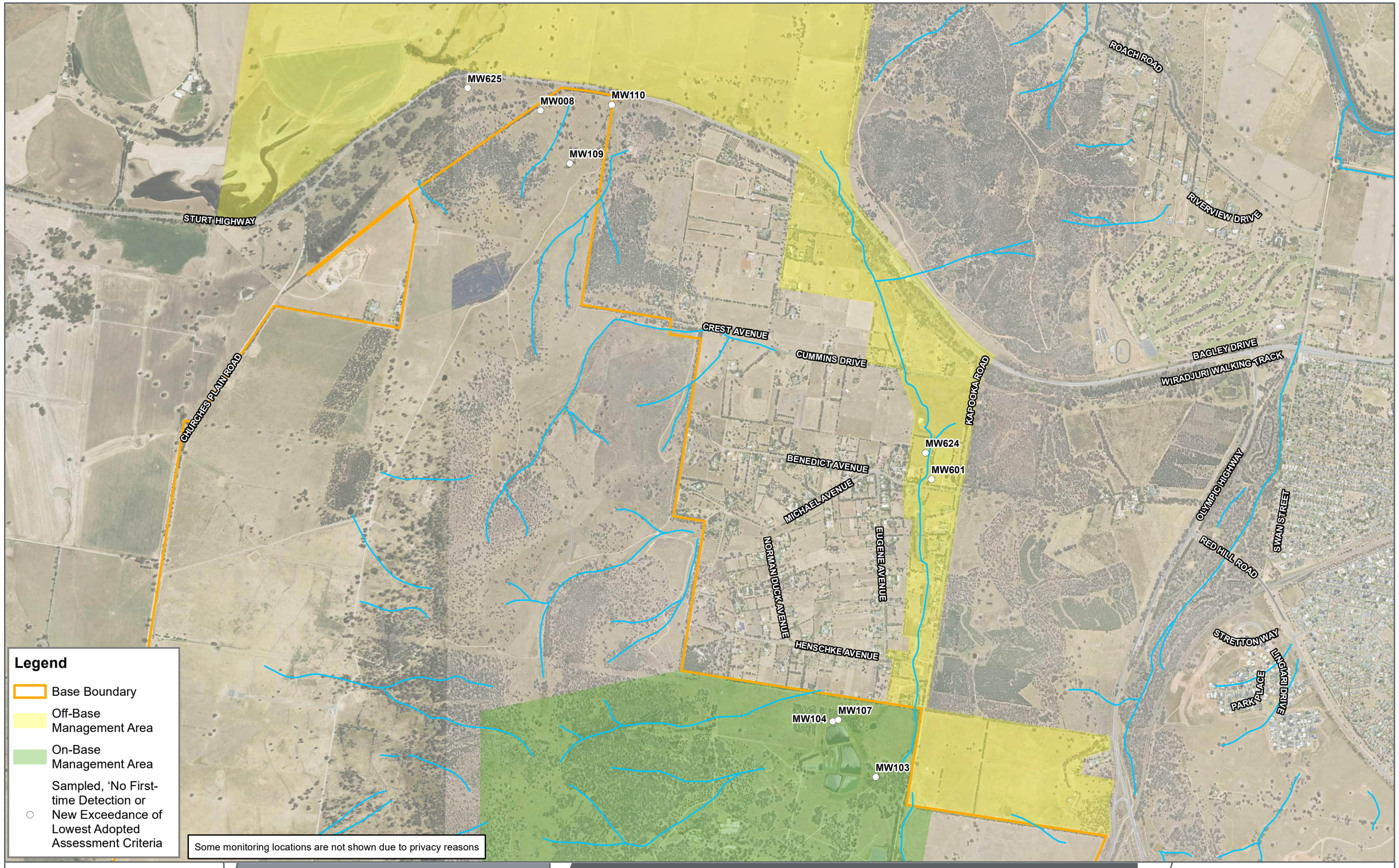


FIGURE 4

1:20,000 Scale at A3

Metres

0 500 1,000

PFAS Results Summary - Groundwater (April 2024)

BIANNUAL REPORT
BLAMEY BARRACKS KAPOOKA
DEPARTMENT OF DEFENCE

N

Cardno now Stantec

Map Produced by Cardno now Stantec
Date: 2024-05-28 | Project: DEF19008
Coordinate System: GDA2020 MGA Zone 55
Map: DEF19008-GS-0457-GW_PFAS_Summary_E6_K.mxd 01
Aerial Imagery Supplied by Metromap

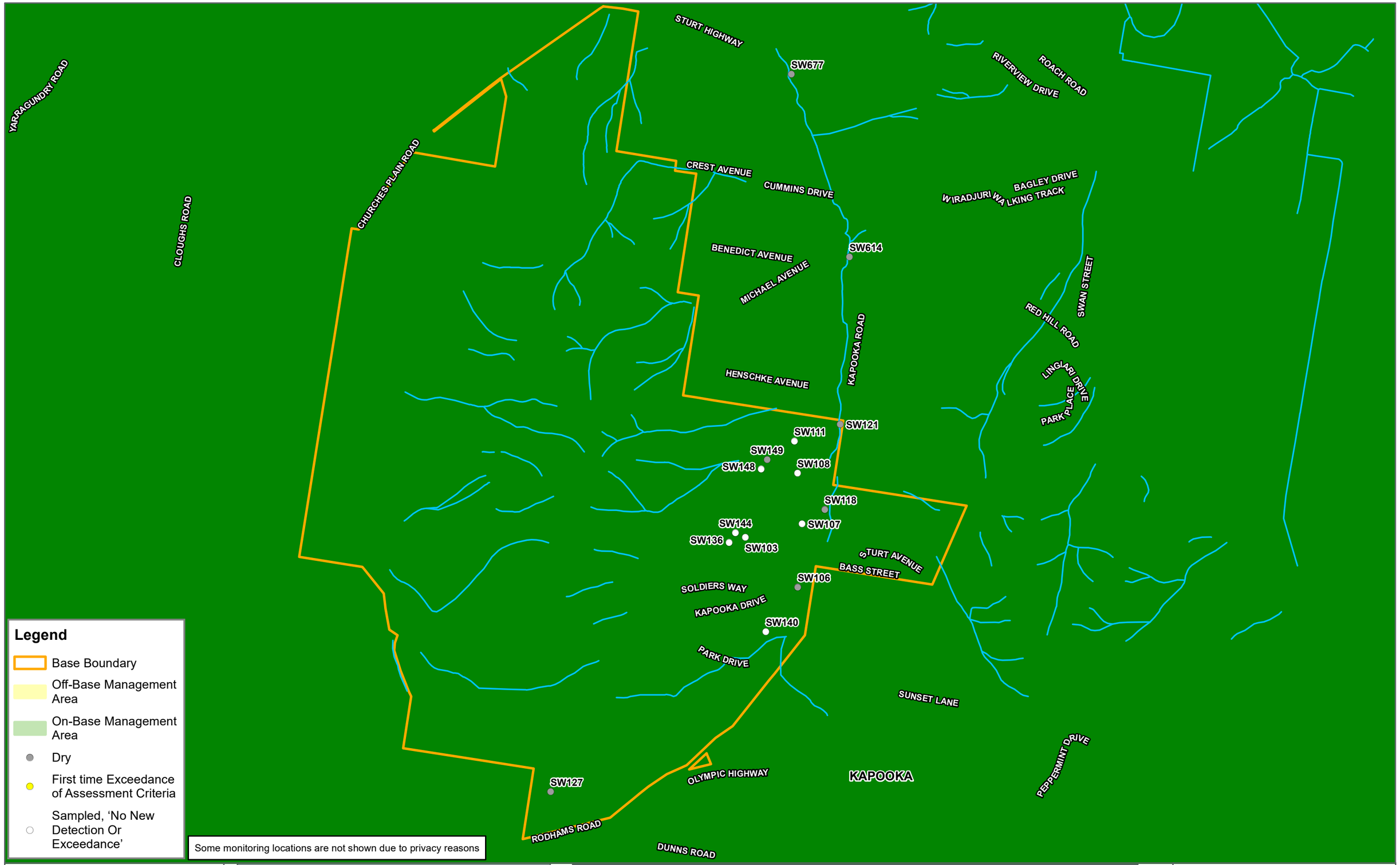


FIGURE 5

1:30,000 Scale at A3

Metres

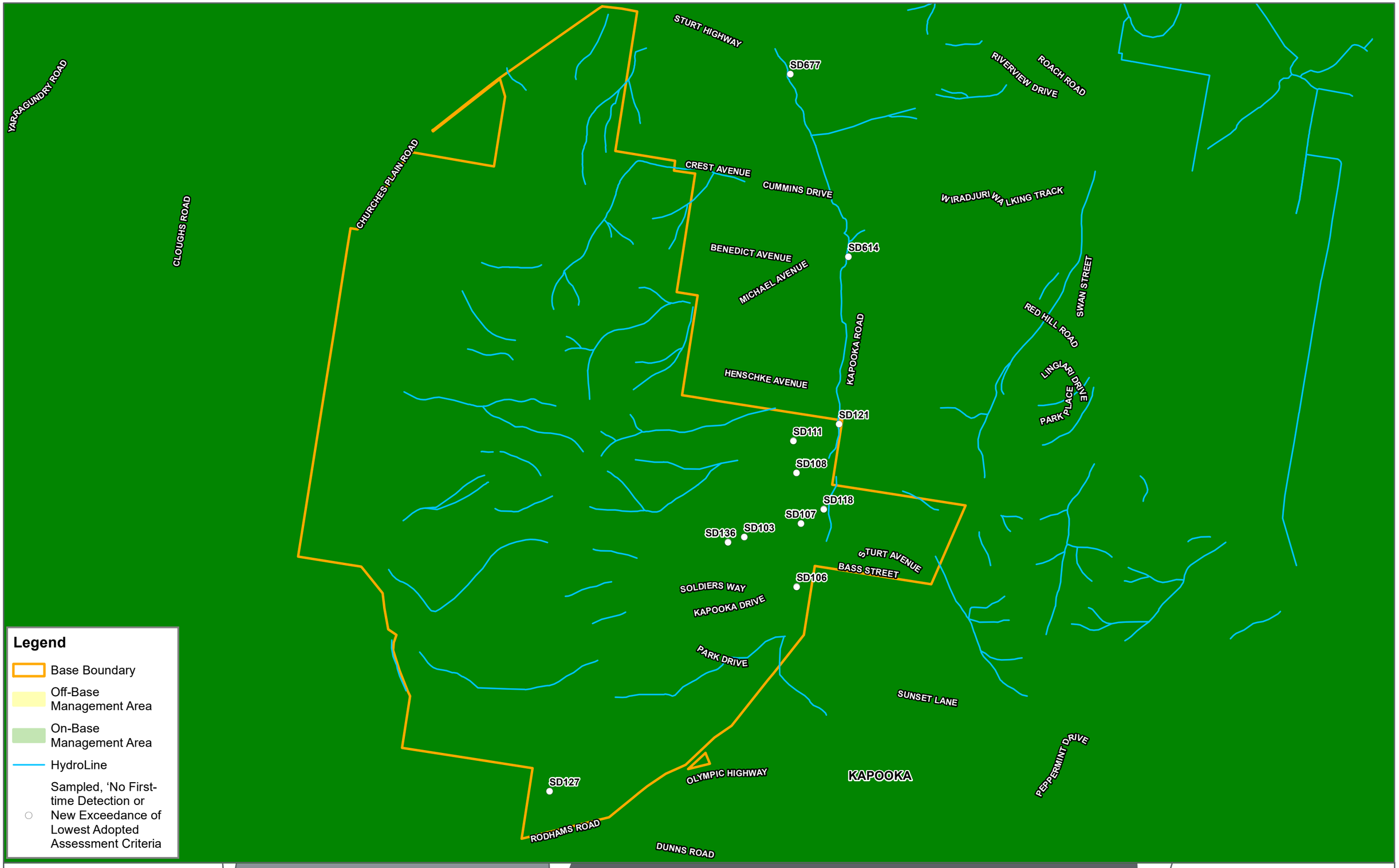
0 500 1,000

PFAS Results Summary - Surface water (April, 2024)

BIANNUAL SAMPLING EVENT
BLAMEY BARRACKS KAPOOKA
DEPARTMENT OF DEFENCE

N

Map Produced by Cardno now Stantec
Date: 2024-05-17 | Project: DEF19008
Coordinate System: GDA2020 MGA Zone 55
Map: DEF19008-GS-0458-SW_PFAS_Summary_E6_K.mxd 01
Aerial Imagery Supplied by Metromap


STURT HIGHWAY
SD677
RIVERVIEW DRIVE
ROACH ROAD
YARRAGUNDRY ROAD
CHURCHES PLAIN ROAD
CREST AVENUE
CUMMINS DRIVE
WIRADJURI WALKING TRACK
CLOUGHS ROAD
BENEDICT AVENUE
SD614
MICHAEL AVENUE
SWAN STREET
RED HILL ROAD
KAPOOKA ROAD
LINGIARI DRIVE
PARK PLACE
HENSCHKE AVENUE
SD121
SD111
SD108
SD118
SD107
SD136
SD103
STURT AVENUE
BASS STREET
SD106
SOLDIERS WAY
KAPOOKA DRIVE
PARK DRIVE
SUNSET LANE
PEPPERMINT DRIVE
SD127
OLYMPIC HIGHWAY
KAPOOKA
RODHAMS ROAD
DUNNS ROAD
Legend
Base Boundary
Off-Base Management Area
On-Base Management Area
HydroLine
Sampled, 'No First-time Detection or New Exceedance of Lowest Adopted Assessment Criteria
FIGURE 6
1:30,000 Scale at A3
Metres
0
500
1,000
PFAS Results Summary - Sediment (April, 2024)
BIANNUAL SAMPLING EVENT
BLAMEY BARRACKS KAPOOKA
DEPARTMENT OF DEFENCE
N
Map Produced by Cardno now Stantec
Date: 2024-05-17 | Project: DEF19008
Coordinate System: GDA2020 MGA Zone 55
Map: DEF19008-GS-0459-SED_PFAS_Summary_E6_K.mxd 01
Aerial Imagery Supplied by Metromap (February, 2022)

APPENDIX

B

DATA ASSESSMENT TABLES

Cardno

now

Stantec

						Perfluorocarbons													
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
						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	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water							**0.56**	**0.07**												
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*												
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220													
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**															
MW008	**On-Base**	**09 Mar 2020**	**0315_MW008_S_200309**	**Normal**	**ES2008982**	0.06	<0.01	**0.23**	<0.02	<0.02	0.17	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC101_200309	**Field_D**	**ES2008982**	0.06	<0.01	**0.23**	<0.02	<0.02	0.17	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC201_200309	**Interlab_D**	**239048**	0.05	<0.01	**0.18**	0.01	<0.01	0.13	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.02	<0.02
		28 Oct 2021	**0315_MW008_20211028**	**Normal**	**ES2139229**	0.03	<0.01	**0.11**	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		28 Apr 2022	**0315_MW008_20220428**	**Normal**	**EM2208205**	0.02	<0.01	**0.10**	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	**0315_MW008_20221103**	**Normal**	**EM2222407**	0.04	<0.01	**0.13**	<0.02	<0.02	0.09	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		12 Apr 2023	**0315_MW008_20230412**	**Normal**	**EM2306946**	0.02	<0.01	**0.11**	<0.02	<0.02	0.09	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	**0315_MW008_231012**	**Normal**	**EM2318619**	0.02	<0.01	**0.11**	<0.02	<0.02	0.09	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		16 Apr 2024	**0315_MW008_240416**	**Normal**	**EM2406739**	0.01	<0.01	**0.09**	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW103	**On-Base**	**20 Feb 2019**	**0315_MW103_S_190220**	**Normal**	**ES1905450**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		28 Oct 2021	**0315_MW103_20211028**	**Normal**	**ES2139229**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		29 Apr 2022	**0315_MW103_20220429**	**Normal**	**EM2208205**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	**0315_MW103_20221103**	**Normal**	**EM2222407**	<0.01	0.02	0.06	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02
		13 Apr 2023	**0315_MW103_20230413**	**Normal**	**EM2306946**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC105_20230413	**Field_D**	**EM2306946**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC205_20230413	**Interlab_D**	**982794**	<0.01	<0.01	<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
		12 Oct 2023	**0315_MW103_231012**	**Normal**	**EM2318619**	0.02	0.04	**0.14**	0.03	<0.02	0.12	<0.02	<0.02	<0.1	0.02	0.06	0.03	<0.02	<0.02	<0.02
		20 Dec 2023	**0315_MW103_231220**	**Normal**	**EM2322883**	<0.01	<0.01	0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC101_231220	**Field_D**	**EM2322883**	<0.01	<0.01	0.02	<0.02	-	0.02	-	-	<0.1	<0.02	<0.02	<0.02	-	-	-
		16 Apr 2024	**0315_MW103_240416**	**Normal**	**EM2406739**	0.04	0.06	**0.32**	0.07	0.04	0.28	<0.02	<0.02	<0.1	0.05	0.13	0.05	<0.02	<0.02	<0.02
MW104	**On-Base**	**20 Feb 2019**	**0315_MW104_S_190220**	**Normal**	**ES1905450**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		28 Oct 2021	**0315_MW104_20211028**	**Normal**	**ES2139229**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		28 Apr 2022	**0315_MW104_20220428**	**Normal**	**EM2208205**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	**0315_MW104_20221103**	**Normal**	**EM2222407**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		15 Apr 2023	**0315_MW104_20230415**	**Normal**	**EM2306946**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	**0315_MW104_231012**	**Normal**	**EM2318619**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC104_231012	**Field_D**	**EM2318619**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC204_20230413	**Interlab_D**	**1036476**	<0.01	<0.01	<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
		16 Apr 2024	**0315_MW104_240416**	**Normal**	**EM2406739**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW107	**On-Base**	**30 Jan 2019**	**0315_MW107_P_190130**	**Normal**	**ES1902996**	<0.01	<0.01	**0.10**	<0.02	<0.02	0.10	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		07 Mar 2019	**0315_MW107_P_190307**	**Normal**	**ES1907492**	0.02	<0.01	0.07	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		29 Apr 2022	**0315_MW107_20220429**	**Normal**	**EM2208205**	0.02	0.02	**0.14**	0.02	0.02	0.12	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	**0315_MW107_20221103**	**Normal**	**EM2222407**	0.01	<0.01	**0.09**	0.03	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		13 Apr 2023	**0315_MW107_20230413**	**Normal**	**EM2306946**	0.01	0.01	**0.09**	0.03	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	**0315_MW107_231012**	**Normal**	**EM2318619**	0.02	0.02	**0.10**	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		16 Apr 2024	**0315_MW107_240416**	**Normal**	**EM2406739**	0.02	0.01	**0.10**	0.03	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW109	**On-Base**	**10 Mar 2020**	**0315_MW109_S_200310**	**Normal**	**ES2008982**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		27 Oct 2021	**0315_MW109_20211027**	**Normal**	**ES2139229**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC105_20211027	**Field_D**	**ES2139230**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC205_20211027	**Interlab_D**	**837707**	<0.01	<0.01	<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
		27 Apr 2022	**0315_MW109_20220427**	**Normal**	**EM2208205**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC101_20220427	**Field_D**	**EM2208205**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC201_20220427	**Interlab_D**	**889626**	<0.01	<0.01	<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
		03 Nov 2022	**0315_MW109_20221103**	**Normal**	**EM2222407**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC104_20221103	**Field_D**	**EM2222407**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC204_20221103	**Interlab_D**	**940511**	<0.01	<0.01	<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
		13 Apr 2023	**0315_MW109_20230413**	**Normal**	**EM2306946**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	**0315_MW109_231012**	**Normal**	**EM2318619**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		16 Apr 2024	**0315_MW109_240416**	**Normal**	**EM2406739**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

						Perfluorocarbons													
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
						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	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water							**0.56**	**0.07**												
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*												
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220													
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**															
MW110	**On-Base**	**10 Mar 2020**	**0315_MW110_S_200310**	**Normal**	**ES2008982**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		28 Oct 2021	**0315_MW110_20211027**	**Normal**	**ES2139229**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		27 Apr 2022	**0315_MW110_20220427**	**Normal**	**EM2208205**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	**0315_MW110_20221103**	**Normal**	**EM2222407**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		13 Apr 2023	**0315_MW110_20230413**	**Normal**	**EM2306946**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	**0315_MW110_231012**	**Normal**	**EM2318619**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		16 Apr 2024	**0315_MW110_240416**	**Normal**	**EM2406739**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC102_240416	**Field_D**	**EM2406739**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC202_240416	**Interlab_D**	**1090100**	<0.01	<0.01	<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
MW601	**Off-Base**	**29 Jan 2019**	**0315_MW601_S_190129**	**Normal**	**ES1902996**	0.01	<0.01	**0.15**	<0.02	<0.02	0.14	<0.02	<0.02	<0.1	<0.02	<0.02	0.03	<0.02	<0.02	<0.02
			0315_QC101_190129	**Field_D**	**ES1902996**	0.01	<0.01	**0.15**	<0.02	<0.02	0.14	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
			0315_QC201_190129	**Interlab_D**	**638493**	0.01	<0.01	**0.1**	0.01	0.01	0.09	<0.01	<0.01	<0.05	<0.01	0.01	0.01	<0.01	<0.01	<0.01
		18 Feb 2019	**0315_MW601_S_190218**	**Normal**	**ES1905450**	0.02	<0.01	**0.25**	<0.02	<0.02	0.23	<0.02	<0.02	<0.1	0.02	0.02	<0.02	<0.02	<0.02	<0.02
		12 Mar 2020	**0315_MW601_P_200312**	**Normal**	**ES2008982**	0.16	0.01	**0.89**	0.06	0.08	0.73	0.03	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02
		27 Oct 2021	**0315_MW601_20211027**	**Normal**	**ES2139235**	0.17	<0.01	**0.59**	0.03	0.03	0.42	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02
		28 Apr 2022	**0315_MW601_20220428**	**Normal**	**EM2208229**	0.20	0.01	**0.65**	0.03	0.04	0.45	0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02
		04 Nov 2022	**0315_MW601_20221104**	**Normal**	**EM2222368**	0.34	<0.01	**0.77**	0.04	0.03	0.43	0.03	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02
		13 Apr 2023	**0315_MW601_ 20230413**	**Normal**	**EM2306926**	0.21	<0.01	**0.57**	0.02	0.04	0.36	0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	**0315_MW601_231012**	**Normal**	**EM2318605**	0.37	<0.01	**0.79**	0.03	0.03	0.42	0.04	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02
		16 Apr 2024	**0315_MW601_240416**	**Normal**	**EM2406741**	0.27	<0.01	**0.56**	0.02	<0.02	0.29	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW624	**Off-Base**	**11 Mar 2020**	**0315_MW624_S_200311**	**Normal**	**ES2008982**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		27 Oct 2021	**0315_MW624_20211027**	**Normal**	**ES2139235**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		20 Dec 2021	**MW624**	**Normal**	**EM2125953**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		28 Apr 2022	**0315_MW624_20220428**	**Normal**	**EM2208229**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		04 Nov 2022	**0315_MW624_20221104**	**Normal**	**EM2222368**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		13 Apr 2023	**0315_MW624_20230413**	**Normal**	**EM2306926**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	**0315_MW624_231012**	**Normal**	**EM2318605**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		16 Apr 2024	**0315_MW624_240416**	**Normal**	**EM2406741**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	0.02	<0.02	<0.02	<0.02
MW625	**Off-Base**	**21 May 2020**	**0315_MW625_S_200521**	**Normal**	**ES2017986**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		26 Oct 2021	**0315_MW625_20211026**	**Normal**	**ES2139232**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		27 Apr 2022	**0315_MW625_20220427**	**Normal**	**EM2208223**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	**0315_MW625_20221103**	**Normal**	**EM2222366**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		13 Apr 2023	**0315_MW625_ 20230413**	**Normal**	**EM2306925**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	**0315_MW625_231012**	**Normal**	**EM2318601**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		17 Apr 2024	**0315_MW625_240417**	**Normal**	**EM2406721**	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

						Perfluorocarbons																
						Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FTS)	8:2 Fluorotelomer sulfonate (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
						µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	ug/L
					LOR	0.01	0.01	0.01	0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.00001	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																						
PFAS NEMP 2.0 Table 1 Health Recreational Water																						
PFAS NEMP 2.0 Table 5 Freshwater 95%																						
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																	
MW008	**On-Base**	**09 Mar 2020**	**0315_MW008_S_200309**	**Normal**	**ES2008982**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.23	-	-
			0315_QC101_200309	**Field_D**	**ES2008982**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.23	-	-
			0315_QC201_200309	**Interlab_D**	**239048**	<0.05	<0.1	<0.5	<0.1	<0.05	<0.05	<0.1	<0.5	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	0.19	0.00005	-
		28 Oct 2021	**0315_MW008_20211028**	**Normal**	**ES2139229**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.11	-	-
		28 Apr 2022	**0315_MW008_20220428**	**Normal**	**EM2208205**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.10	-	-
		03 Nov 2022	**0315_MW008_20221103**	**Normal**	**EM2222407**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.13	-	-
		12 Apr 2023	**0315_MW008_20230412**	**Normal**	**EM2306946**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.11	-	-
		12 Oct 2023	**0315_MW008_231012**	**Normal**	**EM2318619**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.11	-	-
		16 Apr 2024	**0315_MW008_240416**	**Normal**	**EM2406739**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.09	-	-
MW103	**On-Base**	**20 Feb 2019**	**0315_MW103_S_190220**	**Normal**	**ES1905450**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		28 Oct 2021	**0315_MW103_20211028**	**Normal**	**ES2139229**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		29 Apr 2022	**0315_MW103_20220429**	**Normal**	**EM2208205**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		03 Nov 2022	**0315_MW103_20221103**	**Normal**	**EM2222407**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.11	-	-
		13 Apr 2023	**0315_MW103_20230413**	**Normal**	**EM2306946**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			0315_QC105_20230413	**Field_D**	**EM2306946**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			0315_QC205_20230413	**Interlab_D**	**982794**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
		12 Oct 2023	**0315_MW103_231012**	**Normal**	**EM2318619**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.32	-	-
		20 Dec 2023	**0315_MW103_231220**	**Normal**	**EM2322883**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-
			0315_QC101_231220	**Field_D**	**EM2322883**	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-
		16 Apr 2024	**0315_MW103_240416**	**Normal**	**EM2406739**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.76	-	-
MW104	**On-Base**	**20 Feb 2019**	**0315_MW104_S_190220**	**Normal**	**ES1905450**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		28 Oct 2021	**0315_MW104_20211028**	**Normal**	**ES2139229**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		28 Apr 2022	**0315_MW104_20220428**	**Normal**	**EM2208205**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.18	<0.05	<0.05	0.18	-	-
		03 Nov 2022	**0315_MW104_20221103**	**Normal**	**EM2222407**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		15 Apr 2023	**0315_MW104_20230415**	**Normal**	**EM2306946**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		12 Oct 2023	**0315_MW104_231012**	**Normal**	**EM2318619**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			0315_QC104_231012	**Field_D**	**EM2318619**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			0315_QC204_20230413	**Interlab_D**	**1036476**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
		16 Apr 2024	**0315_MW104_240416**	**Normal**	**EM2406739**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
MW107	**On-Base**	**30 Jan 2019**	**0315_MW107_P_190130**	**Normal**	**ES1902996**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.10	-	-
		07 Mar 2019	**0315_MW107_P_190307**	**Normal**	**ES1907492**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-
		29 Apr 2022	**0315_MW107_20220429**	**Normal**	**EM2208205**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.07	<0.05	<0.05	0.27	-	-
		03 Nov 2022	**0315_MW107_20221103**	**Normal**	**EM2222407**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-	-
		13 Apr 2023	**0315_MW107_20230413**	**Normal**	**EM2306946**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.13	-	-
		12 Oct 2023	**0315_MW107_231012**	**Normal**	**EM2318619**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-	-
		16 Apr 2024	**0315_MW107_240416**	**Normal**	**EM2406739**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14	-	-
MW109	**On-Base**	**10 Mar 2020**	**0315_MW109_S_200310**	**Normal**	**ES2008982**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		27 Oct 2021	**0315_MW109_20211027**	**Normal**	**ES2139229**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			0315_QC105_20211027	**Field_D**	**ES2139230**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			0315_QC205_20211027	**Interlab_D**	**837707**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
		27 Apr 2022	**0315_MW109_20220427**	**Normal**	**EM2208205**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			0315_QC101_20220427	**Field_D**	**EM2208205**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			0315_QC201_20220427	**Interlab_D**	**889626**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
		03 Nov 2022	**0315_MW109_20221103**	**Normal**	**EM2222407**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			0315_QC104_20221103	**Field_D**	**EM2222407**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			0315_QC204_20221103	**Interlab_D**	**940511**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
		13 Apr 2023	**0315_MW109_20230413**	**Normal**	**EM2306946**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		12 Oct 2023	**0315_MW109_231012**	**Normal**	**EM2318619**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		16 Apr 2024	**0315_MW109_240416**	**Normal**	**EM2406739**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-

						Perfluorocarbons															
						Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
						µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	ug/L
					LOR	0.01	0.01	0.01	0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.00001	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																					
PFAS NEMP 2.0 Table 1 Health Recreational Water																					
PFAS NEMP 2.0 Table 5 Freshwater 95%																					
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																
MW110	On-Base	10 Mar 2020	0315_MW110_S_200310	Normal	ES2008982	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		28 Oct 2021	0315_MW110_20211027	Normal	ES2139229	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		27 Apr 2022	0315_MW110_20220427	Normal	EM2208205	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		03 Nov 2022	0315_MW110_20221103	Normal	EM2222407	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		13 Apr 2023	0315_MW110_20230413	Normal	EM2306946	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		12 Oct 2023	0315_MW110_231012	Normal	EM2318619	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		16 Apr 2024	0315_MW110_240416	Normal	EM2406739	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			0315_QC102_240416	Field_D	EM2406739	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			0315_QC202_240416	Interlab_D	1090100	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
MW601	Off-Base	29 Jan 2019	0315_MW601_S_190129	Normal	ES1902996	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.18	-	-
			0315_QC101_190129	Field_D	ES1902996	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.15	-	-
			0315_QC201_190129	Interlab_D	638493	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.14	0.01	0.1
		18 Feb 2019	0315_MW601_S_190218	Normal	ES1905450	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.29	-	-
		12 Mar 2020	0315_MW601_P_200312	Normal	ES2008982	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.11	-	-
		27 Oct 2021	0315_MW601_20211027	Normal	ES2139235	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.68	-	-
		28 Apr 2022	0315_MW601_20220428	Normal	EM2208229	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.78	-	-
		04 Nov 2022	0315_MW601_20221104	Normal	EM2222368	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.89	-	-
		13 Apr 2023	0315_MW601_ 20230413	Normal	EM2306926	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.68	-	-
		12 Oct 2023	0315_MW601_231012	Normal	EM2318605	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.91	-	-
		16 Apr 2024	0315_MW601_240416	Normal	EM2406741	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.58	-	-
MW624	Off-Base	11 Mar 2020	0315_MW624_S_200311	Normal	ES2008982	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		27 Oct 2021	0315_MW624_20211027	Normal	ES2139235	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.05	<0.05	<0.05	0.05	-	-
		20 Dec 2021	MW624	Normal	EM2125953	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		28 Apr 2022	0315_MW624_20220428	Normal	EM2208229	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		04 Nov 2022	0315_MW624_20221104	Normal	EM2222368	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		13 Apr 2023	0315_MW624_20230413	Normal	EM2306926	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.23	<0.05	<0.05	0.23	-	-
		12 Oct 2023	0315_MW624_231012	Normal	EM2318605	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.49	<0.05	<0.05	0.49	-	-
		16 Apr 2024	0315_MW624_240416	Normal	EM2406741	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-
MW625	Off-Base	21 May 2020	0315_MW625_S_200521	Normal	ES2017986	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		26 Oct 2021	0315_MW625_20211026	Normal	ES2139232	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		27 Apr 2022	0315_MW625_20220427	Normal	EM2208223	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		03 Nov 2022	0315_MW625_20221103	Normal	EM2222366	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		13 Apr 2023	0315_MW625_ 20230413	Normal	EM2306925	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		12 Oct 2023	0315_MW625_231012	Normal	EM2318601	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		17 Apr 2024	0315_MW625_240417	Normal	EM2406721	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-

						Perfluorocarbons																
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorononanesulfonic acid (PFNS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoropropansulfonic acid (PFPrS)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
						µg/L	µg/L	µg/L	mg/kg	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	µg/L	µg/L	µg/L	µg/L
					LOR	0.01	0.01	0.01	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
PFAS NEMP 2.0 Table 1 Health Drinking Water							**0.56**	**0.07**														
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	*2*														
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220															
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																	
SW103	**On-Base**	**10 Dec 2018**	**0315_SW103_181210**	**Normal**	**ES1837611**	0.67	0.05	**1.31**	-	0.10	0.06	0.64	0.02	<0.02	<0.1	0.13	0.18	-	0.04	<0.02	<0.02	<0.02
		26 Oct 2021	**0315_QC103_20211026**	**Field_D**	**ES2139230**	0.74	0.03	**0.99**	-	0.02	<0.02	0.25	<0.02	<0.02	<0.1	0.06	0.07	-	<0.02	<0.02	<0.02	<0.02
			0315_QC203_20211026	**Interlab_D**	**837707**	1.0	0.03	**1.31**	<0.01	0.02	0.02	0.31	0.02	<0.01	<0.05	0.06	0.07	<0.01	0.02	<0.01	<0.01	<0.01
			0315_SW103_20211026	**Normal**	**ES2139229**	0.60	0.02	**0.82**	-	<0.02	<0.02	0.22	<0.02	<0.02	<0.1	0.06	0.06	-	<0.02	<0.02	<0.02	<0.02
		28 Apr 2022	**0315_SW103_20220428**	**Normal**	**EM2208205**	0.19	<0.01	**0.28**	-	<0.02	<0.02	0.09	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	**0315_SW103_20221103**	**Normal**	**EM2222407**	0.22	0.02	**0.36**	-	<0.02	<0.02	0.14	<0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02
		12 Apr 2023	**0315_QC104_20230412**	**Field_D**	**EM2306946**	0.16	<0.01	**0.24**	-	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
			0315_QC204_20230412	**Interlab_D**	**982794**	0.23	<0.01	**0.32**	-	<0.01	<0.01	0.09	<0.01	<0.01	<0.05	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
			0315_SW103_20230412	**Normal**	**EM2306946**	0.16	<0.01	**0.24**	-	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	**0315_SW103_231012**	**Normal**	**EM2318619**	0.88	0.02	**1.16**	-	<0.02	<0.02	0.28	<0.02	<0.02	<0.1	0.02	0.05	-	<0.02	<0.02	<0.02	<0.02
		15 Apr 2024	**0315_SW103_240415**	**Normal**	**EM2406739**	0.53	0.02	**0.92**	-	0.02	0.03	0.39	<0.02	<0.02	<0.1	0.04	0.08	-	0.02	<0.02	<0.02	<0.02
SW106	**On-Base**	**16 Dec 2018**	**0315_SW106_181216**	**Normal**	**ES1838218**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	**0315_SW106_20221103**	**Normal**	**EM2222407**	<0.01	<0.01	0.02	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		12 Apr 2023	**0315_SW106_20230412**	**Normal**	**EM2306946**	0.02	<0.01	0.04	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
SW107	**On-Base**	**10 Dec 2018**	**0315_SW107_181210**	**Normal**	**ES1837611**	0.43	0.03	**0.65**	-	0.02	<0.02	0.22	<0.02	<0.02	<0.1	0.03	0.04	-	<0.02	<0.02	<0.02	<0.02
		26 Oct 2021	**0315_SW107_20211026**	**Normal**	**ES2139229**	0.18	0.01	**0.25**	-	<0.02	<0.02	0.07	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		02 May 2022	**0315_SW107_20220502**	**Normal**	**EM2208205**	0.15	<0.01	**0.20**	-	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	**0315_SW107_20221103**	**Normal**	**EM2222407**	0.14	<0.01	**0.25**	-	<0.02	<0.02	0.11	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		12 Apr 2023	**0315_SW107_20230412**	**Normal**	**EM2306946**	0.13	<0.01	**0.20**	-	<0.02	<0.02	0.07	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	**0315_SW107_231012**	**Normal**	**EM2318619**	0.20	0.01	**0.27**	-	<0.02	<0.02	0.07	<0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02
		15 Apr 2024	**0315_SW107_240415**	**Normal**	**EM2406739**	0.16	<0.01	**0.26**	-	<0.02	<0.02	0.10	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
SW108	**On-Base**	**15 Dec 2018**	**0315_SW108_181215**	**Normal**	**ES1838218**	0.02	0.02	0.06	-	0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		26 Oct 2021	**0315_SW108_20211026**	**Normal**	**ES2139229**	0.01	<0.01	0.02	-	<0.02	<0.02	0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		02 May 2022	**0315_SW108_20220502**	**Normal**	**EM2208205**	0.02	0.01	0.04	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	**0315_SW108_20221103**	**Normal**	**EM2222407**	0.01	<0.01	0.03	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		13 Apr 2023	**0315_SW108_ 20230413**	**Normal**	**EM2306946**	0.01	<0.01	0.03	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	**0315_QC103_231012**	**Field_D**	**EM2318619**	0.01	<0.01	0.02	-	<0.02	<0.02	0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
			0315_QC203_20230412	**Interlab_D**	**1036476**	0.02	0.01	0.04	-	0.01	<0.01	0.02	<0.01	<0.01	<0.05	0.03	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0315_SW108_231012	**Normal**	**EM2318619**	0.01	<0.01	0.02	-	<0.02	<0.02	0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		16 Apr 2024	**0315_QC100_240416**	**Field_D**	**EM2406739**	0.02	0.01	0.04	-	0.03	<0.02	0.02	<0.02	<0.02	<0.1	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02
			0315_QC200_240416	**Interlab_D**	**1090100**	0.02	0.02	0.05	-	0.02	<0.01	0.03	<0.01	<0.01	<0.05	0.03	0.03	<0.01	<0.01	<0.01	<0.01	<0.01
			0315_SW108_240416	**Normal**	**EM2406739**	0.02	0.02	0.04	-	0.02	<0.02	0.02	<0.02	<0.02	<0.1	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02
SW111	**On-Base**	**15 Dec 2018**	**0315_SW111_181215**	**Normal**	**ES1838218**	0.03	0.02	**0.11**	-	0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02
		26 Oct 2021	**0315_SW111_20211026**	**Normal**	**ES2139229**	0.02	<0.01	0.04	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		27 Apr 2022	**0315_SW111_20220427**	**Normal**	**EM2208205**	0.02	<0.01	0.04	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	**0315_SW111_20221103**	**Normal**	**EM2222407**	0.02	<0.01	0.04	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		13 Apr 2023	**0315_SW111_ 20230413**	**Normal**	**EM2306946**	0.01	<0.01	0.04	-	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	**0315_QC101_231012**	**Field_D**	**EM2318619**	0.01	<0.01	0.03	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
			0315_QC201_20230411	**Interlab_D**	**1036476**	0.02	<0.01	0.04	-	<0.01	<0.01	0.02	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0315_SW111_231012	**Normal**	**EM2318619**	0.02	<0.01	0.04	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		16 Apr 2024	**0315_SW111_240416**	**Normal**	**EM2406739**	0.02	<0.01	0.04	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
SW118	**On-Base**	**30 Nov 2018**	**0315_SW118_181130**	**Normal**	**ES1836659**	0.52	0.02	**0.67**	-	<0.02	<0.02	0.15	<0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02
		13 Dec 2018	**0315_SW118_181213**	**Normal**	**ES1837950**	0.07	<0.01	0.07	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		28 Apr 2022	**0315_SW118_20220428**	**Normal**	**EM2208205**	0.18	<0.01	**0.24**	-	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	**0315_SW118_20221103**	**Normal**	**EM2222407**	0.13	<0.01	**0.23**	-	<0.02	<0.02	0.10	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		12 Apr 2023	**0315_SW118_20230412**	**Normal**	**EM2306946**	0.02	<0.01	0.02	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	**0315_SW118_231012**	**Normal**	**EM2318619**	0.38	0.02	**0.47**	-	<0.02	<0.02	0.09	<0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02
SW121	**On-Base**	**30 Nov 2018**	**0315_SW121_181130**	**Normal**	**ES1836659**	0.28	0.02	**0.39**	-	<0.02	<0.02	0.11	<0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02
		26 Oct 2021	**0315_SW121_20211026**	**Normal**	**ES2139229**	0.22	0.01	**0.31**	-	<0.02	<0.02	0.09	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		28 Apr 2022	**0315_SW121_20220428**	**Normal**	**EM2208205**	0.16	<0.01	**0.21**	-	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		04 Nov 2022	**0315_SW121_20221104**	**Normal**	**EM2222407**	0.09	<0.01	**0.13**	-	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		11 Apr 2023	**0315_QC102_20230411**	**Field_D**	**EM2306946**	0.16	<0.01	**0.22**	-	<0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
			0315_QC202_20230411	**Interlab_D**	**982794**	0.22	<0.01	**0.28**	-	<0.01	<0.01	0.06	<0.01	<0.01	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0315_SW121_20230411	**Normal**	**EM2306946**	0.17	<0.01	**0.23**	-	0.02	<0.02	0.06	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		14 Oct 2023	**0315_SW121_231014**	**Normal**	**EM2318619**	0.31	0.01	**0.41**	-	<0.02	<0.02	0.10	<0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02
SW127	**On-Base**	**14 Dec 2018**	**0315_SW127_181214**	**Normal**	**ES1838218**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		25 Oct 2021	**0315_QC101_20211025**	**Field_D**	**ES2139230**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
			0315_QC201_20211025	**Interlab_D**	**837707**	<0.01	<0.01	<0.01	<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
			0315_SW127_20211025	**Normal**	**ES2139229**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		27 Apr 2022	**0315_SW127_20220427**	**Normal**	**EM2208205**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	**0315_QC101_20221103**	**Field_D**	**EM2222407**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
			0315_QC201_20221103	**Interlab_D**	**940511**	<0.01	<0.01	<0.01	<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
			0315_SW127_20221103	**Normal**	**EM2222407**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		12 Apr 2023	**0315_SW127_20230412**	**Normal**	**EM2306946**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	**0315_SW127_231012**	**Normal**	**EM2318619**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02

						Perfluorocarbons															
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorononanesulfonic acid (PFNS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
						µg/L	µg/L	µg/L	mg/kg	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/kg	µg/L	µg/L	µg/L	µg/L
					LOR	0.01	0.01	0.01	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
PFAS NEMP 2.0 Table 1 Health Drinking Water							**0.56**	**0.07**														
PFAS NEMP 2.0 Table 1 Health Recreational Water							*10*	2														
PFAS NEMP 2.0 Table 5 Freshwater 95%						0.13	220															
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																	
SW136	**On-Base**	**29 Jan 2019**	**0315_SW136_190129**	**Normal**	**ES1902996**	1.48	0.11	***4.15***	-	0.26	0.24	2.67	0.04	<0.02	<0.1	0.17	0.44	-	0.16	<0.02	<0.02	<0.02
		26 Oct 2021	**0315_SW136_20211026**	**Normal**	**ES2139229**	1.20	0.04	**1.93**	-	0.06	0.06	0.73	0.03	<0.02	<0.1	0.11	0.19	-	0.03	<0.02	<0.02	<0.02
		27 Apr 2022	**0315_QC102_20220427**	**Field_D**	**EM2208205**	0.05	<0.01	0.07	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
			0315_QC202_20220427	**Interlab_D**	**889626**	0.06	<0.01	**0.08**	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.05	0.02	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0315_SW136_20220427	**Normal**	**EM2208205**	0.04	<0.01	0.05	-	<0.02	<0.02	0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	**0315_SW136_20221103**	**Normal**	**EM2222407**	0.17	0.02	**0.30**	-	0.03	<0.02	0.13	<0.02	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	<0.02
		12 Apr 2023	**0315_SW136_20230412**	**Normal**	**EM2306946**	0.04	<0.01	0.06	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	**0315_SW136_231012**	**Normal**	**EM2318619**	1.21	0.04	**1.91**	-	0.04	0.05	0.70	0.02	<0.02	<0.1	0.04	0.12	-	0.02	<0.02	<0.02	<0.02
		15 Apr 2024	**0315_SW136_240415**	**Normal**	**EM2406739**	0.78	0.03	**1.38**	-	0.03	0.04	0.60	<0.02	<0.02	<0.1	0.04	0.06	-	<0.02	<0.02	<0.02	<0.02
SW140	**On-Base**	**29 Jan 2019**	**0315_SW140_190129**	**Normal**	**ES1902996**	0.03	<0.01	**0.25**	-	0.04	0.03	0.22	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		26 Oct 2021	**0315_SW140_20211026**	**Normal**	**ES2139229**	<0.01	<0.01	0.02	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		28 Apr 2022	**0315_QC103_20220428**	**Field_D**	**EM2208205**	<0.01	<0.01	0.01	-	<0.02	<0.02	0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
			0315_QC203_20220428	**Interlab_D**	**889626**	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0315_SW140_20220428	**Normal**	**EM2208205**	<0.01	<0.01	0.02	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	**0315_QC102_20221103**	**Field_D**	**EM2222407**	0.01	<0.01	0.05	-	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
			0315_QC202_20221103	**Interlab_D**	**940511**	0.01	<0.01	0.04	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			0315_SW140_20221103	**Normal**	**EM2222407**	<0.01	<0.01	0.03	-	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		12 Apr 2023	**0315_SW140_20230412**	**Normal**	**EM2306946**	<0.01	<0.01	0.02	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	**0315_SW140_231012**	**Normal**	**EM2318619**	0.01	<0.01	0.03	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		16 Apr 2024	**0315_SW140_240416**	**Normal**	**EM2406739**	<0.01	<0.01	0.02	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
SW144	**On-Base**	**29 Jan 2019**	**0315_SW144_190129**	**Normal**	**ES1902996**	0.01	<0.01	0.03	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		27 Oct 2021	**0315_SW144_20211027**	**Normal**	**ES2139229**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		29 Apr 2022	**0315_SW144_20220429**	**Normal**	**EM2208205**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	**0315_SW144_20221103**	**Normal**	**EM2222407**	0.12	<0.01	**0.17**	-	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		12 Apr 2023	**0315_SW144_20230412**	**Normal**	**EM2306946**	0.02	<0.01	0.02	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	**0315_SW144_231012**	**Normal**	**EM2318619**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		15 Apr 2024	**0315_SW144_240415**	**Normal**	**EM2406739**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
SW148	**On-Base**	**29 Jan 2019**	**0315_SW148_190129**	**Normal**	**ES1902996**	0.47	0.01	**0.61**	-	0.02	<0.02	0.14	<0.02	<0.02	<0.1	<0.02	0.02	-	<0.02	<0.02	<0.02	<0.02
		27 Oct 2021	**0315_SW148_20211027**	**Normal**	**ES2139229**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		28 Apr 2022	**0315_SW148_20220428**	**Normal**	**EM2208205**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	**0315_SW148_20221103**	**Normal**	**EM2222407**	0.16	<0.01	**0.16**	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		12 Apr 2023	**0315_SW148_20230412**	**Normal**	**EM2306946**	0.01	<0.01	0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	**0315_SW148_231012**	**Normal**	**EM2318619**	0.02	<0.01	0.02	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		16 Apr 2024	**0315_SW148_240416**	**Normal**	**EM2406739**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
SW149	**On-Base**	**29 Jan 2019**	**0315_SW149_190129**	**Normal**	**ES1902996**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		27 Oct 2021	**0315_SW149_20211027**	**Normal**	**ES2139229**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		29 Apr 2022	**0315_SW149_20220429**	**Normal**	**EM2208205**	0.02	<0.01	0.02	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		03 Nov 2022	**0315_SW149_20221103**	**Normal**	**EM2222407**	0.16	0.01	**0.16**	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	0.02	-	<0.02	<0.02	<0.02	<0.02
		12 Apr 2023	**0315_SW149_20230412**	**Normal**	**EM2306946**	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		12 Oct 2023	**0315_SW149_231012**	**Normal**	**EM2318619**	0.01	<0.01	0.02	-	<0.02	<0.02	0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
SW614	**Off-Base**	**13 Dec 2018**	**0315_SW614_181213**	**Normal**	**ES1837950**	0.03	<0.01	0.03	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		27 Oct 2021	**0315_SW614_20211027**	**Normal**	**ES2139235**	0.27	<0.01	**0.35**	-	<0.02	<0.02	0.08	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		04 Nov 2022	**0315_SW614_20221104**	**Normal**	**EM2222368**	0.05	<0.01	0.07	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		16 Apr 2023	**0315_SW614_20230416**	**Normal**	**EM2306926**	0.07	<0.01	0.07	-	<0.02	<0.02	<0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		16 Oct 2023	**0315_SW614_231016**	**Normal**	**EM2318605**	0.07	<0.01	**0.08**	-	<0.02	<0.02	0.01	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
SW677		**04 Nov 2022**	**0315_SW677_20221104**	**Normal**	**EM2222368**	0.04	<0.01	0.06	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
SW680		**10 Dec 2019**	**0315_SW680_191210**	**Normal**	**ES1941493**	0.08	<0.01	**0.12**	-	<0.02	<0.02	0.04	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		04 Nov 2022	**0315_SW680_20221104**	**Normal**	**EM2222365**	0.04	<0.01	0.07	-	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		13 Apr 2023	**0315_SW680_ 20230413**	**Normal**	**EM2306924**	0.10	<0.01	**0.13**	-	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		13 Oct 2023	**0315_SW680_231013**	**Normal**	**EM2318603**	0.13	<0.01	**0.18**	-	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02
		16 Apr 2024	**0315_SW680_240416**	**Normal**	**EM2406722**	0.18	<0.01	**0.23**	-	<0.02	<0.02	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02

Notes

Denotes first time detection above LOR in latest monitoring round

Denotes new exceedance of lowest adopted screening criteria in latest monitoring round

						Perfluorocarbons																
						Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
						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	mg/kg	ug/L
					LOR	0.01	0.01	0.01	0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																						
PFAS NEMP 2.0 Table 1 Health Recreational Water																						
PFAS NEMP 2.0 Table 5 Freshwater 95%																						
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																	
SW103	**On-Base**	**10 Dec 2018**	**0315_SW103_181210**	**Normal**	**ES1837611**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.89	-	-
		26 Oct 2021	**0315_QC103_20211026**	**Field_D**	**ES2139230**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.17	-	-
			0315_QC203_20211026	**Interlab_D**	**837707**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	1.55	1.03	1.34
			0315_SW103_20211026	**Normal**	**ES2139229**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.96	-	-
		28 Apr 2022	**0315_SW103_20220428**	**Normal**	**EM2208205**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.28	-	-
		03 Nov 2022	**0315_SW103_20221103**	**Normal**	**EM2222407**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.41	-	-
		12 Apr 2023	**0315_QC104_20230412**	**Field_D**	**EM2306946**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.24	-	-
			0315_QC204_20230412	**Interlab_D**	**982794**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.36	0.23	0.32
			0315_SW103_20230412	**Normal**	**EM2306946**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.24	-	-
		12 Oct 2023	**0315_SW103_231012**	**Normal**	**EM2318619**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.25	-	-
		15 Apr 2024	**0315_SW103_240415**	**Normal**	**EM2406739**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.13	-	-
SW106	**On-Base**	**16 Dec 2018**	**0315_SW106_181216**	**Normal**	**ES1838218**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		03 Nov 2022	**0315_SW106_20221103**	**Normal**	**EM2222407**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-
		12 Apr 2023	**0315_SW106_20230412**	**Normal**	**EM2306946**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-
SW107	**On-Base**	**10 Dec 2018**	**0315_SW107_181210**	**Normal**	**ES1837611**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.77	-	-
		26 Oct 2021	**0315_SW107_20211026**	**Normal**	**ES2139229**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.26	-	-
		02 May 2022	**0315_SW107_20220502**	**Normal**	**EM2208205**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.20	-	-
		03 Nov 2022	**0315_SW107_20221103**	**Normal**	**EM2222407**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.25	-	-
		12 Apr 2023	**0315_SW107_20230412**	**Normal**	**EM2306946**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.17	<0.05	<0.05	0.37	-	-
		12 Oct 2023	**0315_SW107_231012**	**Normal**	**EM2318619**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.31	-	-
		15 Apr 2024	**0315_SW107_240415**	**Normal**	**EM2406739**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.26	-	-
SW108	**On-Base**	**15 Dec 2018**	**0315_SW108_181215**	**Normal**	**ES1838218**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.10	-	-
		26 Oct 2021	**0315_SW108_20211026**	**Normal**	**ES2139229**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-
		02 May 2022	**0315_SW108_20220502**	**Normal**	**EM2208205**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-	-
		03 Nov 2022	**0315_SW108_20221103**	**Normal**	**EM2222407**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
		13 Apr 2023	**0315_SW108_ 20230413**	**Normal**	**EM2306946**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-	-
		12 Oct 2023	**0315_QC103_231012**	**Field_D**	**EM2318619**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-
			0315_QC203_20230412	**Interlab_D**	**1036476**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.1	0.03	0.05
			0315_SW108_231012	**Normal**	**EM2318619**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-
		16 Apr 2024	**0315_QC100_240416**	**Field_D**	**EM2406739**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-	-
			0315_QC200_240416	**Interlab_D**	**1090100**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.15	0.04	0.07
			0315_SW108_240416	**Normal**	**EM2406739**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-	-
SW111	**On-Base**	**15 Dec 2018**	**0315_SW111_181215**	**Normal**	**ES1838218**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.18	-	-
		26 Oct 2021	**0315_SW111_20211026**	**Normal**	**ES2139229**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-
		27 Apr 2022	**0315_SW111_20220427**	**Normal**	**EM2208205**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-
		03 Nov 2022	**0315_SW111_20221103**	**Normal**	**EM2222407**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-
		13 Apr 2023	**0315_SW111_ 20230413**	**Normal**	**EM2306946**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-
		12 Oct 2023	**0315_QC101_231012**	**Field_D**	**EM2318619**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
			0315_QC201_20230411	**Interlab_D**	**1036476**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.02	0.04
			0315_SW111_231012	**Normal**	**EM2318619**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-
		16 Apr 2024	**0315_SW111_240416**	**Normal**	**EM2406739**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04	-	-
SW118	**On-Base**	**30 Nov 2018**	**0315_SW118_181130**	**Normal**	**ES1836659**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.72	-	-
		13 Dec 2018	**0315_SW118_181213**	**Normal**	**ES1837950**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-
		28 Apr 2022	**0315_SW118_20220428**	**Normal**	**EM2208205**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.24	-	-
		03 Nov 2022	**0315_SW118_20221103**	**Normal**	**EM2222407**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.23	-	-
		12 Apr 2023	**0315_SW118_20230412**	**Normal**	**EM2306946**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.09	<0.05	<0.05	0.11	-	-
		12 Oct 2023	**0315_SW118_231012**	**Normal**	**EM2318619**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.52	-	-
SW121	**On-Base**	**30 Nov 2018**	**0315_SW121_181130**	**Normal**	**ES1836659**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.44	-	-
		26 Oct 2021	**0315_SW121_20211026**	**Normal**	**ES2139229**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.32	-	-
		28 Apr 2022	**0315_SW121_20220428**	**Normal**	**EM2208205**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.21	-	-
		04 Nov 2022	**0315_SW121_20221104**	**Normal**	**EM2222407**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.13	-	-
		11 Apr 2023	**0315_QC102_20230411**	**Field_D**	**EM2306946**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.22	-	-
			0315_QC202_20230411	**Interlab_D**	**982794**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.29	0.22	0.28
			0315_SW121_20230411	**Normal**	**EM2306946**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.25	-	-
		14 Oct 2023	**0315_SW121_231014**	**Normal**	**EM2318619**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.45	-	-
SW127	**On-Base**	**14 Dec 2018**	**0315_SW127_181214**	**Normal**	**ES1838218**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		25 Oct 2021	**0315_QC101_20211025**	**Field_D**	**ES2139230**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			0315_QC201_20211025	**Interlab_D**	**837707**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			0315_SW127_20211025	**Normal**	**ES2139229**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		27 Apr 2022	**0315_SW127_20220427**	**Normal**	**EM2208205**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		03 Nov 2022	**0315_QC101_20221103**	**Field_D**	**EM2222407**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
			0315_QC201_20221103	**Interlab_D**	**940511**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	<0.01
			0315_SW127_20221103	**Normal**	**EM2222407**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		12 Apr 2023	**0315_SW127_20230412**	**Normal**	**EM2306946**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		12 Oct 2023	**0315_SW127_231012**	**Normal**	**EM2318619**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-

						Perfluorocarbons																
						Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (NeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*
						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	mg/kg	ug/L
					LOR	0.01	0.01	0.01	0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 Table 1 Health Drinking Water																						
PFAS NEMP 2.0 Table 1 Health Recreational Water																						
PFAS NEMP 2.0 Table 5 Freshwater 95%																						
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																	
SW136	**On-Base**	**29 Jan 2019**	**0315_SW136_190129**	**Normal**	**ES1902996**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	5.57	-	-
		26 Oct 2021	**0315_SW136_20211026**	**Normal**	**ES2139229**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.45	-	-
		27 Apr 2022	**0315_QC102_20220427**	**Field_D**	**EM2208205**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-
			0315_QC202_20220427	**Interlab_D**	**889626**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	0.11	0.06	0.08
			0315_SW136_20220427	**Normal**	**EM2208205**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-	-
		03 Nov 2022	**0315_SW136_20221103**	**Normal**	**EM2222407**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.38	-	-
		12 Apr 2023	**0315_SW136_20230412**	**Normal**	**EM2306946**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-	-
		12 Oct 2023	**0315_SW136_231012**	**Normal**	**EM2318619**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	2.24	-	-
		15 Apr 2024	**0315_SW136_240415**	**Normal**	**EM2406739**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.58	-	-
SW140	**On-Base**	**29 Jan 2019**	**0315_SW140_190129**	**Normal**	**ES1902996**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.32	-	-
		26 Oct 2021	**0315_SW140_20211026**	**Normal**	**ES2139229**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-
		28 Apr 2022	**0315_QC103_20220428**	**Field_D**	**EM2208205**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-	-
			0315_QC203_20220428	**Interlab_D**	**889626**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	<0.01	0.02
			0315_SW140_20220428	**Normal**	**EM2208205**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-
		03 Nov 2022	**0315_QC102_20221103**	**Field_D**	**EM2222407**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.05	-	-
			0315_QC202_20221103	**Interlab_D**	**940511**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.1	0.01	0.04
			0315_SW140_20221103	**Normal**	**EM2222407**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
		12 Apr 2023	**0315_SW140_20230412**	**Normal**	**EM2306946**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.05	<0.05	<0.05	0.07	-	-
		12 Oct 2023	**0315_SW140_231012**	**Normal**	**EM2318619**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
		16 Apr 2024	**0315_SW140_240416**	**Normal**	**EM2406739**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-
SW144	**On-Base**	**29 Jan 2019**	**0315_SW144_190129**	**Normal**	**ES1902996**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
		27 Oct 2021	**0315_SW144_20211027**	**Normal**	**ES2139229**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		29 Apr 2022	**0315_SW144_20220429**	**Normal**	**EM2208205**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		03 Nov 2022	**0315_SW144_20221103**	**Normal**	**EM2222407**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.17	-	-
		12 Apr 2023	**0315_SW144_20230412**	**Normal**	**EM2306946**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.11	<0.05	<0.05	0.13	-	-
		12 Oct 2023	**0315_SW144_231012**	**Normal**	**EM2318619**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		15 Apr 2024	**0315_SW144_240415**	**Normal**	**EM2406739**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
SW148	**On-Base**	**29 Jan 2019**	**0315_SW148_190129**	**Normal**	**ES1902996**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.66	-	-
		27 Oct 2021	**0315_SW148_20211027**	**Normal**	**ES2139229**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		28 Apr 2022	**0315_SW148_20220428**	**Normal**	**EM2208205**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	<0.05	<0.05	0.06	-	-
		03 Nov 2022	**0315_SW148_20221103**	**Normal**	**EM2222407**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.16	-	-
		12 Apr 2023	**0315_SW148_20230412**	**Normal**	**EM2306946**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.13	<0.05	<0.05	0.14	-	-
		12 Oct 2023	**0315_SW148_231012**	**Normal**	**EM2318619**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-
		16 Apr 2024	**0315_SW148_240416**	**Normal**	**EM2406739**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
SW149	**On-Base**	**29 Jan 2019**	**0315_SW149_190129**	**Normal**	**ES1902996**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		27 Oct 2021	**0315_SW149_20211027**	**Normal**	**ES2139229**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		29 Apr 2022	**0315_SW149_20220429**	**Normal**	**EM2208205**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.07	<0.05	<0.05	0.09	-	-
		03 Nov 2022	**0315_SW149_20221103**	**Normal**	**EM2222407**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.19	-	-
		12 Apr 2023	**0315_SW149_20230412**	**Normal**	**EM2306946**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	-	-
		12 Oct 2023	**0315_SW149_231012**	**Normal**	**EM2318619**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02	-	-
SW614	**Off-Base**	**13 Dec 2018**	**0315_SW614_181213**	**Normal**	**ES1837950**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03	-	-
		27 Oct 2021	**0315_SW614_20211027**	**Normal**	**ES2139235**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.35	-	-
		04 Nov 2022	**0315_SW614_20221104**	**Normal**	**EM2222368**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-
		16 Apr 2023	**0315_SW614_20230416**	**Normal**	**EM2306926**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-
		16 Oct 2023	**0315_SW614_231016**	**Normal**	**EM2318605**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08	-	-
SW677		**04 Nov 2022**	**0315_SW677_20221104**	**Normal**	**EM2222368**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.06	-	-
SW680		**10 Dec 2019**	**0315_SW680_191210**	**Normal**	**ES1941493**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12	-	-
		04 Nov 2022	**0315_SW680_20221104**	**Normal**	**EM2222365**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07	-	-
		13 Apr 2023	**0315_SW680_ 20230413**	**Normal**	**EM2306924**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.13	-	-
		13 Oct 2023	**0315_SW680_231013**	**Normal**	**EM2318603**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.18	-	-
		16 Apr 2024	**0315_SW680_240416**	**Normal**	**EM2406722**	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.23	-	-

Notes

Denotes first time detection above LOR in latest monitoring round

Denotes new exceedance of lowest adopted screening criteria in latest monitoring round

						Perfluorocarbons															
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorononanesulfonic acid (PFNS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
					LOR	0.0002	0.0002	0.0002	0.005	0.0002	0.0002	0.0002	0.0002	0.0002	0.001	0.0002	0.0002	0.005	0.0002	0.0002	0.0002	0.0002
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																
SD103	**On-Base**	**26 Oct 2021**	**0315_QC104_20211026**	**Field_D**	**ES2139230**	0.0126	<0.0002	0.0132	-	<0.0002	<0.0002	0.0006	<0.0002	0.0006	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
			0315_SD103_20211026	**Normal**	**ES2139229**	0.0140	<0.0002	0.0146	-	<0.0002	<0.0002	0.0006	<0.0002	0.0004	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		28 Apr 2022	**0315_QC105_20220428**	**Field_D**	**EM2208205**	0.0163	<0.0002	0.0173	-	<0.0002	<0.0002	0.0010	<0.0002	0.0005	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	0.0004	0.0002
			0315_QC205_20220428	**Interlab_D**	**889626**	0.013	<0.005	0.013	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
			0315_SD103_20220428	**Normal**	**EM2208205**	0.0163	<0.0002	0.0175	-	<0.0002	<0.0002	0.0012	<0.0002	0.0007	<0.001	<0.0002	0.0002	-	<0.0002	<0.0002	0.0003	0.0002
		03 Nov 2022	**0315_SD103_20221103**	**Normal**	**EM2222407**	0.0063	<0.0002	0.0066	-	<0.0002	<0.0002	0.0003	<0.0002	0.0004	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		12 Apr 2023	**0315_QC103_20230412**	**Field_D**	**EM2306946**	0.0089	0.0002	0.0093	-	<0.0002	<0.0002	0.0004	<0.0002	0.0005	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	0.0002	<0.0002
			0315_QC203_20230412	**Interlab_D**	**982794**	0.014	<0.005	0.014	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
			0315_SD103_20230412	**Normal**	**EM2306946**	0.0130	0.0002	0.0137	-	<0.0002	<0.0002	0.0007	<0.0002	0.0006	<0.001	0.0003	0.0002	-	<0.0002	<0.0002	0.0003	0.0002
		12 Oct 2023	**0315_SD103_231012_0.00-0.3**	**Normal**	**EM2318619**	0.0132	<0.0002	0.0136	-	<0.0002	<0.0002	0.0004	<0.0002	0.0011	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		15 Apr 2024	**0315_SD103_240415**	**Normal**	**EM2406739**	0.0085	<0.0002	0.0092	-	<0.0002	<0.0002	0.0007	<0.0002	0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
SD106	**On-Base**	**26 Oct 2021**	**0315_SD106_20211026**	**Normal**	**ES2139229**	0.0042	<0.0002	0.0042	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		28 Apr 2022	**0315_SD106_20220428**	**Normal**	**EM2208205**	0.0042	0.0002	0.0042	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	0.0012	<0.0002
		03 Nov 2022	**0315_SD106_20221103**	**Normal**	**EM2222407**	0.0040	<0.0002	0.0040	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		12 Apr 2023	**0315_SD106_20230412**	**Normal**	**EM2306946**	0.0053	<0.0002	0.0055	-	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		12 Oct 2023	**0315_SD106_231012 _0.00-0.**	**Normal**	**EM2318619**	0.0036	<0.0002	0.0036	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		15 Apr 2024	**0315_SD106_240415**	**Normal**	**EM2406739**	0.0052	<0.0002	0.0052	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	0.0002	<0.0002
SD107	**On-Base**	**26 Oct 2021**	**0315_SD107_20211026**	**Normal**	**ES2139229**	0.0051	<0.0002	0.0051	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		02 May 2022	**0315_SD107_20220502**	**Normal**	**EM2208205**	0.0037	<0.0002	0.0042	-	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		03 Nov 2022	**0315_SD107_20221103**	**Normal**	**EM2222407**	0.0027	<0.0002	0.0027	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		12 Apr 2023	**0315_SD107_20230412**	**Normal**	**EM2306946**	0.0033	<0.0002	0.0033	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		12 Oct 2023	**0315_SD107_231012_0.00-0.3**	**Normal**	**EM2318619**	0.0064	<0.0002	0.0064	-	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		15 Apr 2024	**0315_SD107_240415**	**Normal**	**EM2406739**	0.0095	<0.0002	0.0099	-	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
SD108	**On-Base**	**26 Oct 2021**	**0315_SD108_20211026**	**Normal**	**ES2139229**	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		02 May 2022	**0315_SD108_20220502**	**Normal**	**EM2208205**	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		03 Nov 2022	**0315_SD108_20221103**	**Normal**	**EM2222407**	0.0006	<0.0002	0.0006	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		13 Apr 2023	**0315_SD108_20230413**	**Normal**	**EM2306946**	0.0005	<0.0002	0.0005	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		12 Oct 2023	**0315_QC102_231012**	**Field_D**	**EM2318619**	0.0004	<0.0002	0.0004	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
			0315_QC202_20230412	**Interlab_D**	**1036476**	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
			0315_SD108_231012_0.00-0.1	**Normal**	**EM2318619**	0.0005	<0.0002	0.0005	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		16 Apr 2024	**0315_SD108_240416**	**Normal**	**EM2406739**	0.0023	<0.0002	0.0023	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	0.0002
SD111	**On-Base**	**26 Oct 2021**	**0315_SD111_20211026**	**Normal**	**ES2139229**	0.0008	<0.0002	0.0008	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		27 Apr 2022	**0315_SD111_20220427**	**Normal**	**EM2208205**	0.0005	<0.0002	0.0005	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		03 Nov 2022	**0315_SD111_20221103**	**Normal**	**EM2222407**	0.0004	<0.0002	0.0004	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		13 Apr 2023	**0315_SD111_ 20230413**	**Normal**	**EM2306946**	0.0008	<0.0002	0.0008	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		12 Oct 2023	**0315_QC100_231012**	**Field_D**	**EM2318619**	0.0012	<0.0002	0.0012	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
			0315_QC200_20230411	**Interlab_D**	**1036476**	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
			0315_SD111_231012_0.00-0.1	**Normal**	**EM2318619**	0.0012	<0.0002	0.0012	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		16 Apr 2024	**0315_QC101_240416**	**Field_D**	**EM2406739**	0.0009	<0.0002	0.0009	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
			0315_QC201_240416	**Interlab_D**	**1090100**	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
			0315_SD111_240416	**Normal**	**EM2406739**	0.0017	<0.0002	0.0017	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
SD118	**On-Base**	**26 Oct 2021**	**0315_SD118_20211026**	**Normal**	**ES2139229**	0.0045	<0.0002	0.0045	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		28 Apr 2022	**0315_SD118_20220428**	**Normal**	**EM2208205**	0.0077	<0.0002	0.0077	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		03 Nov 2022	**0315_SD118_20221103**	**Normal**	**EM2222407**	0.0025	<0.0002	0.0025	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		12 Apr 2023	**0315_SD118_20230412**	**Normal**	**EM2306946**	0.0058	<0.0002	0.0058	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		12 Oct 2023	**0315_SD118_231012_0.00-0.3**	**Normal**	**EM2318619**	0.0016	<0.0002	0.0016	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		16 Apr 2024	**0315_SD118_240416**	**Normal**	**EM2406739**	0.0207	<0.0002	0.0211	-	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002

						Perfluorocarbons															
						Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoate (PFOA)	Sum of PFHxS and PFOS	Perfluorononanesulfonic acid (PFNS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
					LOR	0.0002	0.0002	0.0002	0.005	0.0002	0.0002	0.0002	0.0002	0.0002	0.001	0.0002	0.0002	0.005	0.0002	0.0002	0.0002	0.0002
Location Code	Monitoring Zone	Date	Field ID	Sample Type	Lab Report Number																
SD121	On-Base	26 Oct 2021	0315_SD121_20211026	Normal	ES2139229	0.0016	<0.0002	0.0016	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		21 Dec 2021	QC101_211221	Field_D	EM2125953	0.0194	<0.0002	0.0197	-	<0.0002	-	0.0003	-	-	<0.001	<0.0002	<0.0002	-	<0.0002	-	-	-
			QC201_211221	Interlab_D	853128	0.033	<0.005	0.033	-	-	-	<0.005	-	-	-	-	-	-	-	-	-	-
			SD121	Normal	EM2125953	0.0184	<0.0002	0.0188	-	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		28 Apr 2022	0315_SD121_20220428	Normal	EM2208205	0.0009	<0.0002	0.0009	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		04 Nov 2022	0315_SD121_20221104	Normal	EM2222407	0.0017	<0.0002	0.0017	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		11 Apr 2023	0315_QC101_20230411	Field_D	EM2306946	0.0039	<0.0002	0.0039	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
			0315_QC201_20230411	Interlab_D	982794	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
			0315_SD121_20230411	Normal	EM2306946	0.0017	<0.0002	0.0017	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		14 Oct 2023	0315_SD121_231014_0.00-0.1	Normal	EM2318619	0.0010	<0.0002	0.0010	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		16 Apr 2024	0315_SD121_240416	Normal	EM2406739	0.0028	<0.0002	0.0028	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
SD127	On-Base	25 Oct 2021	0315_QC102_20211025	Field_D	ES2139230	0.0003	<0.0002	0.0003	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
			0315_SD127_20211026	Normal	ES2139229	0.0005	<0.0002	0.0005	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		27 Apr 2022	0315_SD127_20220427	Normal	EM2208205	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		03 Nov 2022	0315_QC103_20221103	Field_D	EM2222407	0.0014	<0.0002	0.0014	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
			0315_QC203_20221103	Interlab_D	940511	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
			0315_SD127_20221103	Normal	EM2222407	0.0009	<0.0002	0.0009	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		12 Apr 2023	0315_SD127_20230412	Normal	EM2306946	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		12 Oct 2023	0315_SD127_231012_0.00-0.1	Normal	EM2318619	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		16 Apr 2024	0315_SD127_240416	Normal	EM2406739	0.0005	<0.0002	0.0005	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
SD136	On-Base	26 Oct 2021	0315_SD136_20211026	Normal	ES2139229	0.0046	<0.0002	0.0050	-	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		27 Apr 2022	0315_QC104_20220427	Field_D	EM2208205	0.0606	<0.0002	0.0631	-	<0.0002	<0.0002	0.0025	0.0002	0.0005	<0.001	<0.0002	0.0004	-	<0.0002	<0.0002	<0.0002	<0.0002
			0315_QC204_20220427	Interlab_D	889626	0.052	<0.005	0.052	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
			0315_SD136_20220427	Normal	EM2208205	0.0393	<0.0002	0.0411	-	<0.0002	<0.0002	0.0018	<0.0002	0.0004	<0.001	<0.0002	0.0003	-	<0.0002	<0.0002	<0.0002	<0.0002
		03 Nov 2022	0315_QC105_20221103	Field_D	EM2222407	0.0029	<0.0002	0.0029	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
			0315_QC205_20221103	Interlab_D	940511	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
			0315_SD136_20221103	Normal	EM2222407	0.0030	<0.0002	0.0030	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		12 Apr 2023	0315_SD136_20230412	Normal	EM2306946	0.0246	0.0003	0.0282	-	<0.0002	<0.0002	0.0036	0.0003	0.0009	<0.001	0.0003	0.0008	-	0.0002	0.0002	0.0004	0.0005
		12 Oct 2023	0315_SD136_231012_0.00-0.1	Normal	EM2318619	0.0131	<0.0002	0.0136	-	<0.0002	<0.0002	0.0005	<0.0002	0.0004	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		15 Apr 2024	0315_SD136_240415	Normal	EM2406739	0.0234	0.0005	0.0254	-	<0.0002	<0.0002	0.0020	0.0003	0.0004	<0.001	<0.0002	0.0004	-	0.0004	0.0002	0.0003	0.0003
SD614	Off-Base	27 Oct 2021	0315_SD614_20211027	Normal	ES2139235	0.0110	<0.0002	0.0114	-	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		20 Dec 2021	SD614	Normal	EM2125953	0.0093	<0.0002	0.0095	-	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		28 Apr 2022	0315_SD614_20220428	Normal	EM2208229	0.0075	<0.0002	0.0077	-	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		04 Nov 2022	0315_SD614_20221104	Normal	EM2222368	0.0073	<0.0002	0.0073	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		12 Apr 2023	0315_SD614_20230412	Normal	EM2306926	0.0090	<0.0002	0.0092	-	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		13 Oct 2023	0315_SD614_231013_0.00-0.3	Normal	EM2318605	0.0175	<0.0002	0.0179	-	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		16 Apr 2024	0315_SD614_240416	Normal	EM2406741	0.0126	<0.0002	0.0129	-	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
SD677	Off-Base	26 Oct 2021	0315_SD677_20211026	Normal	ES2139235	0.0052	<0.0002	0.0052	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		21 Dec 2021	SD677	Normal	EM2125953	0.0075	<0.0002	0.0075	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		28 Apr 2022	0315_SD677_20220428	Normal	EM2208229	0.0068	<0.0002	0.0068	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		04 Nov 2022	0315_SD677_20221104	Normal	EM2222368	0.0074	<0.0002	0.0074	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		12 Apr 2023	0315_SD677_20230412	Normal	EM2306926	0.0066	<0.0002	0.0066	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		14 Oct 2023	0315_SD677_231014_0.00-0.3	Normal	EM2318605	0.0064	<0.0002	0.0064	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002
		16 Apr 2024	0315_SD677_240416	Normal	EM2406741	0.0074	<0.0002	0.0074	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	<0.0002

						Perfluorocarbons																NA
						Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate (8:2 FtS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Moisture Content
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%
					LOR	0.0002	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002	0.005	0.005	0.1
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																	
SD103	**On-Base**	**26 Oct 2021**	**0315_QC104_20211026**	**Field_D**	**ES2139230**	<0.0002	<0.0002	<0.0005	0.0004	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0142	-	-	33.3
			0315_SD103_20211026	**Normal**	**ES2139229**	0.0003	<0.0002	<0.0005	0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0156	-	-	38.4
		28 Apr 2022	**0315_QC105_20220428**	**Field_D**	**EM2208205**	0.0003	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0187	-	-	38.3
			0315_QC205_20220428	**Interlab_D**	**889626**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.005	<0.01	<0.005	<0.005	<0.05	0.013	0.013	-
			0315_SD103_20220428	**Normal**	**EM2208205**	0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0191	-	-	25.0
		03 Nov 2022	**0315_SD103_20221103**	**Normal**	**EM2222407**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0070	-	-	23.2
		12 Apr 2023	**0315_QC103_20230412**	**Field_D**	**EM2306946**	0.0003	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0105	-	-	1.0
			0315_QC203_20230412	**Interlab_D**	**982794**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.005	<0.01	<0.005	<0.005	<0.05	0.014	0.014	-
			0315_SD103_20230412	**Normal**	**EM2306946**	0.0004	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0159	-	-	38.6
		12 Oct 2023	**0315_SD103_231012_0.00-0.3**	**Normal**	**EM2318619**	<0.0002	<0.0002	<0.0005	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0152	-	-	20.6
		15 Apr 2024	**0315_SD103_240415**	**Normal**	**EM2406739**	<0.0002	<0.0002	<0.0005	0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0096	-	-	19.7
SD106	**On-Base**	**26 Oct 2021**	**0315_SD106_20211026**	**Normal**	**ES2139229**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0042	-	-	16.3
		28 Apr 2022	**0315_SD106_20220428**	**Normal**	**EM2208205**	0.0004	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	0.0004	<0.0005	<0.0005	<0.0005	<0.0005	0.0064	-	-	24.0
		03 Nov 2022	**0315_SD106_20221103**	**Normal**	**EM2222407**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0040	-	-	26.4
		12 Apr 2023	**0315_SD106_20230412**	**Normal**	**EM2306946**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0055	-	-	46.6
		12 Oct 2023	**0315_SD106_231012 _0.00-0.**	**Normal**	**EM2318619**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0036	-	-	24.2
		15 Apr 2024	**0315_SD106_240415**	**Normal**	**EM2406739**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0054	-	-	34.5
SD107	**On-Base**	**26 Oct 2021**	**0315_SD107_20211026**	**Normal**	**ES2139229**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0051	-	-	30.0
		02 May 2022	**0315_SD107_20220502**	**Normal**	**EM2208205**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0042	-	-	29.0
		03 Nov 2022	**0315_SD107_20221103**	**Normal**	**EM2222407**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0027	-	-	23.6
		12 Apr 2023	**0315_SD107_20230412**	**Normal**	**EM2306946**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0033	-	-	30.2
		12 Oct 2023	**0315_SD107_231012_0.00-0.3**	**Normal**	**EM2318619**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0066	-	-	22.9
		15 Apr 2024	**0315_SD107_240415**	**Normal**	**EM2406739**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0099	-	-	49.2
SD108	**On-Base**	**26 Oct 2021**	**0315_SD108_20211026**	**Normal**	**ES2139229**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	-	-	27.4
		02 May 2022	**0315_SD108_20220502**	**Normal**	**EM2208205**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	-	-	19.6
		03 Nov 2022	**0315_SD108_20221103**	**Normal**	**EM2222407**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0006	-	-	26.5
		13 Apr 2023	**0315_SD108_ 20230413**	**Normal**	**EM2306946**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	-	-	28.8
		12 Oct 2023	**0315_QC102_231012**	**Field_D**	**EM2318619**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0004	-	-	26.0
			0315_QC202_20230412	**Interlab_D**	**1036476**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.005	<0.01	<0.005	<0.005	<0.05	<0.005	<0.005	-
			0315_SD108_231012_0.00-0.1	**Normal**	**EM2318619**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	-	-	26.1
		16 Apr 2024	**0315_SD108_240416**	**Normal**	**EM2406739**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0025	-	-	32.7
SD111	**On-Base**	**26 Oct 2021**	**0315_SD111_20211026**	**Normal**	**ES2139229**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0008	-	-	24.8
		27 Apr 2022	**0315_SD111_20220427**	**Normal**	**EM2208205**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	-	-	20.8
		03 Nov 2022	**0315_SD111_20221103**	**Normal**	**EM2222407**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0004	-	-	22.7
		13 Apr 2023	**0315_SD111_ 20230413**	**Normal**	**EM2306946**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0008	-	-	27.6
		12 Oct 2023	**0315_QC100_231012**	**Field_D**	**EM2318619**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0012	-	-	26.7
			0315_QC200_20230411	**Interlab_D**	**1036476**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.005	<0.01	<0.005	<0.005	<0.05	<0.005	<0.005	-
			0315_SD111_231012_0.00-0.1	**Normal**	**EM2318619**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0012	-	-	25.0
		16 Apr 2024	**0315_QC101_240416**	**Field_D**	**EM2406739**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0009	-	-	27.7
			0315_QC201_240416	**Interlab_D**	**1090100**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.005	<0.01	<0.005	<0.005	<0.05	<0.005	<0.005	-
			0315_SD111_240416	**Normal**	**EM2406739**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0017	-	-	23.9
SD118	**On-Base**	**26 Oct 2021**	**0315_SD118_20211026**	**Normal**	**ES2139229**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0045	-	-	16.4
		28 Apr 2022	**0315_SD118_20220428**	**Normal**	**EM2208205**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0077	-	-	17.6
		03 Nov 2022	**0315_SD118_20221103**	**Normal**	**EM2222407**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0025	-	-	20.4
		12 Apr 2023	**0315_SD118_20230412**	**Normal**	**EM2306946**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0058	-	-	21.0
		12 Oct 2023	**0315_SD118_231012_0.00-0.3**	**Normal**	**EM2318619**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0016	-	-	21.8
		16 Apr 2024	**0315_SD118_240416**	**Normal**	**EM2406739**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0211	-	-	11.1

						Perfluorocarbons																NA
						Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FTS)	8:2 Fluorotelomer sulfonate (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Moisture Content
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%
					LOR	0.0002	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002	0.005	0.005	0.1
Location Code	**Monitoring Zone**	**Date**	**Field ID**	**Sample Type**	**Lab Report Number**																	
SD121	**On-Base**	**26 Oct 2021**	**0315_SD121_20211026**	**Normal**	**ES2139229**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0016	-	-	23.0
		21 Dec 2021	**QC101_211221**	**Field_D**	**EM2125953**	-	-	-	-	-	-	-	-	-	-	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	32.2
			QC201_211221	**Interlab_D**	**853128**	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	0.033	0.033	-
			SD121	**Normal**	**EM2125953**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0188	-	-	28.1
		28 Apr 2022	**0315_SD121_20220428**	**Normal**	**EM2208205**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0009	-	-	21.7
		04 Nov 2022	**0315_SD121_20221104**	**Normal**	**EM2222407**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0017	-	-	29.6
		11 Apr 2023	**0315_QC101_20230411**	**Field_D**	**EM2306946**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0039	-	-	32.7
			0315_QC201_20230411	**Interlab_D**	**982794**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.005	<0.01	<0.005	<0.005	<0.05	<0.005	<0.005	-
			0315_SD121_20230411	**Normal**	**EM2306946**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0017	-	-	23.6
		14 Oct 2023	**0315_SD121_231014_0.00-0.1**	**Normal**	**EM2318619**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0010	-	-	20.6
		16 Apr 2024	**0315_SD121_240416**	**Normal**	**EM2406739**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0028	-	-	15.0
SD127	**On-Base**	**25 Oct 2021**	**0315_QC102_20211025**	**Field_D**	**ES2139230**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0003	-	-	27.9
			0315_SD127_20211026	**Normal**	**ES2139229**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	-	-	26.8
		27 Apr 2022	**0315_SD127_20220427**	**Normal**	**EM2208205**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	-	-	25.2
		03 Nov 2022	**0315_QC103_20221103**	**Field_D**	**EM2222407**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0014	-	-	22.1
			0315_QC203_20221103	**Interlab_D**	**940511**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.005	<0.01	<0.005	<0.005	<0.05	<0.005	<0.005	-
			0315_SD127_20221103	**Normal**	**EM2222407**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0009	-	-	23.1
		12 Apr 2023	**0315_SD127_20230412**	**Normal**	**EM2306946**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	-	-	26.0
		12 Oct 2023	**0315_SD127_231012_0.00-0.1**	**Normal**	**EM2318619**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	-	-	21.8
		16 Apr 2024	**0315_SD127_240416**	**Normal**	**EM2406739**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	-	-	18.6
SD136	**On-Base**	**26 Oct 2021**	**0315_SD136_20211026**	**Normal**	**ES2139229**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0050	-	-	30.9
		27 Apr 2022	**0315_QC104_20220427**	**Field_D**	**EM2208205**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0642	-	-	26.0
			0315_QC204_20220427	**Interlab_D**	**889626**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.005	<0.01	<0.005	<0.005	0.052	0.052	0.052	-
			0315_SD136_20220427	**Normal**	**EM2208205**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0418	-	-	22.4
		03 Nov 2022	**0315_QC105_20221103**	**Field_D**	**EM2222407**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0029	-	-	28.6
			0315_QC205_20221103	**Interlab_D**	**940511**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.005	<0.01	<0.005	<0.005	<0.05	<0.005	<0.005	-
			0315_SD136_20221103	**Normal**	**EM2222407**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0030	-	-	30.7
		12 Apr 2023	**0315_SD136_20230412**	**Normal**	**EM2306946**	0.0004	0.0003	<0.0005	0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0330	-	-	49.6
		12 Oct 2023	**0315_SD136_231012_0.00-0.1**	**Normal**	**EM2318619**	<0.0002	<0.0002	<0.0005	0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0142	-	-	23.6
		15 Apr 2024	**0315_SD136_240415**	**Normal**	**EM2406739**	0.0006	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0288	-	-	49.1
SD614	**Off-Base**	**27 Oct 2021**	**0315_SD614_20211027**	**Normal**	**ES2139235**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0114	-	-	24.7
		20 Dec 2021	**SD614**	**Normal**	**EM2125953**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0095	-	-	33.8
		28 Apr 2022	**0315_SD614_20220428**	**Normal**	**EM2208229**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0077	-	-	19.3
		04 Nov 2022	**0315_SD614_20221104**	**Normal**	**EM2222368**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0073	-	-	23.4
		12 Apr 2023	**0315_SD614_20230412**	**Normal**	**EM2306926**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0092	-	-	20.4
		13 Oct 2023	**0315_SD614_231013_0.00-0.3**	**Normal**	**EM2318605**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0179	-	-	18.3
		16 Apr 2024	**0315_SD614_240416**	**Normal**	**EM2406741**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0129	-	-	28.2
SD677	**Off-Base**	**26 Oct 2021**	**0315_SD677_20211026**	**Normal**	**ES2139235**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0052	-	-	18.3
		21 Dec 2021	**SD677**	**Normal**	**EM2125953**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0075	-	-	30.9
		28 Apr 2022	**0315_SD677_20220428**	**Normal**	**EM2208229**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0068	-	-	22.4
		04 Nov 2022	**0315_SD677_20221104**	**Normal**	**EM2222368**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0074	-	-	46.5
		12 Apr 2023	**0315_SD677_20230412**	**Normal**	**EM2306926**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0066	-	-	35.3
		14 Oct 2023	**0315_SD677_231014_0.00-0.3**	**Normal**	**EM2318605**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0064	-	-	21.3
		16 Apr 2024	**0315_SD677_240416**	**Normal**	**EM2406741**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0074	-	-	20.2

Lab Report Number			EM2406739			EM2406739	1090100		EM2406739			EM2406739	1090100	
Field ID			0315_MW110_240416	0315_QC102_240416		0315_MW110_240416	0315_QC202_240416		0315_SW108_240416	0315_QC100_240416		0315_SW108_240416	0315_QC200_240416	
Matrix Type			Water	Water		Water	Water		Water	Water		Water	Water	
Date	Unit	LOR	16 Apr 2024	16 Apr 2024	RPD	16 Apr 2024	16 Apr 2024	RPD	16 Apr 2024	16 Apr 2024	RPD	16 Apr 2024	16 Apr 2024	RPD
Perfluorocarbons														
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	0.02	0.02	0	0.02	0.02	0
Perfluorooctanoate (PFOA)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	0.02	0.01	67	0.02	0.02	0
Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	0.04	0.04	0	0.04	0.05	22
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	0.02	0.03	40	0.02	0.02	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	0.02	0.02	0	0.02	0.03	40
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorobutanoic acid (PFBA)	µg/L	0.05	<0.1	<0.1	0	<0.1	<0.05	0	<0.1	<0.1	0	<0.1	<0.05	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	0.02	0.02	0	0.02	0.03	40
Perfluorohexanoic acid (PFHxA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	0.02	0.02	0	0.02	0.03	40
Perfluoropropanesulfonic acid (PFPrS)	mg/kg	0.01	-	-	-	-	<0.01	-	-	-	-	-	<0.01	-
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorononanoic acid (PFNA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.01	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/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 (EtFOSA)	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 sulfonamidoethanol (EtFOSE)	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 (MeFOSAA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.05	0	<0.02	<0.02	0	<0.02	<0.05	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01	<0.05	<0.05	0	<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	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.01	<0.05	<0.05	0	<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	0.01	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
Sum of PFAS	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.1	0	0.12	0.12	0	0.12	0.15	22
Sum of US EPA PFAS (PFOS + PFOA)*	mg/kg	0.01	-	-	-	-	<0.01	-	-	-	-	-	0.04	-
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	ug/L	0.01	-	-	-	-	<0.01	-	-	-	-	-	0.07	-

*RPDs have only been considered where a concentration is greater than 1 times the LOR.

**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each LOR multiplier range are: 81 (1 - 10 x LOR); 50 (10 - 30 x LOR); 30 (> 30 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

			Lab Report Number	EM2406739		EM2406739	1090100	
			Field ID	0315_SD111_240416	0315_QC101_240416	0315_SD111_240416	0315_QC201_240416	
			Matrix Type	Soil	Soil	Soil	Soil	
			Date	16 Apr 2024	16 Apr 2024	RPD	16 Apr 2024	16 Apr 2024	RPD
	Unit	LOR						
Perfluorocarbons								
Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0002	0.0017	0.0009	62	0.0017	<0.005	0
Perfluorooctanoate (PFOA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Sum of PFHxS and PFOS	mg/kg	0.0002	0.0017	0.0009	62	0.0017	<0.005	0
Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorodecanesulfonic acid (PFDS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorobutanoic acid (PFBA)	mg/kg	0.001	<0.001	<0.001	0	<0.001	<0.005	0
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluoropropanesulfonic acid (PFPrS)	mg/kg	0.005					<0.005	
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorononanoic acid (PFNA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorodecanoic acid (PFDA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0
Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.01	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.01	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.01	0
8:2 Fluorotelomer sulfonate (8:2 FtS)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0
Sum of PFAS	mg/kg	0.0002	0.0017	0.0009	62	0.0017	<0.05	0
Sum of US EPA PFAS (PFOS + PFOA)*	mg/kg	0.005					<0.005	
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	mg/kg	0.005					<0.005	
NA								
Moisture Content	%	0.1	23.9	27.7	15	23.9		

*RPDs have only been considered where a concentration is greater than 1 times the EQL.

**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 81 (1 - 10 x EQL); 50 (10 - 30 x EQL); 30 (> 30 x EQL))

***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

		Lab Report Number	EM2406727						
		Field ID	0906_QC300_240415	0906_QC301_240415	0906_QC302_240416	0906_QC303_240416	0906_QC304_240417	0906_QC305_240417	0906_QC306_240418
		Date	15 Apr 2024	15 Apr 2024	16 Apr 2024	16 Apr 2024	17 Apr 2024	17 Apr 2024	18 Apr 2024
		Sample Type	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate
	Unit	LOR							
Perfluorocarbons									
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoate (PFOA)	µg/L	0.01	<0.01	<0.01	<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	<0.01	<0.01	<0.01
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropropanesulfonic acid (PFPrS)	mg/kg	0.01	-	-	-	-	-	-	-
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	0.05	<0.05	<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	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<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	<0.02	<0.02
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01	<0.05	<0.05	<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	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of US EPA PFAS (PFOS + PFOA)*	mg/kg	0.01	-	-	-	-	-	-	-
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	ug/L	0.01	-	-	-	-	-	-	-

	Lab Report Number		EM2406727							1090100
	Field ID		0906_QC307_240418	0906_QC308_240419	0906_QC309_240419	0906_QC310_240420	0906_QC311_240420	0906_QC500_240420	0906_QC501_240420	0906_QC502_240420
	Date		18 Apr 2024	19 Apr 2024	19 Apr 2024	20 Apr 2024	20 Apr 2024	20 Apr 2024	20 Apr 2024	16 Apr 2024
	Sample Type		Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Trip_B	Trip_B	Trip_B
	Unit	LOR								
Perfluorocarbons										
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
Perfluorooctanoate (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01	<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	<0.01	<0.01	<0.01	0.02
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01
Perfluorobutanoic acid (PFBA)	µg/L	0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05
Perfluoropentanoic acid (PFPeA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01
Perfluorohexanoic acid (PFHxA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01
Perfluoropropanesulfonic acid (PFPrS)	mg/kg	0.01	-	-	-	-	-	-	-	<0.01
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01
Perfluorononanoic acid (PFNA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01
Perfluorodecanoic acid (PFDA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01
Perfluorododecanoic acid (PFDoDA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	0.05	<0.05	<0.05	<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	<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	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01
Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1
Sum of US EPA PFAS (PFOS + PFOA)*	mg/kg	0.01	-	-	-	-	-	-	-	0.02
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	ug/L	0.01	-	-	-	-	-	-	-	0.02

APPENDIX

C

LABORATORY CERTIFICATES

Cardno

now

Stantec

CHAIN OF CUSTODY

ALS COC#: 66662 ALS Laboratory: EM Melbourne Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	[redacted]
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 22/04/24 – 13:22

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0315_PFASOMP_24

SITE: Kapooka Onsite

ORDER NO:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: SY/139/19_Laverton / EM2023MWHAUS0002

EMAIL REPORTS TO: [redacted]

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	SOIL: PFAS SEDIMENT	WATER: PFAS WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0315_MW008_240416		16/04/2024 05:02 PM	WATER	ALS: 6 Non ALS: 0	No		X		
002	0315_MW103_240416		16/04/2024 03:55 PM	WATER	ALS: 2 Non ALS: 0	No		X		
003	0315_MW104_240416		16/04/2024 03:53 PM	WATER	ALS: 2 Non ALS: 0	No		X		
004	0315_MW107_240416		16/04/2024 03:59 PM	WATER	ALS: 2 Non ALS: 0	No		X		
005	0315_MW109_240416		16/04/2024 04:49 PM	WATER	ALS: 2 Non ALS: 0	No		X		
006	0315_MW110_240416		16/04/2024 04:50 PM	WATER	ALS: 2 Non ALS: 0	No		X		
007	0315_SW103_240415		15/04/2024 03:58 PM	WATER	ALS: 2 Non ALS: 0	No		X		

Environmental Division Melbourne

Work Order Reference

EM2406739

Telephone : +61-3-8549 9600

CHAIN OF CUSTODY

COC#: 66662 *ALS Laboratory:* EM Melbourne Environmental

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

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0315_PFASOMP_24

SITE: Kapooka Onsite

ORDER NO:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19_Laverton / EM2023MWHAUS0002

EMAIL REPORTS TO: [redacted]

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	SOIL: PFAS SEDIMENT	WATER: PFAS WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
008	0315_SW107_240415		15/04/2024 03:59 PM	WATER	ALS: 2 Non ALS: 0	No		X		
009	0315_SW108_240416		16/04/2024 05:00 PM	WATER	ALS: 2 Non ALS: 0	No		X		
010	0315_SW111_240416		16/04/2024 04:58 PM	WATER	ALS: 6 Non ALS: 0	No		X		Internal Lab qc
011	0315_SW136_240415		15/04/2024 05:04 PM	WATER	ALS: 2 Non ALS: 0	No		X		
012	0315_SW140_240416		16/04/2024 03:57 PM	WATER	ALS: 2 Non ALS: 0	No		X		
013	0315_SW144_240415		15/04/2024 03:54 PM	WATER	ALS: 2 Non ALS: 0	No		X		
014	0315_SW148_240416		16/04/2024 04:57 PM	WATER	ALS: 2 Non ALS: 0	No		X		

CHAIN OF CUSTODY

ALS COC#: 66662 ALS Laboratory: EM Melbourne Environmental

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

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0315_PFASOMP_24

SITE: Kapooka Onsite

ORDER NO:

PROJECT MANAGER: [redacted]
PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:
QUOTE NO: SY/139/19_Laverton / EM2023MWHAUS0002

EMAIL REPORTS TO: [redacted]

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	SOIL: PFAS SEDIMENT	WATER: PFAS WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
015	0315_SD103_240415		15/04/2024 04:05 PM	SOIL	ALS: 0 Non ALS: 1	No	X			
016	0315_SD106_240415		20/04/2024 04:06 PM	SOIL	ALS: 0 Non ALS: 1	No	X			
017	0315_SD107_240415		15/04/2024 04:04 PM	SOIL	ALS: 0 Non ALS: 1	No	X			
018	0315_SD108_240416		16/04/2024 05:07 PM	SOIL	ALS: 0 Non ALS: 1	No	X			
019	0315_SD111_240416		16/04/2024 05:08 PM	SOIL	ALS: 0 Non ALS: 1	No	X			
020	0315_SD118_240416		20/04/2024 04:01 PM	SOIL	ALS: 0 Non ALS: 1	No	X			Bottle wouldn't scan - included in esky
021	0315_SD121_240416		16/04/2024 05:12 PM	SOIL	ALS: 0 Non ALS: 1	No	X			

CHAIN OF CUSTODY

(ALS) COC#: 66662 *ALS Laboratory:* EM Melbourne Environmental

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

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0315_PFASOMP_24

SITE: Kapooka Onsite

ORDER NO:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19_Laverton

/ EM2023MWHAUS0002

EMAIL REPORTS TO: [redacted]

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	SOIL: PFAS SEDIMENT	WATER: PFAS WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
022	0315_SD127_240416		16/04/2024 04:56 PM	SOIL	ALS: 0 Non ALS: 1	No	X			
023	0315_SD136_240415		15/04/2024 05:09 PM	SOIL	ALS: 0 Non ALS: 1	No	X			
024	0315_QC100_240416		16/04/2024 05:21 PM	WATER	ALS: 2 Non ALS: 0	No		X		
025	0315_QC101_240416		16/04/2024 05:22 PM	SOIL	ALS: 0 Non ALS: 1	No	X			
026	0315_QC102_240416		16/04/2024 05:23 PM	WATER	ALS: 2 Non ALS: 0	No		X		

CHAIN OF CUSTODY

ALS COC#: 66662 ALS Laboratory: EM Melbourne Environmental

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

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0315_PFASOMP_24

SITE: Kapooka Onsite

ORDER NO:

PROJECT MANAGER: [redacted]
PRIMARY SAMPLER

CONTACT PH: SAMPLER MOBILE:
QUOTE NO: SY/139/19_Laverton / EM2023MWHAUS0002

EMAIL REPORTS TO: [redacted]

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	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0315_MW008_240416	HDPE (no PTFE)	20 mL	00352312003458	Grey	No	
001	0315_MW008_240416	HDPE (no PTFE)	20 mL	00352312002931	Grey	No	
001	0315_MW008_240416	HDPE (no PTFE)	20 mL	00352312003550	Grey	No	
001	0315_MW008_240416	HDPE (no PTFE)	20 mL	00352312003511	Grey	No	
001	0315_MW008_240416	HDPE (no PTFE)	20 mL	00352312003448	Grey	No	
001	0315_MW008_240416	HDPE (no PTFE)	20 mL	00352312003267	Grey	No	
002	0315_MW103_240416	HDPE (no PTFE)	20 mL	00352312003066	Grey	No	
002	0315_MW103_240416	HDPE (no PTFE)	20 mL	00352312003272	Grey	No	
003	0315_MW104_240416	HDPE (no PTFE)	20 mL	00352312003018	Grey	No	
003	0315_MW104_240416	HDPE (no PTFE)	20 mL	00352312003377	Grey	No	
004	0315_MW107_240416	HDPE (no PTFE)	20 mL	00352312003570	Grey	No	
004	0315_MW107_240416	HDPE (no PTFE)	20 mL	00352312003203	Grey	No	
005	0315_MW109_240416	HDPE (no PTFE)	20 mL	00352312003025	Grey	No	
005	0315_MW109_240416	HDPE (no PTFE)	20 mL	00352312003024	Grey	No	
006	0315_MW110_240416	HDPE (no PTFE)	20 mL	00352312003422	Grey	No	
006	0315_MW110_240416	HDPE (no PTFE)	20 mL	00352312002939	Grey	No	
007	0315_SW103_240415	HDPE (no PTFE)	20 mL	00352312012565	Grey	No	
007	0315_SW103_240415	HDPE (no PTFE)	20 mL	00352312012663	Grey	No	
008	0315_SW107_240415	HDPE (no PTFE)	20 mL	00352312012675	Grey	No	
008	0315_SW107_240415	HDPE (no PTFE)	20 mL	00352312012449	Grey	No	
009	0315_SW108_240416	HDPE (no PTFE)	20 mL	00352312012447	Grey	No	
009	0315_SW108_240416	HDPE (no PTFE)	20 mL	00352312012680	Grey	No	
010	0315_SW111_240416	HDPE (no PTFE)	20 mL	00352312012482	Grey	No	
010	0315_SW111_240416	HDPE (no PTFE)	20 mL	00352312012509	Grey	No	
010	0315_SW111_240416	HDPE (no PTFE)	20 mL	00352312012533	Grey	No	
010	0315_SW111_240416	HDPE (no PTFE)	20 mL	00352312012456	Grey	No	

CHAIN OF CUSTODY

COC#: 66662 ALS Laboratory: EM Melbourne Environmental

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

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0315_PFASOMP_24

SITE: Kapooka Onsite

ORDER NO:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: SY/139/19_Laverton / EM2023MWHAUS0002

EMAIL REPORTS TO: [redacted]

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:

010	0315_SW111_240416	HDPE (no PTFE)	20 mL	00352312012626	Grey	No	
010	0315_SW111_240416	HDPE (no PTFE)	20 mL	00352312012649	Grey	No	
011	0315_SW136_240415	HDPE (no PTFE)	20 mL	00352312003460	Grey	No	
011	0315_SW136_240415	HDPE (no PTFE)	20 mL	00352312003712	Grey	No	
012	0315_SW140_240416	HDPE (no PTFE)	20 mL	00351221002000	Grey	No	
012	0315_SW140_240416	HDPE (no PTFE)	20 mL	00351221001808	Grey	No	
013	0315_SW144_240415	HDPE (no PTFE)	20 mL	00352312002979	Grey	No	
013	0315_SW144_240415	HDPE (no PTFE)	20 mL	00352312003520	Grey	No	
014	0315_SW148_240416	HDPE (no PTFE)	20 mL	00352312003425	Grey	No	
014	0315_SW148_240416	HDPE (no PTFE)	20 mL	00352312003354	Grey	No	
024	0315_QC100_240416	HDPE (no PTFE)	20 mL	00352312012434	Grey	No	
024	0315_QC100_240416	HDPE (no PTFE)	20 mL	00352312012630	Grey	No	
026	0315_QC102_240416	HDPE (no PTFE)	20 mL	00352312002831	Grey	No	
026	0315_QC102_240416	HDPE (no PTFE)	20 mL	00352312003010	Grey	No	

Total Bottle Count: ALS: 40, Non ALS: 10

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2406739**	Page	: 1 of 7
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP_24	Date Samples Received	: 22-Apr-2024
Site	: Kapooka Onsite	Issue Date	: 03-May-2024
Sampler	: [redacted]	No. of samples received	: 26
Order number	: -	No. of samples analysed	: 26

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

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

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

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA055: Moisture Content (Dried @ 105-110°C)						
HDPE Soil Jar						
0315_SD103_240415, 0315_SD106_240415, 0315_SD107_240415, 0315_SD136_240415	----	----	----	30-Apr-2024	29-Apr-2024	**1**

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: **SOIL**

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
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055)							
0315_SD103_240415, 0315_SD106_240415, 0315_SD107_240415, 0315_SD136_240415	**15-Apr-2024**	**----**	----	----	**30-Apr-2024**	29-Apr-2024	×
HDPE Soil Jar (EA055)							
0315_SD108_240416, 0315_SD111_240416, 0315_SD118_240416, 0315_SD121_240416, 0315_SD127_240416, 0315_QC101_240416	**16-Apr-2024**	**----**	----	----	**30-Apr-2024**	30-Apr-2024	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X)							
0315_SD103_240415, 0315_SD106_240415, 0315_SD107_240415, 0315_SD136_240415	**15-Apr-2024**	**02-May-2024**	12-Oct-2024	✓	**02-May-2024**	11-Jun-2024	✓
HDPE Soil Jar (EP231X)							
0315_SD108_240416, 0315_SD111_240416, 0315_SD118_240416, 0315_SD121_240416, 0315_SD127_240416, 0315_QC101_240416	**16-Apr-2024**	**02-May-2024**	13-Oct-2024	✓	**02-May-2024**	11-Jun-2024	✓

Matrix: **SOIL**

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 Soil Jar (EP231X) 0315_SD103_240415, 0315_SD106_240415, 0315_SD107_240415, 0315_SD136_240415	**15-Apr-2024**	**02-May-2024**	12-Oct-2024	✓	**02-May-2024**	11-Jun-2024	✓
HDPE Soil Jar (EP231X) 0315_SD108_240416, 0315_SD111_240416, 0315_SD118_240416, 0315_SD121_240416, 0315_SD127_240416, 0315_QC101_240416	**16-Apr-2024**	**02-May-2024**	13-Oct-2024	✓	**02-May-2024**	11-Jun-2024	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X) 0315_SD103_240415, 0315_SD106_240415, 0315_SD107_240415, 0315_SD136_240415	**15-Apr-2024**	**02-May-2024**	12-Oct-2024	✓	**02-May-2024**	11-Jun-2024	✓
HDPE Soil Jar (EP231X) 0315_SD108_240416, 0315_SD111_240416, 0315_SD118_240416, 0315_SD121_240416, 0315_SD127_240416, 0315_QC101_240416	**16-Apr-2024**	**02-May-2024**	13-Oct-2024	✓	**02-May-2024**	11-Jun-2024	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X) 0315_SD103_240415, 0315_SD106_240415, 0315_SD107_240415, 0315_SD136_240415	**15-Apr-2024**	**02-May-2024**	12-Oct-2024	✓	**02-May-2024**	11-Jun-2024	✓
HDPE Soil Jar (EP231X) 0315_SD108_240416, 0315_SD111_240416, 0315_SD118_240416, 0315_SD121_240416, 0315_SD127_240416, 0315_QC101_240416	**16-Apr-2024**	**02-May-2024**	13-Oct-2024	✓	**02-May-2024**	11-Jun-2024	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X) 0315_SD103_240415, 0315_SD106_240415, 0315_SD107_240415, 0315_SD136_240415	**15-Apr-2024**	**02-May-2024**	12-Oct-2024	✓	**02-May-2024**	11-Jun-2024	✓
HDPE Soil Jar (EP231X) 0315_SD108_240416, 0315_SD111_240416, 0315_SD118_240416, 0315_SD121_240416, 0315_SD127_240416, 0315_QC101_240416	**16-Apr-2024**	**02-May-2024**	13-Oct-2024	✓	**02-May-2024**	11-Jun-2024	✓

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

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) 0315_SW103_240415, 0315_SW107_240415, 0315_SW136_240415, 0315_SW144_240415	**15-Apr-2024**	**01-May-2024**	12-Oct-2024	✓	**01-May-2024**	12-Oct-2024	✓
HDPE (no PTFE) (EP231X) 0315_MW008_240416, 0315_MW103_240416, 0315_MW104_240416, 0315_MW107_240416, 0315_MW109_240416, 0315_MW110_240416, 0315_SW108_240416, 0315_SW111_240416, 0315_SW140_240416, 0315_SW148_240416, 0315_QC100_240416, 0315_QC102_240416	**16-Apr-2024**	**01-May-2024**	13-Oct-2024	✓	**01-May-2024**	13-Oct-2024	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0315_SW103_240415, 0315_SW107_240415, 0315_SW136_240415, 0315_SW144_240415	**15-Apr-2024**	**01-May-2024**	12-Oct-2024	✓	**01-May-2024**	12-Oct-2024	✓
HDPE (no PTFE) (EP231X) 0315_MW008_240416, 0315_MW103_240416, 0315_MW104_240416, 0315_MW107_240416, 0315_MW109_240416, 0315_MW110_240416, 0315_SW108_240416, 0315_SW111_240416, 0315_SW140_240416, 0315_SW148_240416, 0315_QC100_240416, 0315_QC102_240416	**16-Apr-2024**	**01-May-2024**	13-Oct-2024	✓	**01-May-2024**	13-Oct-2024	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0315_SW103_240415, 0315_SW107_240415, 0315_SW136_240415, 0315_SW144_240415	**15-Apr-2024**	**01-May-2024**	12-Oct-2024	✓	**01-May-2024**	12-Oct-2024	✓
HDPE (no PTFE) (EP231X) 0315_MW008_240416, 0315_MW103_240416, 0315_MW104_240416, 0315_MW107_240416, 0315_MW109_240416, 0315_MW110_240416, 0315_SW108_240416, 0315_SW111_240416, 0315_SW140_240416, 0315_SW148_240416, 0315_QC100_240416, 0315_QC102_240416	**16-Apr-2024**	**01-May-2024**	13-Oct-2024	✓	**01-May-2024**	13-Oct-2024	✓

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) 0315_SW103_240415, 0315_SW107_240415, 0315_SW136_240415, 0315_SW144_240415	**15-Apr-2024**	**01-May-2024**	12-Oct-2024	✓	**01-May-2024**	12-Oct-2024	✓
HDPE (no PTFE) (EP231X) 0315_MW008_240416, 0315_MW103_240416, 0315_MW104_240416, 0315_MW107_240416, 0315_MW109_240416, 0315_MW110_240416, 0315_SW108_240416, 0315_SW111_240416, 0315_SW140_240416, 0315_SW148_240416, 0315_QC100_240416, 0315_QC102_240416	**16-Apr-2024**	**01-May-2024**	13-Oct-2024	✓	**01-May-2024**	13-Oct-2024	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0315_SW103_240415, 0315_SW107_240415, 0315_SW136_240415, 0315_SW144_240415	**15-Apr-2024**	**01-May-2024**	12-Oct-2024	✓	**01-May-2024**	12-Oct-2024	✓
HDPE (no PTFE) (EP231X) 0315_MW008_240416, 0315_MW103_240416, 0315_MW104_240416, 0315_MW107_240416, 0315_MW109_240416, 0315_MW110_240416, 0315_SW108_240416, 0315_SW111_240416, 0315_SW140_240416, 0315_SW148_240416, 0315_QC100_240416, 0315_QC102_240416	**16-Apr-2024**	**01-May-2024**	13-Oct-2024	✓	**01-May-2024**	13-Oct-2024	✓

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: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**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
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.
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 5.4, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
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	: **EM2406739**	Page	: 1 of 12
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: Level 28, 600 Bourke St MELBOURNE 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP_24	Date Samples Received	: 22-Apr-2024
Order number	: -	Date Analysis Commenced	: 30-Apr-2024
C-O-C number	: 66662	Issue Date	: 03-May-2024
Sampler	: [redacted]		
Site	: Kapooka Onsite		
Quote number	: SY/139/19_Laverton		
No. of samples received	: 26		
No. of samples analysed	: 26		

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]	2IC Organic Chemist	Melbourne Organics, 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.

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: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5758601)									
EM2406739-015	0315_SD103_240415	EA055: Moisture Content	----	0.1	%	19.7	20.7	4.9	0% - 20%
EM2406741-003	Anonymous	EA055: Moisture Content	----	0.1	%	28.2	28.8	2.1	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5762185)									
EM2406534-005	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EM2406739-018	0315_SD108_240416	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0023	0.0015	40.2	0% - 50%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5762185)									
EM2406534-005	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

				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: 5762185) - continued									
EM2406534-005	Anonymous	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EM2406739-018	0315_SD108_240416	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5762185)									
EM2406534-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EM2406739-018	0315_SD108_240416	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: **SOIL**

				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: 5762185) - continued									
EM2406739-018	0315_SD108_240416	EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5762185)									
EM2406534-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EM2406739-018	0315_SD108_240416	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 5762185)									
EM2406534-005	Anonymous	EP231X: Sum of PFAS	----	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EM2406739-018	0315_SD108_240416	EP231X: Sum of PFAS	----	0.0002	mg/kg	0.0025	0.0015	50.0	0% - 50%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0023	0.0015	42.1	0% - 50%
		EP231X: Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0023	0.0015	42.1	0% - 50%

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: 5759758)									
EM2406739-001	0315_MW008_240416	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.08	0.07	0.0	No Limit
		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: 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: 5759758) - continued									
EM2406739-010	0315_SW111_240416	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.02	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: 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: 5759758)									
EM2406739-001	0315_MW008_240416	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
EM2406739-010	0315_SW111_240416	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: 5759758)									
EM2406739-001	0315_MW008_240416	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

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: 5759758) - continued									
EM2406739-001	0315_MW008_240416	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
EM2406739-010	0315_SW111_240416	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: 5759758)									
EM2406739-001	0315_MW008_240416	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
EM2406739-010	0315_SW111_240416	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: 5759758)									
EM2406739-001	0315_MW008_240416	EP231X: Sum of PFAS	----	0.01	µg/L	0.09	0.08	11.8	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.09	0.08	11.8	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.09	0.08	11.8	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 (%)*
EP231P: PFAS Sums (QC Lot: 5759758) - continued									
EM2406739-010	0315_SW111_240416	EP231X: Sum of PFAS	----	0.01	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.04	0.04	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: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5762185)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00111 mg/kg	95.3	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00118 mg/kg	89.7	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00114 mg/kg	97.2	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00119 mg/kg	89.2	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00116 mg/kg	97.9	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00121 mg/kg	71.2	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5762185)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	88.2	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.0	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.8	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.2	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.0	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.9	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.5	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	105	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5762185)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.4	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	110	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	95.2	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	90.3	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	93.5	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.1	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.1	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5762185)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5762185) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00117 mg/kg	91.9	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00119 mg/kg	96.1	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.0012 mg/kg	108	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00121 mg/kg	84.5	70.0	130
EP231P: PFAS Sums (QCLot: 5762185)								
EP231X: Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5759758)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	93.9	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	96.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	98.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	97.9	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	100	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	94.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5759758)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	94.3	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	93.3	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	94.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	94.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.7	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	93.5	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	85.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	93.9	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	97.7	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	97.4	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5759758)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	94.0	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	113	68.0	141

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5759758) - continued								
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.4	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	94.8	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.0	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	96.6	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	84.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5759758)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	96.2	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	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	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	79.6	70.0	130
EP231P: PFAS Sums (QCLot: 5759758)								
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: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5762185)							
EM2406665-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00111 mg/kg	95.6	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00118 mg/kg	84.5	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00114 mg/kg	81.0	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00119 mg/kg	78.7	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00116 mg/kg	96.3	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00121 mg/kg	76.6	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5762185)							
EM2406665-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	89.6	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	86.4	69.0	132

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Matrix Spike (MS) Report: Acceptable Limits (%) Low	Matrix Spike (MS) Report: Acceptable Limits (%) High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5762185) - continued							
EM2406665-001	Anonymous	EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	90.7	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	91.9	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	94.0	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	91.0	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	85.5	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	101	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	98.3	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	104	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	102	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5762185)							
EM2406665-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	98.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	102	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	102	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	81.4	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	99.2	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	90.3	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	88.9	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5762185)							
EM2406665-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00117 mg/kg	92.7	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00119 mg/kg	98.1	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0012 mg/kg	102	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00121 mg/kg	71.4	70.0	130

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Matrix Spike (MS) Report: Acceptable Limits (%) Low	Matrix Spike (MS) Report: Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5759758)							
EM2406739-001	0315_MW008_240416	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	98.6	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	91.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	94.3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	93.5	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	88.8	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	82.1	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5759758)							

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Matrix Spike (MS) Report: Acceptable Limits (%) Low	Matrix Spike (MS) Report: Acceptable Limits (%) High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5759758) - continued							
EM2406739-001	0315_MW008_240416	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	99.6	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	96.6	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	93.1	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	90.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	94.0	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	88.4	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	76.4	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	84.9	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	87.1	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	100	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5759758)							
EM2406739-001	0315_MW008_240416	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	89.0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	84.2	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	76.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	91.8	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	92.8	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	94.5	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	83.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5759758)							
EM2406739-001	0315_MW008_240416	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	90.7	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	101	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	73.8	70.0	130

CERTIFICATE OF ANALYSIS

Work Order	: **EM2406739**	Page	: 1 of 15
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: Level 28, 600 Bourke St MELBOURNE 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP_24	Date Samples Received	: 22-Apr-2024 13:22
Order number	: -	Date Analysis Commenced	: 30-Apr-2024
C-O-C number	: 66662	Issue Date	: 03-May-2024 12:26
Sampler	: [redacted]		
Site	: Kapooka Onsite		
Quote number	: SY/139/19_Laverton		
No. of samples received	: 26		
No. of samples analysed	: 26		

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]	2IC Organic Chemist	Melbourne Organics, 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 Contract 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 QSM5.4 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 or as per tables in USEPA 1633 where listed. 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 and also conform to QSM 5.4 (US DoD) requirements.
- 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 or as per USEPA 1633 limits where LISTED. 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 and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0315_MW008_240416	0315_MW103_240416	0315_MW104_240416	0315_MW107_240416	0315_MW109_240416
				Sampling date / time	16-Apr-2024 17:02	16-Apr-2024 15:55	16-Apr-2024 15:53	16-Apr-2024 15:59	16-Apr-2024 16:49
Compound	CAS Number	LOR	Unit		EM2406739-001	EM2406739-002	EM2406739-003	EM2406739-004	EM2406739-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	**0.07**	<0.02	**0.03**	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	**0.04**	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.08**	**0.28**	<0.01	**0.08**	<0.01
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**	**0.04**	<0.01	**0.02**	<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	**0.05**	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	**0.13**	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	**0.05**	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	**0.06**	<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	0315_MW008_240416	0315_MW103_240416	0315_MW104_240416	0315_MW107_240416	0315_MW109_240416
				Sampling date / time	16-Apr-2024 17:02	16-Apr-2024 15:55	16-Apr-2024 15:53	16-Apr-2024 15:59	16-Apr-2024 16:49
Compound	CAS Number	LOR	Unit		EM2406739-001	EM2406739-002	EM2406739-003	EM2406739-004	EM2406739-005
					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		**0.09**	**0.76**	<0.01	**0.14**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.09**	**0.32**	<0.01	**0.10**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.09**	**0.68**	<0.01	**0.14**	<0.01
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**92.2**	**96.8**	**94.8**	**89.3**	**83.7**
13C8-PFOA	----	0.02	%		**99.2**	**101**	**102**	**100**	**98.3**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0315_MW110_240416	0315_QC102_240416	----	----	----
				Sampling date / time	16-Apr-2024 16:50	16-Apr-2024 17:23	----	----	----
Compound	CAS Number	LOR	Unit		EM2406739-006	EM2406739-026	--------	--------	--------
					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	0.01	µg/L		<0.01	<0.01	----	----	----
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	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0315_MW110_240416	0315_QC102_240416	----	----	----
				Sampling date / time	16-Apr-2024 16:50	16-Apr-2024 17:23	----	----	----
Compound	CAS Number	LOR	Unit		EM2406739-006	EM2406739-026	--------	--------	--------
					Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	----	----	----
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	%		**86.6**	**84.9**	----	----	----
13C8-PFOA	----	0.02	%		**92.9**	**96.9**	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	0315_SD103_240415	0315_SD106_240415	0315_SD107_240415	0315_SD108_240416	0315_SD111_240416
			Sampling date / time	15-Apr-2024 16:05	15-Apr-2024 16:06	15-Apr-2024 16:04	16-Apr-2024 17:07	16-Apr-2024 17:08
Compound	CAS Number	LOR	Unit	EM2406739-015	EM2406739-016	EM2406739-017	EM2406739-018	EM2406739-019
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**19.7**	**34.5**	**49.2**	**32.7**	**23.9**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	**0.0007**	<0.0002	**0.0004**	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0085**	**0.0052**	**0.0095**	**0.0023**	**0.0017**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	**0.0002**	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	**0.0002**	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**0.0002**	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	**0.0002**	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0315_SD103_240415	0315_SD106_240415	0315_SD107_240415	0315_SD108_240416	0315_SD111_240416
				Sampling date / time	15-Apr-2024 16:05	15-Apr-2024 16:06	15-Apr-2024 16:04	16-Apr-2024 17:07	16-Apr-2024 17:08
Compound	CAS Number	LOR	Unit		EM2406739-015	EM2406739-016	EM2406739-017	EM2406739-018	EM2406739-019
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0096**	**0.0054**	**0.0099**	**0.0025**	**0.0017**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0092**	**0.0052**	**0.0099**	**0.0023**	**0.0017**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0092**	**0.0052**	**0.0099**	**0.0023**	**0.0017**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**85.4**	**100**	**81.8**	**99.6**	**87.7**
13C8-PFOA	----	0.0002	%		**98.3**	**99.6**	**98.4**	**99.6**	**99.7**

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0315_SD118_240416	0315_SD121_240416	0315_SD127_240416	0315_SD136_240415	0315_QC101_240416
				Sampling date / time	16-Apr-2024 16:01	16-Apr-2024 17:12	16-Apr-2024 16:56	15-Apr-2024 17:09	16-Apr-2024 17:22
Compound	CAS Number	LOR	Unit		EM2406739-020	EM2406739-021	EM2406739-022	EM2406739-023	EM2406739-025
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**11.1**	**15.0**	**18.6**	**49.1**	**27.7**
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		**0.0004**	<0.0002	<0.0002	**0.0020**	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**0.0003**	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0207**	**0.0028**	**0.0005**	**0.0234**	**0.0009**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**0.0004**	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**0.0004**	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**0.0004**	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**0.0005**	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**0.0002**	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**0.0003**	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**0.0003**	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**0.0006**	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0315_SD118_240416	0315_SD121_240416	0315_SD127_240416	0315_SD136_240415	0315_QC101_240416
				Sampling date / time	16-Apr-2024 16:01	16-Apr-2024 17:12	16-Apr-2024 16:56	15-Apr-2024 17:09	16-Apr-2024 17:22
Compound	CAS Number	LOR	Unit		EM2406739-020	EM2406739-021	EM2406739-022	EM2406739-023	EM2406739-025
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0211**	**0.0028**	**0.0005**	**0.0288**	**0.0009**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0211**	**0.0028**	**0.0005**	**0.0254**	**0.0009**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0211**	**0.0028**	**0.0005**	**0.0267**	**0.0009**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**90.5**	**89.8**	**95.0**	**96.8**	**80.7**
13C8-PFOA	----	0.0002	%		**98.1**	**101**	**105**	**99.0**	**96.4**

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0315_SW103_240415	0315_SW107_240415	0315_SW108_240416	0315_SW111_240416	0315_SW136_240415
				Sampling date / time	15-Apr-2024 15:58	15-Apr-2024 15:59	16-Apr-2024 17:00	16-Apr-2024 16:58	15-Apr-2024 17:04
Compound	CAS Number	LOR	Unit		EM2406739-007	EM2406739-008	EM2406739-009	EM2406739-010	EM2406739-011
					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	**0.03**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.03**	<0.02	<0.02	<0.02	**0.04**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.39**	**0.10**	**0.02**	**0.02**	**0.60**
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		**0.53**	**0.16**	**0.02**	**0.02**	**0.78**
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		**0.04**	<0.02	**0.02**	<0.02	**0.04**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.08**	<0.02	**0.02**	<0.02	**0.06**
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	**0.02**	<0.01	**0.03**
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	0315_SW103_240415	0315_SW107_240415	0315_SW108_240416	0315_SW111_240416	0315_SW136_240415
				Sampling date / time	15-Apr-2024 15:58	15-Apr-2024 15:59	16-Apr-2024 17:00	16-Apr-2024 16:58	15-Apr-2024 17:04
Compound	CAS Number	LOR	Unit		EM2406739-007	EM2406739-008	EM2406739-009	EM2406739-010	EM2406739-011
					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		**1.13**	**0.26**	**0.12**	**0.04**	**1.58**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.92**	**0.26**	**0.04**	**0.04**	**1.38**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**1.10**	**0.26**	**0.12**	**0.04**	**1.54**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**92.6**	**95.6**	**111**	**90.6**	**93.6**
13C8-PFOA	----	0.02	%		**97.7**	**98.5**	**97.6**	**98.6**	**98.4**

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0315_SW140_240416	0315_SW144_240415	0315_SW148_240416	0315_QC100_240416	----
				Sampling date / time	16-Apr-2024 15:57	15-Apr-2024 15:54	16-Apr-2024 16:57	16-Apr-2024 17:21	----
Compound	CAS Number	LOR	Unit		EM2406739-012	EM2406739-013	EM2406739-014	EM2406739-024	--------
					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	**0.03**	----
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	0.01	µg/L		**0.02**	<0.01	<0.01	**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	**0.02**	----
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	----

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0315_SW140_240416	0315_SW144_240415	0315_SW148_240416	0315_QC100_240416	----
				Sampling date / time	16-Apr-2024 15:57	15-Apr-2024 15:54	16-Apr-2024 16:57	16-Apr-2024 17:21	----
Compound	CAS Number	LOR	Unit		EM2406739-012	EM2406739-013	EM2406739-014	EM2406739-024	--------
					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		**0.02**	<0.01	<0.01	**0.12**	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.02**	<0.01	<0.01	**0.04**	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.02**	<0.01	<0.01	**0.12**	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**94.3**	**97.3**	**100**	**96.4**	----
13C8-PFOA	----	0.02	%		**101**	**101**	**98.4**	**96.7**	----

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: SEDIMENT		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	68	136
13C8-PFOA	----	69	133

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

CHAIN OF CUSTODY

COC#: **66664** *ALS Laboratory:* EM Melbourne Environmental

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0315_PFASOMP_24

SITE: LLS

ORDER NO:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19_Laverton / EM2023MWHAUS0002

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY: [redacted]
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 22/04/24 – 13:22

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	WATER: PFAS WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0315_MW625_240417		17/04/2024 04:57 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division
Melbourne
Work Order Reference
EM2406721

Telephone : + 61-3-8549 9600

CHAIN OF CUSTODY

COC#: 66664 *ALS Laboratory:* EM Melbourne Environmental

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

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0315_PFASOMP_24

SITE: LLS

ORDER NO:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: SY/139/19_Laverton / EM2023MWHAUS0002

EMAIL REPORTS TO: [redacted]

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	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0315_MW625_240417	HDPE (no PTFE)	20 mL	00352312003686	Grey	No	
001	0315_MW625_240417	HDPE (no PTFE)	20 mL	00352312003507	Grey	No	

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

QUALITY CONTROL REPORT

Work Order	: **EM2406721**	Page	: 1 of 7
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: Level 28, 600 Bourke St MELBOURNE 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP_24	Date Samples Received	: 22-Apr-2024
Order number	: -	Date Analysis Commenced	: 30-Apr-2024
C-O-C number	: 66664	Issue Date	: 01-May-2024
Sampler	: [redacted]		
Site	: LLS		
Quote number	: SY/139/19_Laverton		
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%.

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: 5758799)									
EB2413049-007	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.24	0.24	0.0	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.26	0.27	0.0	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: 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
EM2406723-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		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: 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: 5758799)									
EB2413049-007	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.11	0.11	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.12	0.11	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	<0.02	<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

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: 5758799) - continued									
EB2413049-007	Anonymous	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
EM2406723-001	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: 5758799)									
EB2413049-007	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
EM2406723-001	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

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: 5758799)									
EB2413049-007	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
EM2406723-001	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: 5758799)									
EB2413049-007	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.81	0.83	2.4	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.50	0.51	2.0	0% - 20%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.81	0.81	0.0	0% - 20%
EM2406723-001	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 Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5758799)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	92.6	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	94.0	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	92.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 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	95.1	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	95.5	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5758799)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	93.7	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	91.9	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	90.7	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	91.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	90.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.3	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	93.8	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.4	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	96.1	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	97.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	99.5	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5758799)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	93.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	109	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.4	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	92.6	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	95.7	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	95.7	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	93.2	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5758799)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5758799) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	94.0	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	99.4	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	102	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	77.6	70.0	130
EP231P: PFAS Sums (QCLot: 5758799)								
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	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5758799)							
EM2406723-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	96.5	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	96.7	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	92.9	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	91.2	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	90.0	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	96.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5758799)							
EM2406723-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	93.8	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	92.4	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	91.9	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	96.1	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	91.4	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	93.8	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	90.5	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	93.4	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	94.9	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	97.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	101	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5758799)							

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: 5758799) - continued							
EM2406723-001	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	100	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	80.8	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	86.3	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	85.4	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	90.7	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	85.3	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5758799)							
EM2406723-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	89.1	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	98.2	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	98.2	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.242 µg/L	84.9	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2406721**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP_24	Date Samples Received	: 22-Apr-2024
Site	: LLS	Issue Date	: 01-May-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: -	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

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

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)							
0315_MW625_240417	**17-Apr-2024**	**30-Apr-2024**	14-Oct-2024	✓	**30-Apr-2024**	14-Oct-2024	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
0315_MW625_240417	**17-Apr-2024**	**30-Apr-2024**	14-Oct-2024	✓	**30-Apr-2024**	14-Oct-2024	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0315_MW625_240417	**17-Apr-2024**	**30-Apr-2024**	14-Oct-2024	✓	**30-Apr-2024**	14-Oct-2024	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0315_MW625_240417	**17-Apr-2024**	**30-Apr-2024**	14-Oct-2024	✓	**30-Apr-2024**	14-Oct-2024	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0315_MW625_240417	**17-Apr-2024**	**30-Apr-2024**	14-Oct-2024	✓	**30-Apr-2024**	14-Oct-2024	✓

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		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**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
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 5.4, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
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.

CERTIFICATE OF ANALYSIS

Work Order	: **EM2406721**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: Level 28, 600 Bourke St MELBOURNE 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP_24	Date Samples Received	: 22-Apr-2024 13:22
Order number	: -	Date Analysis Commenced	: 30-Apr-2024
C-O-C number	: 66664	Issue Date	: 01-May-2024 16:45
Sampler	: [redacted]		
Site	: LLS		
Quote number	: SY/139/19_Laverton		
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 Contract 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 QSM5.4 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 or as per tables in USEPA 1633 where listed. 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 and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0315_MW625_240417	----	----	----	----
				Sampling date / time	17-Apr-2024 16:57	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2406721-001	--------	--------	--------	--------
					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	0.01	µg/L		<0.01	----	----	----	----
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	0315_MW625_240417	----	----	----	----
				Sampling date / time	17-Apr-2024 16:57	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2406721-001	--------	--------	--------	--------
					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	%		**97.8**	----	----	----	----
13C8-PFOA	----	0.02	%		**101**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

CHAIN OF CUSTODY

COC#: **66665** *ALS Laboratory:* EM Melbourne Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 22/04/24 – 13:22

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0315_PFASOMP_24

SITE: PO010

ORDER NO:

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:

CONTACT PH: SAMPLER MOBILE:
QUOTE NO: SY/139/19_Laverton / EM2023MWHAUS0002

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	WATER: PFAS WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0315_SW680_240416		16/04/2024 04:56 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division
Melbourne
Work Order Reference
EM2406722

Telephone : + 61-3-8549 9600

CHAIN OF CUSTODY

ALS COC#: 66665 ALS Laboratory: EM Melbourne Environmental

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

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0315_PFASOMP_24

SITE: PO010

ORDER NO:

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:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19_Laverton / EM2023MWHAUS0002

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0315_SW680_240416	HDPE (no PTFE)	20 mL	00352312003197	Grey	No	
001	0315_SW680_240416	HDPE (no PTFE)	20 mL	00352312003108	Grey	No	

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

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2406722**	Page	: 1 of 4
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP_24	Date Samples Received	: 22-Apr-2024
Site	: PO010	Issue Date	: 02-May-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: -	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

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

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)							
0315_SW680_240416	**16-Apr-2024**	**01-May-2024**	13-Oct-2024	✓	**01-May-2024**	13-Oct-2024	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
0315_SW680_240416	**16-Apr-2024**	**01-May-2024**	13-Oct-2024	✓	**01-May-2024**	13-Oct-2024	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0315_SW680_240416	**16-Apr-2024**	**01-May-2024**	13-Oct-2024	✓	**01-May-2024**	13-Oct-2024	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0315_SW680_240416	**16-Apr-2024**	**01-May-2024**	13-Oct-2024	✓	**01-May-2024**	13-Oct-2024	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0315_SW680_240416	**16-Apr-2024**	**01-May-2024**	13-Oct-2024	✓	**01-May-2024**	13-Oct-2024	✓

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		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**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
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 5.4, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
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	: **EM2406722**	Page	: 1 of 7
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: Level 28, 600 Bourke St MELBOURNE 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP_24	Date Samples Received	: 22-Apr-2024
Order number	: -	Date Analysis Commenced	: 30-Apr-2024
C-O-C number	: 66665	Issue Date	: 02-May-2024
Sampler	: [redacted]		
Site	: PO010		
Quote number	: SY/139/19_Laverton		
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]	2IC 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: 5759758)									
EM2406739-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.08	0.07	0.0	No Limit
		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: 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
EM2406739-010	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.02	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: 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: 5759758)									
EM2406739-001	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

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: 5759758) - continued									
EM2406739-001	Anonymous	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
EM2406739-010	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: 5759758)									
EM2406739-001	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
EM2406739-010	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

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: 5759758)									
EM2406739-001	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
EM2406739-010	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: 5759758)									
EM2406739-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.09	0.08	11.8	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.09	0.08	11.8	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.09	0.08	11.8	No Limit
EM2406739-010	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.04	0.04	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 Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5759758)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	93.9	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	96.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	98.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	97.9	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	100	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	94.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5759758)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	94.3	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	93.3	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	94.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	94.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.7	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	93.5	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	85.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	93.9	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	97.7	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	97.4	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5759758)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	94.0	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	113	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.4	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	94.8	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.0	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	96.6	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	84.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5759758)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5759758) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	96.2	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	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	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	79.6	70.0	130
EP231P: PFAS Sums (QCLot: 5759758)								
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	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5759758)							
EM2406739-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	98.6	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	91.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	94.3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	93.5	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	88.8	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	82.1	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5759758)							
EM2406739-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	99.6	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	96.6	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	93.1	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	90.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	94.0	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	88.4	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	76.4	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	84.9	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	87.1	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	100	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5759758)							

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: 5759758) - continued							
EM2406739-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	89.0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	84.2	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	76.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	91.8	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	92.8	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	94.5	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	83.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5759758)							
EM2406739-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	90.7	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	101	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	73.8	70.0	130

CERTIFICATE OF ANALYSIS

Work Order	: **EM2406722**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: Level 28, 600 Bourke St MELBOURNE 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP_24	Date Samples Received	: 22-Apr-2024 13:22
Order number	: -	Date Analysis Commenced	: 30-Apr-2024
C-O-C number	: 66665	Issue Date	: 02-May-2024 10:41
Sampler	: [redacted]		
Site	: PO010		
Quote number	: SY/139/19_Laverton		
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]	2IC 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 Contract 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 QSM5.4 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 or as per tables in USEPA 1633 where listed. 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 and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0315_SW680_240416	----	----	----	----
				Sampling date / time	16-Apr-2024 16:56	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2406722-001	--------	--------	--------	--------
					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	0.01	µg/L		**0.05**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.18**	----	----	----	----
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: SURFACE WATER (Matrix: WATER)				Sample ID	0315_SW680_240416	----	----	----	----
				Sampling date / time	16-Apr-2024 16:56	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2406722-001	--------	--------	--------	--------
					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		**0.23**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.23**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.23**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**93.9**	----	----	----	----
13C8-PFOA	----	0.02	%		**98.3**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

CHAIN OF CUSTODY

ALS COC#: 66663 ALS Laboratory: EM Melbourne Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 22/04/24 – 13:22

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0315_PFASOMP_24

SITE: Kapooka Council

ORDER NO:

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:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: SY/139/19_Laverton / EM2023MWHAUS0002

EMAIL REPORTS TO: [redacted]

EMAIL INVOICES TO:

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	SOIL: PFAS SEDIMENT	WATER: PFAS WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0315_MW601_240416		16/04/2024 03:56 PM	WATER	ALS: 2 Non ALS: 0	No		X		
002	0315_MW624_240416		16/04/2024 03:55 PM	WATER	ALS: 2 Non ALS: 0	No		X		
003	0315_SD614_240416		16/04/2024 04:07 PM	SOIL	ALS: 0 Non ALS: 1	No	X			
004	0315_SD677_240416		16/04/2024 04:07 PM	SOIL	ALS: 0 Non ALS: 1	No	X			

Environmental Division Melbourne

Work Order Reference

EM2406741

Telephone : + 61-3-8549 9600

CHAIN OF CUSTODY

COC#: 66663 ALS Laboratory: EM Melbourne Environmental

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

CLIENT: MWHAUS - STANTEC AUSTRALIA PTY LTD

PROJECT: NSW_0315_PFASOMP_24

SITE: Kapooka Council

ORDER NO:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:

QUOTE NO: SY/139/19_Laverton / EM2023MWHAUS0002

EMAIL REPORTS TO: [redacted]

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	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0315_MW601_240416	HDPE (no PTFE)	20 mL	00352312003190	Grey	No	
001	0315_MW601_240416	HDPE (no PTFE)	20 mL	00352312003255	Grey	No	
002	0315_MW624_240416	HDPE (no PTFE)	20 mL	00352312002938	Grey	No	
002	0315_MW624_240416	HDPE (no PTFE)	20 mL	00352312003543	Grey	No	

Total Bottle Count: ALS: 4, Non ALS: 2

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2406741**	Page	: 1 of 5
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP_24	Date Samples Received	: 22-Apr-2024
Site	: Kapooka Council	Issue Date	: 03-May-2024
Sampler	: [redacted]	No. of samples received	: 4
Order number	: -	No. of samples analysed	: 4

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

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

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: **SOIL**

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
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055)							
0315_SD614_240416, 0315_SD677_240416	**16-Apr-2024**	**----**	----	----	**30-Apr-2024**	30-Apr-2024	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X)							
0315_SD614_240416, 0315_SD677_240416	**16-Apr-2024**	**02-May-2024**	13-Oct-2024	✓	**02-May-2024**	11-Jun-2024	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X)							
0315_SD614_240416, 0315_SD677_240416	**16-Apr-2024**	**02-May-2024**	13-Oct-2024	✓	**02-May-2024**	11-Jun-2024	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X)							
0315_SD614_240416, 0315_SD677_240416	**16-Apr-2024**	**02-May-2024**	13-Oct-2024	✓	**02-May-2024**	11-Jun-2024	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X)							
0315_SD614_240416, 0315_SD677_240416	**16-Apr-2024**	**02-May-2024**	13-Oct-2024	✓	**02-May-2024**	11-Jun-2024	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X)							
0315_SD614_240416, 0315_SD677_240416	**16-Apr-2024**	**02-May-2024**	13-Oct-2024	✓	**02-May-2024**	11-Jun-2024	✓

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)							
0315_MW601_240416, 0315_MW624_240416	**16-Apr-2024**	**01-May-2024**	13-Oct-2024	✓	**01-May-2024**	13-Oct-2024	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
0315_MW601_240416, 0315_MW624_240416	**16-Apr-2024**	**01-May-2024**	13-Oct-2024	✓	**01-May-2024**	13-Oct-2024	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
0315_MW601_240416, 0315_MW624_240416	**16-Apr-2024**	**01-May-2024**	13-Oct-2024	✓	**01-May-2024**	13-Oct-2024	✓

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)							
0315_MW601_240416, 0315_MW624_240416	**16-Apr-2024**	**01-May-2024**	13-Oct-2024	✓	**01-May-2024**	13-Oct-2024	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0315_MW601_240416, 0315_MW624_240416	**16-Apr-2024**	**01-May-2024**	13-Oct-2024	✓	**01-May-2024**	13-Oct-2024	✓

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: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**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
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.
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 5.4, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
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	: **EM2406741**	Page	: 1 of 12
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: Level 28, 600 Bourke St MELBOURNE 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP_24	Date Samples Received	: 22-Apr-2024
Order number	: -	Date Analysis Commenced	: 30-Apr-2024
C-O-C number	: 66663	Issue Date	: 03-May-2024
Sampler	: [redacted]		
Site	: Kapooka Council		
Quote number	: SY/139/19_Laverton		
No. of samples received	: 4		
No. of samples analysed	: 4		

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]	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
[redacted]	Senior Inorganic Instrument Chemist	Melbourne Inorganics, 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: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5758601)									
EM2406739-015	Anonymous	EA055: Moisture Content	----	0.1	%	19.7	20.7	4.9	0% - 20%
EM2406741-003	0315_SD614_240416	EA055: Moisture Content	----	0.1	%	28.2	28.8	2.1	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5762185)									
EM2406534-005	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EM2406739-018	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0023	0.0015	40.2	0% - 50%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5762185)									
EM2406534-005	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

				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: 5762185) - continued									
EM2406534-005	Anonymous	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EM2406739-018	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5762185)									
EM2406534-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EM2406739-018	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: **SOIL**

				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: 5762185) - continued									
EM2406739-018	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5762185)									
EM2406534-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EM2406739-018	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 5762185)									
EM2406534-005	Anonymous	EP231X: Sum of PFAS	----	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EM2406739-018	Anonymous	EP231X: Sum of PFAS	----	0.0002	mg/kg	0.0025	0.0015	50.0	0% - 50%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0023	0.0015	42.1	0% - 50%
		EP231X: Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0023	0.0015	42.1	0% - 50%

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: 5759758)									
EM2406739-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.08	0.07	0.0	No Limit
		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: 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: 5759758) - continued									
EM2406739-010	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.02	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: 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: 5759758)									
EM2406739-001	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
EM2406739-010	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: 5759758)									
EM2406739-001	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

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: 5759758) - continued									
EM2406739-001	Anonymous	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
EM2406739-010	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: 5759758)									
EM2406739-001	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
EM2406739-010	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: 5759758)									
EM2406739-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.09	0.08	11.8	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.09	0.08	11.8	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.09	0.08	11.8	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 (%)*
EP231P: PFAS Sums (QC Lot: 5759758) - continued									
EM2406739-010	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.04	0.04	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: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5762185)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00111 mg/kg	95.3	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00118 mg/kg	89.7	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00114 mg/kg	97.2	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00119 mg/kg	89.2	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00116 mg/kg	97.9	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00121 mg/kg	71.2	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5762185)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	88.2	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.0	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.8	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.2	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.0	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.9	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.5	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	105	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5762185)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.4	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	110	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	95.2	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	90.3	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	93.5	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.1	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.1	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5762185)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5762185) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00117 mg/kg	91.9	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00119 mg/kg	96.1	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.0012 mg/kg	108	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00121 mg/kg	84.5	70.0	130
EP231P: PFAS Sums (QCLot: 5762185)								
EP231X: Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5759758)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.222 µg/L	93.9	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.235 µg/L	96.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.228 µg/L	98.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	97.9	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	100	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	94.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5759758)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	94.3	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	93.3	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	94.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	94.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.7	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	93.5	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	85.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	93.9	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	97.7	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	97.4	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5759758)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	94.0	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	113	68.0	141

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5759758) - continued								
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.4	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	94.8	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.0	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	96.6	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	84.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5759758)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.234 µg/L	96.2	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	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	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	79.6	70.0	130
EP231P: PFAS Sums (QCLot: 5759758)								
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: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5762185)							
EM2406665-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00111 mg/kg	95.6	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00118 mg/kg	84.5	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00114 mg/kg	81.0	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00119 mg/kg	78.7	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00116 mg/kg	96.3	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00121 mg/kg	76.6	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5762185)							
EM2406665-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	89.6	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	86.4	69.0	132

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Matrix Spike (MS) Report: Acceptable Limits (%) Low	Matrix Spike (MS) Report: Acceptable Limits (%) High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5762185) - continued							
EM2406665-001	Anonymous	EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	90.7	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	91.9	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	94.0	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	91.0	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	85.5	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	101	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	98.3	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	104	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	102	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5762185)							
EM2406665-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	98.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	102	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	102	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	81.4	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	99.2	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	90.3	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	88.9	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5762185)							
EM2406665-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00117 mg/kg	92.7	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00119 mg/kg	98.1	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0012 mg/kg	102	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00121 mg/kg	71.4	70.0	130

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Matrix Spike (MS) Report: Acceptable Limits (%) Low	Matrix Spike (MS) Report: Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5759758)							
EM2406739-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.222 µg/L	98.6	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	91.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.228 µg/L	94.3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	93.5	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	88.8	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	82.1	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5759758)							

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: 5759758) - continued							
EM2406739-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	99.6	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	96.6	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	93.1	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	90.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	94.0	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	88.4	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	76.4	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	84.9	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	87.1	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	100	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5759758)							
EM2406739-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	89.0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	84.2	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	76.0	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	91.8	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	92.8	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	94.5	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	83.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5759758)							
EM2406739-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	90.7	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.238 µg/L	101	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	73.8	70.0	130

CERTIFICATE OF ANALYSIS

Work Order	: **EM2406741**	Page	: 1 of 7
Client	: **STANTEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: [redacted]	Contact	: [redacted]
Address	: Level 28, 600 Bourke St MELBOURNE 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: [redacted]
Project	: NSW_0315_PFASOMP_24	Date Samples Received	: 22-Apr-2024 13:22
Order number	: -	Date Analysis Commenced	: 30-Apr-2024
C-O-C number	: 66663	Issue Date	: 03-May-2024 12:36
Sampler	: [redacted]		
Site	: Kapooka Council		
Quote number	: SY/139/19_Laverton		
No. of samples received	: 4		
No. of samples analysed	: 4		

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]	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
[redacted]	Senior Inorganic Instrument Chemist	Melbourne Inorganics, 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 Contract 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 QSM5.4 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 or as per tables in USEPA 1633 where listed. 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 and also conform to QSM 5.4 (US DoD) requirements.
- 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 or as per USEPA 1633 limits where LISTED. 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 and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0315_MW601_240416	0315_MW624_240416	----	----	----
				Sampling date / time	16-Apr-2024 15:56	16-Apr-2024 15:55	----	----	----
Compound	CAS Number	LOR	Unit		EM2406741-001	EM2406741-002	--------	--------	--------
					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	0.01	µg/L		**0.29**	<0.01	----	----	----
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		**0.27**	<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	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0315_MW601_240416	0315_MW624_240416	----	----	----
				Sampling date / time	16-Apr-2024 15:56	16-Apr-2024 15:55	----	----	----
Compound	CAS Number	LOR	Unit		EM2406741-001	EM2406741-002	--------	--------	--------
					Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	----	----	----
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		**0.58**	**0.02**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.56**	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.58**	**0.02**	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**76.1**	**89.1**	----	----	----
13C8-PFOA	----	0.02	%		**96.9**	**97.6**	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0315_SD614_240416	0315_SD677_240416	----	----	----
				Sampling date / time	16-Apr-2024 16:07	16-Apr-2024 16:07	----	----	----
Compound	CAS Number	LOR	Unit		EM2406741-003	EM2406741-004	--------	--------	--------
					Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**28.2**	**20.2**	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		**0.0003**	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0126**	**0.0074**	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0315_SD614_240416	0315_SD677_240416	----	----	----
				Sampling date / time	16-Apr-2024 16:07	16-Apr-2024 16:07	----	----	----
Compound	CAS Number	LOR	Unit		EM2406741-003	EM2406741-004	--------	--------	--------
					Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0129**	**0.0074**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0129**	**0.0074**	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0129**	**0.0074**	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**105**	**90.9**	----	----	----
13C8-PFOA	----	0.0002	%		**102**	**97.7**	----	----	----

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: **SEDIMENT**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	68	136
13C8-PFOA	----	69	133

Cardno now Stantec

Chain of Custody

PM Name: [redacted]
Phone: Mobile: [redacted]
Address: Level 4, 501 Swanston Street, Melbourne, VIC 3000
PM Email: [redacted]
Project Number: Site: WAGGA / KAPOOKA
Laboratory EUROFINS Recipient: — Previously Contact no: [redacted]

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Sample Matrix: Water	Soil	Sample preservation: Ice	Analysis: PFAS 28 full suite	Hold
0315_QC200-240416	1	2 x plas	16/4		X		X	X	
0315_QC201_240416	2	1 x plas (soil)	16/4			X	X	X	
0315_QC202_240416	3	2 x plas	16/4		X		X	X	
~~0315_QC~~									
0906_QC203_240416	4	2 x plas	16/4		X		X	X	
0906_QC204_240417	5	"	17/4		X		X	X	
0906_QC205_240417	6	"	17/4		X		X	X	
0906_QC206_240418	7	"	18/4		X		X	X	
0906_QC207_240419	8	"	19/4		X		X	X	
0906_QC208_240419	9	"	19/4		X		X	X	
0906_QC209_240419	10	"	19/4		X		X	X	
0906_QC502_240420	11	"	20/4		X		X	X	

22/4/24 AW890100

Sampler: I attest that the proper field sampling proceedures were used during the collection of these samples. Sampler name: (print and [redacted] Date: 22/4

	Date	Time		Date	Time
Relinquished by (Sampler): (print and sig [redacted]	22/4		Received by (Courier/Lab): (print and signature)		
Relinquished by: (print and signature)			Received by: (print and signature)		
Relinquished by: (print and signature)			Received by: (print and signature)		

Please supply results electronically in spreadsheet and ESDAT files.

Turn around time: (5 days) Please circle

DATE: 22/4
TIME: 1.28 HA
COURIER: ✓
TEMPERATURE 1.5
ATTEMP TO CHILL YES NO

Stantec Australia Pty Ltd
Level 22, 570 Bourke Street
Melbourne
VIC 3000

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: [redacted]

Report **1090100-S**
Project name WAGGA/KAPOOKA
Received Date Apr 22, 2024

Client Sample ID			**0315_QC201_240416**
Sample Matrix			**Soil**
Eurofins Sample No.			**M24-Ap0057724**
Date Sampled			**Apr 16, 2024**
Test/Reference	LOR	Unit	
Sample Properties			
% Moisture	1	%	26
Perfluoroalkyl carboxylic acids (PFCAs)			
Perfluorobutanoic acid (PFBA)[N11]	5	ug/kg	< 5
Perfluoropentanoic acid (PFPeA)[N11]	5	ug/kg	< 5
Perfluorohexanoic acid (PFHxA)[N11]	5	ug/kg	< 5
Perfluoroheptanoic acid (PFHpA)[N11]	5	ug/kg	< 5
Perfluorooctanoic acid (PFOA)[N11]	5	ug/kg	< 5
Perfluorononanoic acid (PFNA)[N11]	5	ug/kg	< 5
Perfluorodecanoic acid (PFDA)[N11]	5	ug/kg	< 5
Perfluoroundecanoic acid (PFUnDA)[N11]	5	ug/kg	< 5
Perfluorododecanoic acid (PFDoDA)[N11]	5	ug/kg	< 5
Perfluorotridecanoic acid (PFTrDA)[N15]	5	ug/kg	< 5
Perfluorotetradecanoic acid (PFTeDA)[N11]	5	ug/kg	< 5
13C4-PFBA (surr.)	1	%	66
13C5-PFPeA (surr.)	1	%	71
13C5-PFHxA (surr.)	1	%	78
13C4-PFHpA (surr.)	1	%	75
13C8-PFOA (surr.)	1	%	73
13C5-PFNA (surr.)	1	%	77
13C6-PFDA (surr.)	1	%	53
13C2-PFUnDA (surr.)	1	%	80
13C2-PFDoDA (surr.)	1	%	120
13C2-PFTeDA (surr.)	1	%	95
Perfluoroalkyl sulfonamido substances			
Perfluorooctane sulfonamide (FOSA)[N11]	5	ug/kg	< 5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	5	ug/kg	< 5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	5	ug/kg	< 5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	5	ug/kg	< 5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	5	ug/kg	< 5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	10	ug/kg	< 10
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	10	ug/kg	< 10
13C8-FOSA (surr.)	1	%	98

Client Sample ID			0315_QC201_240416
Sample Matrix			**Soil**
Eurofins Sample No.			**M24-Ap0057724**
Date Sampled			**Apr 16, 2024**
Test/Reference	LOR	Unit	
Perfluoroalkyl sulfonamido substances			
D3-N-MeFOSA (surr.)	1	%	130
D5-N-EtFOSA (surr.)	1	%	131
D7-N-MeFOSE (surr.)	1	%	136
D9-N-EtFOSE (surr.)	1	%	148
D5-N-EtFOSAA (surr.)	1	%	152
D3-N-MeFOSAA (surr.)	1	%	108
Perfluoroalkyl sulfonic acids (PFSAs)			
Perfluorobutanesulfonic acid (PFBS)[N11]	5	ug/kg	< 5
Perfluorononanesulfonic acid (PFNS)[N15]	5	ug/kg	< 5
Perfluoropropanesulfonic acid (PFPrS)[N15]	5	ug/kg	< 5
Perfluoropentanesulfonic acid (PFPeS)[N15]	5	ug/kg	< 5
Perfluorohexanesulfonic acid (PFHxS)[N11]	5	ug/kg	< 5
Perfluoroheptanesulfonic acid (PFHpS)[N15]	5	ug/kg	< 5
Perfluorooctanesulfonic acid (PFOS)[N11]	5	ug/kg	< 5
Perfluorodecanesulfonic acid (PFDS)[N15]	5	ug/kg	< 5
13C3-PFBS (surr.)	1	%	64
18O2-PFHxS (surr.)	1	%	64
13C8-PFOS (surr.)	1	%	50
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	5	ug/kg	< 5
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	10	ug/kg	< 10
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	5	ug/kg	< 5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	5	ug/kg	< 5
13C2-4:2 FTSA (surr.)	1	%	64
13C2-6:2 FTSA (surr.)	1	%	74
13C2-8:2 FTSA (surr.)	1	%	96
13C2-10:2 FTSA (surr.)	1	%	81
PFASs Summations			
Sum (PFHxS + PFOS)*	5	ug/kg	< 5
Sum of US EPA PFAS (PFOS + PFOA)*	5	ug/kg	< 5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	5	ug/kg	< 5
Sum of WA DWER PFAS (n=10)*	10	ug/kg	< 10
Sum of PFASs (n=30)*	50	ug/kg	< 50

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
% Moisture	Melbourne	Apr 22, 2024	14 Days
- Method: LTM-GEN-7080 Moisture			
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Melbourne	Apr 23, 2024	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Melbourne	Apr 23, 2024	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Melbourne	Apr 23, 2024	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Melbourne	Apr 23, 2024	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
PFASs Summations	Melbourne	Apr 22, 2024	
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

eurofins

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Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	T: +61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794	Site# 25079 & 25289

Eurofins ARL Pty Ltd
ABN: 91 05 0159 898

Perth
46-48 Banksia Road
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NATA# 2377
Site# 2370

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ABN: 47 009 120 549

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46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2561
Site# 2554

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

Auckland	Auckland (Focus)	Christchurch	Tauranga
35 O'Rorke Road	Unit C1/4 Pacific Rise,	43 Detroit Drive	1277 Cameron Road,
Penrose,	Mount Wellington,	Rolleston,	Gate Pa,
Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Company Name: Stantec Australia Pty Ltd (VIC)
Address: Level 22, 570 Bourke Street
Melbourne
VIC 3000

Project Name: WAGGA/KAPOOKA

Order No.:
Report #: 1090100
Phone:
Fax:

Received: Apr 22, 2024 1:28 PM
Due: Apr 30, 2024
Priority: 5 Day
Contact Name: [redacted]

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	0315_QC200_240416	Apr 16, 2024		Water	M24-Ap0057723		X
2	0315_QC201_240416	Apr 16, 2024		Soil	M24-Ap0057724	X	X
3	0315_QC202_240416	Apr 16, 2024		Water	M24-Ap0057725		X
4	0906_QC203_240416	Apr 16, 2024		Water	M24-Ap0057726		X
5	0906_QC204_240417	Apr 16, 2024		Water	M24-Ap0057727		X
6	0906_QC205_240417	Apr 16, 2024		Water	M24-Ap0057728		X
7	0906_QC206_240418	Apr 16, 2024		Water	M24-Ap0057729		X
8	0906_QC207_240419	Apr 16, 2024		Water	M24-Ap0057730		X

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NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794	Site# 25079 & 25289

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Company Name: Stantec Australia Pty Ltd (VIC)
Address: Level 22, 570 Bourke Street
Melbourne
VIC 3000

Project Name: WAGGA/KAPOOKA

Order No.:
Report #: 1090100
Phone:
Fax:

Received: Apr 22, 2024 1:28 PM
Due: Apr 30, 2024
Priority: 5 Day
Contact Name: [redacted]

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X
9	0906_QC208_240419	Apr 16, 2024		Water	M24-Ap0057731		X
10	0906_QC209_240419	Apr 16, 2024		Water	M24-Ap0057732		X
11	0906_QC502_240420	Apr 16, 2024		Water	M24-Ap0057733		X
Test Counts						1	11

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Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
3. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with **blue** colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	**mg/L:** milligrams per litre	**ppm:** parts per million
µg/L: micrograms per litre	**ppb:** parts per billion	**%:** Percentage
org/100 mL: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units	**MPN/100 mL:** Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit	**Colour:** Pt-Co Units (CU)	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/kg	< 5			5	Pass	
Perfluoropentanoic acid (PFPeA)	ug/kg	< 5			5	Pass	
Perfluorohexanoic acid (PFHxA)	ug/kg	< 5			5	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/kg	< 5			5	Pass	
Perfluorooctanoic acid (PFOA)	ug/kg	< 5			5	Pass	
Perfluorononanoic acid (PFNA)	ug/kg	< 5			5	Pass	
Perfluorodecanoic acid (PFDA)	ug/kg	< 5			5	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/kg	< 5			5	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/kg	< 5			5	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/kg	< 5			5	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/kg	< 5			5	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/kg	< 5			5	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/kg	< 5			5	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/kg	< 5			5	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	ug/kg	< 5			5	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	ug/kg	< 5			5	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/kg	< 10			10	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/kg	< 10			10	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/kg	< 5			5	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/kg	< 5			5	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/kg	< 5			5	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/kg	< 5			5	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	< 5			5	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	< 5			5	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/kg	< 5			5	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/kg	< 5			5	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/kg	< 5			5	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	ug/kg	< 10			10	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/kg	< 5			5	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/kg	< 5			5	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	116			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	112			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	107			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	134			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	133			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	104			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	111			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	114			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	113			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	108			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	110			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	102			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	107			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	110			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	%	102			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	%	110			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	146			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	99			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	122			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	110			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	138			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	108			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	100			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	111			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	111			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	101			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	140			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	%	113			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	113			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	103			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	M24-Ap0057135	NCP	%	8.4	9.0	7.1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised by:

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: [redacted]

Report **1090100-W**
Project name WAGGA/KAPOOKA
Received Date Apr 22, 2024

Client Sample ID			0315_QC200_240416	0315_QC202_240416	0906_QC203_240416	0906_QC204_240417
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M24-Ap0057723	M24-Ap0057725	M24-Ap0057726	M24-Ap0057727
Date Sampled			Apr 16, 2024	Apr 16, 2024	Apr 16, 2024	Apr 16, 2024
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	0.03	< 0.01	< 0.01	< 0.01
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	0.03	< 0.01	< 0.01	< 0.01
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	[N09]0.02	< 0.01	< 0.01	< 0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
13C4-PFBA (surr.)	1	%	21	94	68	104
13C5-PFPeA (surr.)	1	%	81	92	99	92
13C5-PFHxA (surr.)	1	%	94	87	95	87
13C4-PFHpA (surr.)	1	%	100	86	98	87
13C8-PFOA (surr.)	1	%	102	85	95	89
13C5-PFNA (surr.)	1	%	109	110	118	127
13C6-PFDA (surr.)	1	%	96	88	104	99
13C2-PFUnDA (surr.)	1	%	78	67	74	76
13C2-PFDoDA (surr.)	1	%	72	67	70	74
13C2-PFTeDA (surr.)	1	%	75	58	48	60
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
13C8-FOSA (surr.)	1	%	118	112	121	120
D3-N-MeFOSA (surr.)	1	%	135	108	65	129
D5-N-EtFOSA (surr.)	1	%	133	110	59	131

Client Sample ID			0315_QC200_240416	0315_QC202_240416	0906_QC203_240416	0906_QC204_240417
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M24-Ap0057723	M24-Ap0057725	M24-Ap0057726	M24-Ap0057727
Date Sampled			Apr 16, 2024	Apr 16, 2024	Apr 16, 2024	Apr 16, 2024
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances						
D7-N-MeFOSE (surr.)	1	%	82	82	88	100
D9-N-EtFOSE (surr.)	1	%	82	87	87	104
D5-N-EtFOSAA (surr.)	1	%	75	70	77	78
D3-N-MeFOSAA (surr.)	1	%	80	68	77	75
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	[N09]0.02	< 0.01	< 0.01	< 0.01
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	[N09]0.03	< 0.01	< 0.01	< 0.01
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	[N09]0.02	< 0.01	< 0.01	< 0.01
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
13C3-PFBS (surr.)	1	%	96	94	100	96
18O2-PFHxS (surr.)	1	%	93	91	95	96
13C8-PFOS (surr.)	1	%	90	86	91	91
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
13C2-4:2 FTSA (surr.)	1	%	141	87	111	72
13C2-6:2 FTSA (surr.)	1	%	112	77	97	77
13C2-8:2 FTSA (surr.)	1	%	77	67	84	75
13C2-10:2 FTSA (surr.)	1	%	100	74	83	88
PFASs Summations						
Sum (PFHxS + PFOS)*	0.01	ug/L	0.05	< 0.01	< 0.01	< 0.01
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	0.04	< 0.01	< 0.01	< 0.01
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	0.07	< 0.01	< 0.01	< 0.01
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	0.15	< 0.05	< 0.05	< 0.05
Sum of PFASs (n=30)*	0.1	ug/L	0.15	< 0.1	< 0.1	< 0.1

Client Sample ID			0906_QC205_240417	0906_QC206_240418	0906_QC207_240419	0906_QC208_240419
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M24-Ap0057728	M24-Ap0057729	M24-Ap0057730	M24-Ap0057731
Date Sampled			Apr 16, 2024	Apr 16, 2024	Apr 16, 2024	Apr 16, 2024
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	0.02
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01

Client Sample ID			0906_QC205_240417	0906_QC206_240418	0906_QC207_240419	0906_QC208_240419
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M24-Ap0057728	M24-Ap0057729	M24-Ap0057730	M24-Ap0057731
Date Sampled			Apr 16, 2024	Apr 16, 2024	Apr 16, 2024	Apr 16, 2024
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
13C4-PFBA (surr.)	1	%	120	62	104	103
13C5-PFPeA (surr.)	1	%	99	86	99	91
13C5-PFHxA (surr.)	1	%	94	87	95	89
13C4-PFHpA (surr.)	1	%	94	90	100	95
13C8-PFOA (surr.)	1	%	93	87	99	93
13C5-PFNA (surr.)	1	%	125	114	135	133
13C6-PFDA (surr.)	1	%	99	94	111	113
13C2-PFUnDA (surr.)	1	%	71	67	81	80
13C2-PFDoDA (surr.)	1	%	66	64	76	75
13C2-PFTeDA (surr.)	1	%	41	56	48	48
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
13C8-FOSA (surr.)	1	%	118	117	128	118
D3-N-MeFOSA (surr.)	1	%	109	115	123	34
D5-N-EtFOSA (surr.)	1	%	108	112	123	32
D7-N-MeFOSE (surr.)	1	%	95	83	104	91
D9-N-EtFOSE (surr.)	1	%	96	82	110	87
D5-N-EtFOSAA (surr.)	1	%	73	67	84	86
D3-N-MeFOSAA (surr.)	1	%	72	71	81	81
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	[N09]0.04
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	[N09]0.05
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	[N09]0.45
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
13C3-PFBS (surr.)	1	%	100	96	101	101
18O2-PFHxS (surr.)	1	%	97	91	98	93
13C8-PFOS (surr.)	1	%	93	87	99	101

Client Sample ID			0906_QC205_240417	0906_QC206_240418	0906_QC207_240419	0906_QC208_240419
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M24-Ap0057728	M24-Ap0057729	M24-Ap0057730	M24-Ap0057731
Date Sampled			Apr 16, 2024	Apr 16, 2024	Apr 16, 2024	Apr 16, 2024
Test/Reference	LOR	Unit				
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
13C2-4:2 FTSA (surr.)	1	%	89	92	89	71
13C2-6:2 FTSA (surr.)	1	%	89	83	93	78
13C2-8:2 FTSA (surr.)	1	%	83	71	87	80
13C2-10:2 FTSA (surr.)	1	%	75	76	91	95
PFASs Summations						
Sum (PFHxS + PFOS)*	0.01	ug/L	< 0.01	< 0.01	< 0.01	0.45
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	< 0.01	< 0.01	< 0.01	< 0.01
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	< 0.01	< 0.01	< 0.01	0.45
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	< 0.05	< 0.05	< 0.05	0.51
Sum of PFASs (n=30)*	0.1	ug/L	< 0.1	< 0.1	< 0.1	0.57

Client Sample ID			0906_QC209_240419	0906_QC502_240420
Sample Matrix			Water	Water
Eurofins Sample No.			M24-Ap0057732	M24-Ap0057733
Date Sampled			Apr 16, 2024	Apr 16, 2024
Test/Reference	LOR	Unit		
Perfluoroalkyl carboxylic acids (PFCAs)				
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01	< 0.01
13C4-PFBA (surr.)	1	%	91	80
13C5-PFPeA (surr.)	1	%	101	95
13C5-PFHxA (surr.)	1	%	96	92
13C4-PFHpA (surr.)	1	%	99	94
13C8-PFOA (surr.)	1	%	101	94
13C5-PFNA (surr.)	1	%	139	132
13C6-PFDA (surr.)	1	%	113	104
13C2-PFUnDA (surr.)	1	%	80	77
13C2-PFDoDA (surr.)	1	%	71	76
13C2-PFTeDA (surr.)	1	%	40	67

Client Sample ID			0906_QC209_240419	0906_QC502_240420
Sample Matrix			Water	Water
Eurofins Sample No.			M24-Ap0057732	M24-Ap0057733
Date Sampled			Apr 16, 2024	Apr 16, 2024
Test/Reference	LOR	Unit		
Perfluoroalkyl sulfonamido substances				
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05
13C8-FOSA (surr.)	1	%	130	112
D3-N-MeFOSA (surr.)	1	%	122	109
D5-N-EtFOSA (surr.)	1	%	118	111
D7-N-MeFOSE (surr.)	1	%	105	88
D9-N-EtFOSE (surr.)	1	%	104	90
D5-N-EtFOSAA (surr.)	1	%	85	76
D3-N-MeFOSAA (surr.)	1	%	82	74
Perfluoroalkyl sulfonic acids (PFSAs)				
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	< 0.01	[N09]0.02
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01	< 0.01
13C3-PFBS (surr.)	1	%	102	99
18O2-PFHxS (surr.)	1	%	103	98
13C8-PFOS (surr.)	1	%	100	90
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	0.05	ug/L	< 0.05	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
13C2-4:2 FTSA (surr.)	1	%	91	85
13C2-6:2 FTSA (surr.)	1	%	90	85
13C2-8:2 FTSA (surr.)	1	%	87	82
13C2-10:2 FTSA (surr.)	1	%	81	83
PFASs Summations				
Sum (PFHxS + PFOS)*	0.01	ug/L	< 0.01	0.02
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	< 0.01	0.02
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	< 0.01	0.02
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	< 0.05	< 0.05
Sum of PFASs (n=30)*	0.1	ug/L	< 0.1	< 0.1

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Melbourne	Apr 24, 2024	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Melbourne	Apr 24, 2024	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Melbourne	Apr 24, 2024	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Melbourne	Apr 24, 2024	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
PFASs Summations	Melbourne	Apr 22, 2024	
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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Eurofins Environment Testing Australia Pty Ltd
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Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	T: +61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794	Site# 25079 & 25289

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Penrose,	Mount Wellington,	Rolleston,	Gate Pa,
Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Company Name: Stantec Australia Pty Ltd (VIC)
Address: Level 22, 570 Bourke Street
Melbourne
VIC 3000

Project Name: WAGGA/KAPOOKA

Order No.:
Report #: 1090100
Phone:
Fax:

Received: Apr 22, 2024 1:28 PM
Due: Apr 30, 2024
Priority: 5 Day
Contact Name: [redacted]

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	0315_QC200_240416	Apr 16, 2024		Water	M24-Ap0057723		X
2	0315_QC201_240416	Apr 16, 2024		Soil	M24-Ap0057724	X	X
3	0315_QC202_240416	Apr 16, 2024		Water	M24-Ap0057725		X
4	0906_QC203_240416	Apr 16, 2024		Water	M24-Ap0057726		X
5	0906_QC204_240417	Apr 16, 2024		Water	M24-Ap0057727		X
6	0906_QC205_240417	Apr 16, 2024		Water	M24-Ap0057728		X
7	0906_QC206_240418	Apr 16, 2024		Water	M24-Ap0057729		X
8	0906_QC207_240419	Apr 16, 2024		Water	M24-Ap0057730		X

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Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	T: +61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794	Site# 25079 & 25289

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NATA# 2377
Site# 2370

Eurofins ProMicro Pty Ltd
ABN: 47 009 120 549

Perth ProMicro
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+61 8 6253 4444
NATA# 2561
Site# 2554

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

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35 O'Rorke Road	Unit C1/4 Pacific Rise,	43 Detroit Drive	1277 Cameron Road,
Penrose,	Mount Wellington,	Rolleston,	Gate Pa,
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IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Company Name: Stantec Australia Pty Ltd (VIC)
Address: Level 22, 570 Bourke Street
Melbourne
VIC 3000

Project Name: WAGGA/KAPOOKA

Order No.:
Report #: 1090100
Phone:
Fax:

Received: Apr 22, 2024 1:28 PM
Due: Apr 30, 2024
Priority: 5 Day
Contact Name: [redacted]

Eurofins Analytical Services Manager : [redacted]

Sample Detail						Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X
9	0906_QC208_240419	Apr 16, 2024		Water	M24-Ap0057731		X
10	0906_QC209_240419	Apr 16, 2024		Water	M24-Ap0057732		X
11	0906_QC502_240420	Apr 16, 2024		Water	M24-Ap0057733		X
Test Counts						1	11

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
3. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with **blue** colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	**mg/L:** milligrams per litre	**ppm:** parts per million
µg/L: micrograms per litre	**ppb:** parts per billion	**%:** Percentage
org/100 mL: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units	**MPN/100 mL:** Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit	**Colour:** Pt-Co Units (CU)	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.05			0.05	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.01			0.01	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.01			0.01	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.01			0.01	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.01			0.01	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.05			0.05	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.05			0.05	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.05			0.05	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	ug/L	< 0.05			0.05	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	ug/L	< 0.05			0.05	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.05			0.05	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.05			0.05	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.01			0.01	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/L	< 0.01			0.01	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/L	< 0.01			0.01	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.01			0.01	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	ug/L	< 0.05			0.05	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	115			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	138			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	141			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	140			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	144			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	138			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	109			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	115			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	113			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	128			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	114			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	111			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	112			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	116			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	%	108			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	%	113			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	112			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	114			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	120			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	119			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	124			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	109			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	110			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	113			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	113			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	109			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	112			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	%	118			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	116			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	120			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	M24-Ap0057728	CP	%	116			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	M24-Ap0057728	CP	%	140			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	M24-Ap0057728	CP	%	141			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	M24-Ap0057728	CP	%	140			50-150	Pass	
Perfluorooctanoic acid (PFOA)	M24-Ap0057728	CP	%	144			50-150	Pass	
Perfluorononanoic acid (PFNA)	M24-Ap0057728	CP	%	136			50-150	Pass	
Perfluorodecanoic acid (PFDA)	M24-Ap0057728	CP	%	111			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	M24-Ap0057728	CP	%	112			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	M24-Ap0057728	CP	%	114			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	M24-Ap0057728	CP	%	94			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M24-Ap0057728	CP	%	117			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	M24-Ap0057728	CP	%	112			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M24-Ap0057728	CP	%	114			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M24-Ap0057728	CP	%	115			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	M24-Ap0057728	CP	%	107			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	M24-Ap0057728	CP	%	116			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M24-Ap0057728	CP	%	111			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M24-Ap0057728	CP	%	109			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	M24-Ap0057728	CP	%	120			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	M24-Ap0057728	CP	%	113			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	M24-Ap0057728	CP	%	121			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M24-Ap0057728	CP	%	106			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M24-Ap0057728	CP	%	110			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M24-Ap0057728	CP	%	120			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	M24-Ap0057728	CP	%	112			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	M24-Ap0057728	CP	%	99			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	M24-Ap0057728	CP	%	108			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	M24-Ap0057728	CP	%	111			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	M24-Ap0057728	CP	%	116			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	M24-Ap0057728	CP	%	116			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorooctanoic acid (PFOA)	M24-Ap0057782	NCP	ug/L	0.04	0.04	3.0	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorohexanesulfonic acid (PFHxS)	M24-Ap0052066	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	M24-Ap0052066	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	M24-Ap0057772	NCP	ug/L	0.51	0.54	5.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised by:

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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APPENDIX

D

FIELD RECORDS & CALIBRATION CERTIFICATES

Cardno

now

Stantec

Bore ID	Property	Easting	Northing	Monitoring Date	Bore Depth (m)	Top of casing (mAHD)	Top of Screen (mBTOC)	Bottom of Screen (mBTOC)	SWL (mbTOC)[1]	RL (mAHD)	Water Colour	Turbidity	Other Observations on Bore/Site	Duplicate Samples	Bore ID2	Temp (C^0)	DO (mg/L)	EC (Non-Specific) (US/Cm)	EC (ms/Cm)	TDS (mg/L)	pH	Eh (mV)
MW008	On-Base	524926.6	6114754.4	16/04/2024	13.5	-	-	-	7.26	-	Clear	No		-	MW008	18.6	1.86	1857	1.86	1207.1	7.54	111.3
MW103	On-Base	526845.6	6110958.8	16/04/2024	52.1	225.8	49	52	22.815	202.99	Clear	No		-	MW103	19.7	4.97	2166	2.17	1407.9	7.01	174.7
MW104	On-Base	526597.8	6111277.7	16/04/2024	54.12	231.87	38	53	33.352	198.52	Clear slight brown	Low	Thick red sediment at bottom of sleeve, no sheen, no odour	-	MW104	17.9	3.77	4321	4.32	2808.7	6.37	191.7
MW107	On-Base	526628.4	6111282.8	16/04/2024	15.5	230.54	12.5	15.5	11.243	219.30	Clear	No	Red sediment at bottom of sleeve, no odour, no sheen	-	MW107	17.3	2.47	1626	1.63	1056.9	7.16	156
MW109	On-Base	525096.0	6114455.5	16/04/2024	35	193.62	24.4	33.4	22.8	170.82	Clear, with some suspended particles	Low		-	MW109	20.7	2.04	1085	1.09	705.3	6.82	115.9
MW110	On-Base	525327.6	6114785.0	16/04/2024	21.9	180.29	17.4	20.9	10.43	169.86	Slightly cloudy	Low		QC102 & QC202	MW110	19	0.85	2085	2.09	1355.3	6.56	101.4
MW601	On-Base	527164.1	6112666.0	16/04/2024	17.1	205.3	10	16	6.64	198.66	Slightly cloudy	Low		-	MW601	19.6	3.72	640	0.64	416.0	7.05	136.2
MW624	Off-Base	527138.1	6112814.3	16/04/2024	52	205.92	29	51	8.464	197.46	Clear	No	Slight amount of sediment at bottom of sleeve	-	MW624	19.4	1.14	4177	4.18	2715.1	6.91	-62.3
MW625	Off-Base	524517.0	6114881.7	16/04/2024	22	174.572	15.5	21.5	6.05	168.52	Cloudy with suspended particles	Low		-	MW625	15.7	1.83	1,387	1.39	901.6	6.41	-30.5

1. A consolidated gauging round was completed on 16 April 2024

Sample ID	Property	Easting	Northing	Monitoring Date	Sample Depth (m)	Water Body Depth (m)	Flow Rate (m/s)	Flow Rate (Qualitative)	Water Colour	Turbidity	Channel Width (m)	Water Body Condition	Other Observations	Duplicate Samples	Temp (C^0)	DO (mg/L)	EC (Non-Specific) (US/Cm)	TDS (mg/L)	pH	Eh (mV)
SW103	On-Base	526271.4	6110348.6	15/04/2024	0.01	0.05	0	No	Clear	No	0.3	Overland stormwater channel	No foaming, no microorganisms, no algae, sheen, no odour	-	20.1	5.94	216.4	138.5	6.47	176.2
SW106	On-Base	526717.6	6109926.1	Dry.																
SW107	On-Base	526752.7	6110464.8	15/04/2024	0.3	1	0	No	Cloudy, slightly brown	Low	NA	Overland stormwater channel - concrete overflow	No foaming, no microorganisms, no algae, no sheen, no odour	-	22.8	4.54	250.4	160.3	6.74	153.5
SW108	On-Base	526719.2	6110895.1	15/04/2024	0.1	Unknown	0	No	Clear, with yellow tinge	No	NA	Wastewater Treatment Pland Pond	No foaming, no microorganisms, no algae, slight sheen, no odour	QC100 & QC200	17.5	7.38	1037	663.7	9.64	24.4
SW111	On-Base	526686.5	6111169.2	15/04/2024	0.1	0.5	0	No	Clear	Low	NA	Wastewater Treatment Pland Pond	No foaming, no microorganisms, algae, no sheen, no odour	Internal lab QC taken	15.4	2.6	793	207.4	7.95	-0.5
SW118	On-Base	526946.5	6110587.0	Dry.																
SW121	On-Base	527077.5	6111316.7	Dry.																
SW127	On-Base	524610.6	6108182.2	Dry.																
SW136	On-Base	526132.2	6110304.8	15/04/2024	0.15	0.3	0	No	Cloudy	Low	1	Overland stormwater channel	No foaming, no microorganisms, no algae, organic sheen, no odour	-	21.1	0.67	308	197.1	6.56	-31.6
SW140	On-Base	526449.8	6109549.2	16/04/2024	0.1	0.15	0	No	Clear with suspended particles	No	NA	Sewage channel	No foaming, no microorganisms, no algae, no sheen, slight sewer odour	-	21.4	5.09	610	390.4	7.53	181.6
SW144	On-Base	526185.0	6110390.0	15/04/2024	0.1	Unknown	1	Medium	Brown	Low	NA	Sewage channel	No foaming, no microorganisms, no algae, no sheen, sewage odour	-	22	1.04	704	450.6	8.13	29.2
SW148	On-Base	526404.5	6110931.5	15/04/2024	0.1	0.2	1	Medium	Cloudy with a yellow tinge	Medium	NA	Sewage channel	No foaming, no microorganisms, no algae, no sheen, sewage odour	-	21.1	0.82	864	553.0	8.55	28.6
SW149	On-Base	526455.0	6111012.0	Dry.																
SW614	Off-Base	527151.5	6112749.5	Dry.																
SW677	Off-Base	526647.3	6114308.7	Dry.																
SW680	Off-Base	[redacted]		16/04/2024	0.2	0.75	0	No	Cloudy, slightly yellow	Low	NA	Pond	No foaming, no microorganisms, algae, no sheen, no odour	-	25.3	5.7	171.5	77.4	7.43	92

1. Some co-ordinates are not shown due to privacy reasons

Location ID	Property	Easting	Northing	Monitoring Date	Observations	Duplicate Samples
SD103	On-Base	526271.4	6110348.6	15/04/2024	Gravelly sand, light brown slight orange, fine gravels, loose, wet, no odour, firm	-
SD106	On-Base	526717.6	6109926.1	15/04/2024	Silty clay, soft, loose, low plastic, dark brown, organic, moist, no odour	-
SD107	On-Base	526752.7	6110464.8	15/04/2024	silty clay, light brown, wet, low plastic, soft, no odour, organic roots and reeds	-
SD108	On-Base	526719.2	6110895.1	15/04/2024	Silty clay, light brown, poorly graded, trace gravel, slightly firm, moist, slight organic odour	-
SD111	On-Base	526686.5	6111169.2	15/04/2024	Silty clay brown Brown moist organic material present fine grains poorly graded trace gravel	0315_QC101_240416 & 0315_QC201_240416
SD118	On-Base	526946.5	6110587.0	16/04/2024	Silty sandy clay, light brown slight orange, soft, dry, organic, no odour	-
SD121	On-Base	527077.5	6111316.7	16/04/2024	Silty clay slightly firm, dark brown slightly moist. some organic material presence fine to medium grained well graded Trace gravels	-
SD127	On-Base	524610.6	6108182.2	16/04/2024	Silty clay slightly moist to dry medium grained poorly graded some root material. present Brown mottled with orange no odor	-
SD136	On-Base	526133.0	6110304.1	15/04/2024	Clayey silt, moist fine-grained browned Roots matter present poorly graded loose no odor	-
SD614	Off-Base	527151.5	6112749.5	16/04/2024	Silty clay, brown dark grey, slightly moist, low plastic, no odour	-
SD677	Off-Base	526647.3	6114308.7	16/04/2024	Silty clay, firm, brown mottled orange, organic, dry, no odour	-

Stantec

Equipment Bump Test Record
YSI ProPlus Water Quality Meter

Project Management
YSI Bump Test Record

Date of Bump Test	Job Number	Unit No. Brand/Model	Ambient Air Oxygen Calibration		Zero % Oxygen Solution Calibration		Standard Concentrations (Y if present)		Ambient Temperature (°C)	Bump Test Readings	Bump Test Readings within ±5%?			Comment	Test by (Name)	(Signature)
16.4	0315		100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: 2.4 µS/cm @ 25 °C ORP: 247 mV @ 10 °C	Y / N Y / N Y / N Y / N Y / N	11.4	pH 4.00: 4.01 pH 7.00: 7.07 pH 10.00 — EC: 2.7 µS/cm @ 11 °C ORP: 245 mV @ 11 °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N		JL	
17.4	0315		100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: 2.76 µS/cm @ 25 °C ORP: 231 mV @ 15 °C	Y / N Y / N Y / N Y / N Y / N	13.1	pH 4.00: 3.97 pH 7.00: 7.09 pH 10.00 EC: 2.7 µS/cm @ 13 °C ORP: 240 mV @ 13 °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N		JL	
18.4	0315		100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: 2.76 µS/cm @ 25 °C ORP: 241 mV @ 15 °C	Y / N Y / N Y / N Y / N Y / N	12.7	pH 4.00: 4.02 pH 7.00: 7.01 pH 10.00 EC: 2.86 µS/cm @ 12.7 ORP: 238 mV @ 12.7	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N		JL	
19.4	0315		100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: 2.76 µS/cm @ 25 °C ORP: 241 mV @ 10 °C	Y / N Y / N Y / N Y / N Y / N	11.2	pH 4.00: 4.04 pH 7.00: 6.95 pH 10.00 EC: 2.93 µS/cm @ 11 °C ORP: 240 mV @ 11 °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N		JL	
20.4	0315		100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: 2.76 µS/cm @ 25 °C ORP: 234 mV @ 15 °C	Y / N Y / N Y / N Y / N Y / N	16.0	pH 4.00: 4.05 pH 7.00: 6.92 pH 10.00 EC: 2.65 µS/cm @ 16 °C ORP: 235 mV @ 16 °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N		JL	
			100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: ___ µS/cm @ _ °C ORP: __ mV @ _ °C	Y / N Y / N Y / N Y / N Y / N		pH 4.00: pH 7.00: pH 10.00 EC: ___ µS/cm @ _ °C ORP: __ mV @ _ °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N			
			100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: ___ µS/cm @ _ °C ORP: __ mV @ _ °C	Y / N Y / N Y / N Y / N Y / N		pH 4.00: pH 7.00: pH 10.00 EC: ___ µS/cm @ _ °C ORP: __ mV @ _ °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N			
			100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: ___ µS/cm @ _ °C ORP: __ mV @ _ °C	Y / N Y / N Y / N Y / N Y / N		pH 4.00: pH 7.00: pH 10.00 EC: ___ µS/cm @ _ °C ORP: __ mV @ _ °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N			
			100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: ___ µS/cm @ _ °C ORP: __ mV @ _ °C	Y / N Y / N Y / N Y / N Y / N		pH 4.00: pH 7.00: pH 10.00 EC: ___ µS/cm @ _ °C ORP: __ mV @ _ °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N			

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Equipment Bump Test Record
YSI ProPlus Water Quality Meter

Project Management
YSI Bump Test Record

Date of Bump Test	Job Number	Unit No. Brand/Model	Ambient Air Oxygen Calibration		Zero % Oxygen Solution Calibration		Standard Concentrations (Y if present)		Ambient Temperature (°C)	Bump Test Readings	Bump Test Readings within ±5%?			Comment	Test by (Name)	(Signature)
16/4	3043609/14		100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: 2110 µS/cm @ 25 °C ORP: 247 mV @ 10 °C	Y / N Y / N Y / N Y / N Y / N	9°C	pH 4.00: 4.02 pH 7.00: 7.11 pH 10.00 X EC: 2802 µS/cm @ 25 °C ORP: 25 mV @ 10 °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N		MA	
17/4	11		100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: 2160 µS/cm @ 25 °C ORP: __ mV @ __ °C	Y / N Y / N Y / N Y / N Y / N	13.6	pH 4.00: 4.06 pH 7.00: 6.94 pH 10.00 X EC: 2717 µS/cm @ 25 °C ORP: 25 mV @ 13 °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N	@EC Recal	MA	
18/4	11		100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: __ µS/cm @ _ °C ORP: __ mV @ _ °C	Y / N Y / N Y / N Y / N Y / N	12.7	pH 4.00: 4.08 pH 7.00: 6.92 pH 10.00 EC: 1413 µS/cm @ 25 °C ORP: 248 mV @ 11 °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N	Redox Re cal	MA	
19/4	11		100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: __ µS/cm @ _ °C ORP: __ mV @ _ °C	Y / N Y / N Y / N Y / N Y / N	[illegible]	pH 4.00: 4[illegible] pH 7.00: 7.07 pH 10.00 EC: __ µS/cm @ _ °C ORP: 25 mV @ 11 °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N		MA	
20/4	11		100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: __ µS/cm @ _ °C ORP: __ mV @ _ °C	Y / N Y / N Y / N Y / N Y / N	16.0	pH 4.00: 4.02 pH 7.00: 7.09 pH 10.00 X EC: 2802 µS/cm @ 25 °C ORP: 243 mV @ 15 °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N		MA	
			100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: __ µS/cm @ _ °C ORP: __ mV @ _ °C	Y / N Y / N Y / N Y / N Y / N		pH 4.00: pH 7.00: pH 10.00 EC: __ µS/cm @ _ °C ORP: __ mV @ _ °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N			
			100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: __ µS/cm @ _ °C ORP: __ mV @ _ °C	Y / N Y / N Y / N Y / N Y / N		pH 4.00: pH 7.00: pH 10.00 EC: __ µS/cm @ _ °C ORP: __ mV @ _ °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N			
			100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: __ µS/cm @ _ °C ORP: __ mV @ _ °C	Y / N Y / N Y / N Y / N Y / N		pH 4.00: pH 7.00: pH 10.00 EC: __ µS/cm @ _ °C ORP: __ mV @ _ °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N			
			100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: __ µS/cm @ _ °C ORP: __ mV @ _ °C	Y / N Y / N Y / N Y / N Y / N		pH 4.00: pH 7.00: pH 10.00 EC: __ µS/cm @ _ °C ORP: __ mV @ _ °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N			

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Date of Bump Test	Job Number	Unit No. Brand/Model	Ambient Air Oxygen Calibration		Zero % Oxygen Solution Calibration		Standard Concentrations (Y if present)		Ambient Temperature (°C)	Bump Test Readings	Bump Test Readings within ±5%?			Comment	Test by (Name)	(Signature)
16.4	0315		100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: 2[illegible] µS/cm @ [illegible] °C ORP: 247 mV @ 10 °C	Y / N Y / N Y / N Y / N Y / N	11.4	pH 4.00: 4.01 pH 7.00: 7.07 pH 10.00 — EC: 27[illegible] µS/cm @ 11 °C ORP: 245 mV @ 11 °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N		[redacted]	
17.4	0315		100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: 2.76 µS/cm @ 25 °C ORP 231 mV @ 15 °C	Y / N Y / N Y / N Y / N Y / N	13.1	pH 4.00: 3.97 pH 7.00: 7.09 pH 10.00 EC: 2[illegible] µS/cm @ 13 °C ORP 240 mV @ 13 °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N			
18.4	0315		100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: 2[illegible] µS/cm @ 25 °C ORP: 241 mV @ 15 °C	Y / N Y / N Y / N Y / N Y / N	12.7	pH 4.00: 4.02 pH 7.00: 7.01 pH 10.00 EC: 2.86 µS/cm @ 12.7 ORP: 23[illegible] mV @ 12.7	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N			
19.4	0315		100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: 3.[illegible] µS/cm @ 25 °C ORP: 24[illegible] mV @ 10 °C	Y / N Y / N Y / N Y / N Y / N	11.2	pH 4.00: 4.04 pH 7.00: 6.95 pH 10.00 EC: 2.9[illegible] µS/cm @ 11 °C ORP: 240 mV @ 11 °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N			
20.4	0315		100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: 2.[illegible] µS/cm @ 25 ORP 234 mV @ 15 °C	Y / N Y / N Y / N Y / N Y / N	16.0	pH 4.00: 4.05 pH 7.00: 6.92 pH 10.00 EC: 2.65 µS/cm @ 16 °C ORP: 235 mV @ 16 °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N			
			100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: ___ µS/cm @ _ °C ORP: __ mV @ _ °C	Y / N Y / N Y / N Y / N Y / N		pH 4.00: pH 7.00: pH 10.00 EC: ___ µS/cm @ _ °C ORP: __ mV @ _ °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N			
			100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: ___ µS/cm @ _ °C ORP: __ mV @ _ °C	Y / N Y / N Y / N Y / N Y / N		pH 4.00: pH 7.00: pH 10.00 EC: ___ µS/cm @ _ °C ORP: __ mV @ _ °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N			
			100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: ___ µS/cm @ _ °C ORP: __ mV @ _ °C	Y / N Y / N Y / N Y / N Y / N		pH 4.00: pH 7.00: pH 10.00 EC: ___ µS/cm @ _ °C ORP: __ mV @ _ °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N			
			100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: ___ µS/cm @ _ °C ORP: __ mV @ _ °C	Y / N Y / N Y / N Y / N Y / N		pH 4.00: pH 7.00: pH 10.00 EC: ___ µS/cm @ _ °C ORP: __ mV @ _ °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N			

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Project Management
YSI Bump Test Record

Date of Bump Test	Job Number	Unit No. Brand/Model	Ambient Air Oxygen Calibration		Zero % Oxygen Solution Calibration		Standard Concentrations (Y if present)		Ambient Temperature (°C)	Bump Test Readings	Bump Test Readings within ±5%?			Comment	Test by (Name)	(Signature)
16/4	3043691/4		100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: 2110 µS/cm @ 25 °C ORP: 251 mV @ 10 °C	Y / N Y / N Y / N Y / N Y / N	9°C	pH 4.00: 4.02 pH 7.00: 7.11 pH 10.00 X EC: 2802 µS/cm @ 25 °C ORP: 25 mV @ 10 °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N		[redacted]	
17/4	11		100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: 2160 µS/cm @ 25 °C ORP: __ mV @ __ °C	Y / N Y / N Y / N Y / N Y / N	13.6	pH 4.00: 4.06 pH 7.00: 6.94 pH 10.00 X EC: 2717 µS/cm @ 25 °C ORP: 25 mV @ 13 °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N	@EC Recal		
18/4	11		100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: __ µS/cm @ _ °C ORP: __ mV @ _ °C	Y / N Y / N Y / N Y / N Y / N	12.7	pH 4.00: 4.08 pH 7.00: 6.92 pH 10.00 EC: 1413 µS/cm @ 25 °C ORP: 248 mV @ 11 °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N	Redox Re cal		
19/4	11		100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: __ µS/cm @ _ °C ORP: __ mV @ _ °C	Y / N Y / N Y / N Y / N Y / N	[illegible]	pH 4.00: 4[illegible] pH 7.00: 7.07 pH 10.00 EC: __ µS/cm @ _ °C ORP: 25 mV @ 11 °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N			
20/4	11		100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: __ µS/cm @ _ °C ORP: __ mV @ _ °C	Y / N Y / N Y / N Y / N Y / N	16.0	pH 4.00: 4.02 pH 7.00: 7.09 pH 10.00 X EC: 2802 µS/cm @ 25 °C ORP: 242 mV @ 15 °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N			
			100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: __ µS/cm @ _ °C ORP: __ mV @ _ °C	Y / N Y / N Y / N Y / N Y / N		pH 4.00: pH 7.00: pH 10.00 EC: __ µS/cm @ _ °C ORP: __ mV @ _ °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N			
			100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: __ µS/cm @ _ °C ORP: __ mV @ _ °C	Y / N Y / N Y / N Y / N Y / N		pH 4.00: pH 7.00: pH 10.00 EC: __ µS/cm @ _ °C ORP: __ mV @ _ °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N			
			100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: __ µS/cm @ _ °C ORP: __ mV @ _ °C	Y / N Y / N Y / N Y / N Y / N		pH 4.00: pH 7.00: pH 10.00 EC: __ µS/cm @ _ °C ORP: __ mV @ _ °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N			
			100% Saturation?	Y / N	0% Calibration	Y / N	pH 4.00 pH 7.00 pH 10.00 EC: __ µS/cm @ _ °C ORP: __ mV @ _ °C	Y / N Y / N Y / N Y / N Y / N		pH 4.00: pH 7.00: pH 10.00 EC: __ µS/cm @ _ °C ORP: __ mV @ _ °C	pH 4.00: pH 7.00: pH 10.00 EC: ORP: Temp:	(± pH 0.2) (± pH 0.2) (± pH 0.2) (± 150µS/cm) (± 10mV) (± 2°C)	Y / N Y / N Y / N Y / N Y / N Y / N			

F3.01 – Quality Control Sample Register

Project Details	
Project Name: Kapooka	Job Number: 304300114
Site Address: Kapooka Base	PP/PM:
Client Company/Contact:	Date:
Persons Present:	Notes By:

Quality Control Requirements

Standard QC Sample Requirements (see Proposal for project specific details)

Rinsate Blank:	1/day (even if only placed on hold)
DI Water Blank:	1/day (even if only placed on hold)
Trip Blank:	1/day or 1/esky (if volatiles are suspected or present at site)
Blind Replicate (Primary List):	1 in 20 primary samples
Split Replicate (Secondary List):	1 in 20 primary samples

Labelling

Samples to be labelled **QC##_date** where "**##**" is a numerical sequence commencing at **01** for each field event and **date** is the date of sampling in ddmmyyyy format (**e.g. QC01_03112010**)

Quality Control Sample Register

QC Sample *e.g. QC01_03112010*	***Primary Sample***	***Description***	***DI Water Batch Number***
QC100/200_240416	SW108	Dup/Trip	
QC101/201_240416	SD111	Dup/Trip	
QC102/202_240416	MW110	Dup/Trip	
QC300_240415	-	Rinsate	
QC301_240415	-	Rinsate	
QC302_240416	-	Rinsate	
QC303_240416	-	Rinsate	

Equipment Calibration Form
YSI ProPlus

Enqip #: 22054
Company: Stantec Australia Pty Ltd
Consultant: Jeff Li
PO #: 304300114
Certificate #: 32529

INSTRUMENT IDENTIFICATION

Model Number: 6050000
Serial Number: 18L100379
Instrument Type: YSI ProPlus

INSPECTION RECORD

Batteries Checked:	PASS	**Date & Time:**	PASS
Electrodes Cleaned/Checked:	PASS	**Temperature:**	PASS

CALIBRATION DETAILS

Sensor	Cal Solution	Value	Reading
pH	Buffer 4.00	4.00 pH	4.00 pH
	Buffer 7.00	7.00 pH	7.00 pH
Redox	Standard ORP	241.0 mV @ 15.0 °C	241.0 mV
O_2	Zero Dissolved Oxygen	0.0 %	0.0 %
	Air	100.0 %	100.0 %
Conductivity	Standard Conductivity	2.76 mS/cm	2.76 mS/cm

Calibration Successful: YES

Calibrated By: James Ziemkiewicz **Test Date:** 12/04/2024

Instrument Quality Report
Interface Meter

Enqip #: 22054
Company: Stantec Australia Pty Ltd
Consultant: Jeff Li
PO #: 304300114
Certificate #: 32530

INSTRUMENT IDENTIFICATION

Instrument Type: Solinst Interface Meter
Model Number: 122
Serial Number: IM-1607

INSPECTION RECORD

Battery:	PASS	**Water Tone:**	PASS
Tape Condition:	PASS	**Hydrocarbon Tone:**	PASS

Tested By: James Ziemkiewicz **Test Date:** 12/04/2024

Equipment Quality Report
Water Level Meter

Enqip #: 22054
Company: Stantec Australia Pty Ltd
Consultant: Jeff Li
PO #: 304300114
Certificate #: 32531

INSTRUMENT IDENTIFICATION

Model Number: 100/122
Serial Number: 336585
Instrument Type: Solinst Interface Meter

INSPECTION RECORD

Battery:	PASS	**Water Beeper:**	PASS
Tape Condition:	PASS	**Equipment Condition:**	PASS

Tested By: James Ziemkiewicz **Test Date:** 12/04/2024

Equipment Calibration Form
YSI ProPlus

Enqip #: 22054
Company: Stantec Australia Pty Ltd
Consultant: Jeff Li
PO #: 304300114
Certificate #: 32528

INSTRUMENT IDENTIFICATION

Model Number: 6050000
Serial Number: 18G100362
Instrument Type: YSI ProPlus

INSPECTION RECORD

Batteries Checked:	PASS	**Date & Time:**	PASS
Electrodes Cleaned/Checked:	PASS	**Temperature:**	PASS

CALIBRATION DETAILS

Sensor	Cal Solution	Value	Reading
pH	Buffer 4.00	4.00 pH	4.00 pH
	Buffer 7.00	7.00 pH	7.00 pH
Redox	Standard ORP	241.0 mV @ 15.0 °C	241.0 mV
O_2	Zero Dissolved Oxygen	0.0 %	0.0 %
	Air	100.0 %	100.0 %
Conductivity	Standard Conductivity	2.76 mS/cm	2.76 mS/cm

Calibration Successful: YES

Calibrated By: James Ziemkiewicz **Test Date:** 12/04/2024

Equipment Calibration Form
YSI ProPlus

Enqip #: 22054
Company: Stantec Australia Pty Ltd
Consultant: [redacted]
PO #: 304300114
Certificate #: 32529

INSTRUMENT IDENTIFICATION

Model Number: 6050000
Serial Number: 18L100379
Instrument Type: YSI ProPlus

INSPECTION RECORD

Batteries Checked:	PASS	**Date & Time:**	PASS
Electrodes Cleaned/Checked:	PASS	**Temperature:**	PASS

CALIBRATION DETAILS

Sensor	Cal Solution	Value	Reading
pH	Buffer 4.00	4.00 pH	4.00 pH
	Buffer 7.00	7.00 pH	7.00 pH
Redox	Standard ORP	241.0 mV @ 15.0 °C	241.0 mV
O_2	Zero Dissolved Oxygen	0.0 %	0.0 %
	Air	100.0 %	100.0 %
Conductivity	Standard Conductivity	2.76 mS/cm	2.76 mS/cm

Calibration Successful: YES

Calibrated By: [redacted] **Test Date:** 12/04/2024

Instrument Quality Report
Interface Meter

Enqip #: 22054
Company: Stantec Australia Pty Ltd
Consultant: [redacted]
PO #: 304300114
Certificate #: 32530

INSTRUMENT IDENTIFICATION

Instrument Type: Solinst Interface Meter
Model Number: 122
Serial Number: IM-1607

INSPECTION RECORD

Battery:	PASS	**Water Tone:**	PASS
Tape Condition:	PASS	**Hydrocarbon Tone:**	PASS

Tested By: [redacted] **Test Date:** 12/04/2024

Equipment Quality Report
Water Level Meter

Enqip #: 22054
Company: Stantec Australia Pty Ltd
Consultant: [redacted]
PO #: 304300114
Certificate #: 32531

INSTRUMENT IDENTIFICATION

Model Number: 100/122
Serial Number: 336585
Instrument Type: Solinst Interface Meter

INSPECTION RECORD

Battery:	PASS	**Water Beeper:**	PASS
Tape Condition:	PASS	**Equipment Condition:**	PASS

Tested By: [redacted]

Test Date: 12/04/2024

Equipment Calibration Form
YSI ProPlus

Enqip #: 22054
Company: Stantec Australia Pty Ltd
Consultant: [redacted]
PO #: 304300114
Certificate #: 32528

INSTRUMENT IDENTIFICATION

Model Number: 6050000
Serial Number: 18G100362
Instrument Type: YSI ProPlus

INSPECTION RECORD

Batteries Checked:	PASS	**Date & Time:**	PASS
Electrodes Cleaned/Checked:	PASS	**Temperature:**	PASS

CALIBRATION DETAILS

Sensor	Cal Solution	Value	Reading
pH	Buffer 4.00	4.00 pH	4.00 pH
	Buffer 7.00	7.00 pH	7.00 pH
Redox	Standard ORP	241.0 mV @ 15.0 °C	241.0 mV
O_2	Zero Dissolved Oxygen	0.0 %	0.0 %
	Air	100.0 %	100.0 %
Conductivity	Standard Conductivity	2.76 mS/cm	2.76 mS/cm

Calibration Successful: YES

Calibrated By: [redacted] **Test Date:** 12/04/2024

APPENDIX

E

DATA QUALITY REVIEW

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Data Quality Review
Blamey Barracks, Kapooka, NSW

This Appendix reviews the Quality Assurance (QA) and Quality Control (QC) documentation. Quality assurance encompasses the actions, procedures, checks and decisions undertaken to ensure sample integrity and representativeness, and the reliability and accuracy of analysis results. The QA documentation should also include an indication of the Data Quality Objectives sought in relation to each significant action, test or process involved in the Assessment.

QC activities measure the effectiveness of the QA procedures by undertaking testing, and then comparing results to previously established objectives. QC work will include the internal laboratory testing as well as results of QC samples submitted such as trip blanks and duplicates. The quality of the information and/or data is deemed satisfactory when the QC results demonstrate that agreed objectives have been met.

Cardno undertook a review of its QA/QC as part of the data validation exercise. The findings are summarised below.

QA/QC Aspects	Evidence and Evaluation
	QA Documentation
Sampling and Analysis Quality Plan and Data Quality Objectives	Cardno was engaged by Department of Defence (the client) to carry out the PFAS Ongoing Monitoring Plan (OMP) at Blamey Barracks Kapooka, Kapooka, NSW, 2661 (the site). The monitoring event was conducted from 15 April to 17 April 2024, and was in general accordance with the scope and limitations presented in Cardno's Sampling and Analysis Quality Plan (SAQP) of 13 April 2024 (Our Ref: OMP002.6.5_Kapooka_SAQP_Rev6). The assessment was carried out in general compliance with the following: ▪ Australian Standard AS 4482-2005 Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 - Non-volatile and semi-volatile compounds. ▪ Department of Defence (2019), Pollution Prevention Management Manual – Annex 1L: Pollution Prevention Guidance - Routine Water Quality Monitoring. ▪ Department of Defence, Department of Energy, 2018, Quality System Manual Schedule B15. ▪ Department of Defence (2021), Defence Contamination Management Manual (DCMM), Annex L – Data Management, August 2018, Amended June 2021. ▪ NSW EPA (2002), The NSW State Groundwater Dependant Ecosystems Policy, April 2002. ▪ NSW EPA (2004), Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales, Publication 1669.2, March 2004 ▪ NSW EPA (2016), Designing Sampling Programs for Sites Potentially Contaminated by PFAS. ▪ NSW EPA (2014), Waste Classification Guidelines – Part 1: Classification of Waste, November 2014. ▪ EPA Victoria (2009), Industrial Waste Resources Guidelines, Sampling and Analysis of Waters, Wastewaters, Soils and Wastes, Publication 701. ▪ Heads of Environmental Protection Authority's Australia and New Zealand (HEPA) (2020), PFAS National Environmental Management Plan (NEMP) Version 2.0, January 2020.

QA/QC Aspects	Evidence and Evaluation
	▪ National Environment Protection Council (NEPC), 1999, National Environmental Protection (Assessment of Site Contamination) Measure (as amended 2013) (ASC NEPM). ▪ National Health and Medical Research Council (NHMRC) (2019), Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water, August 2019. ▪ USEPA (2006), Guidance for the Data Quality Objectives Process (EPA QA/G-4). A quality control program was implemented during the investigation and the quality assurance procedures used have been reiterated in the report. The investigation was carried out in accordance with the Safe Work method Statements (SWMS) and Health, Safety and Environmental Management Plan (HSEMP) for the site. Detailed work plans were also provided for each phase of investigation and are outlined in the SAQP. The Data Quality Objectives were expressed in terms of the purpose of the assessment and the relevant assessment criteria.
Data Validation Report	This review constitutes a data validation review. This was supported by an ESdat generated "QAQC Checker" excel report, summarised in Tables B4 and B5, Appendix B.
Data Representativeness	
Holding Times	Groundwater, surface water and sediment sample analysis holding times for PFAS were compliant.
Background Samples	No background samples were collected as part of this assessment.
Equipment Decontamination	The decontamination methodology conducted during this investigation is documented in the body of the report, and was in general conformance with the SAQP. All re-usable sampling equipment was thoroughly washed using "PFAS-free" & phosphate-free detergent (Liquinox), then double rinsed with clean water before the sample collection.
Data Precision and Accuracy	
QC Testing – Blind Replicates (Primary Lab)	***Groundwater*** ▪ Acceptance Criteria: RPD < 30% ▪ Groundwater Samples Analysed: 9 ▪ Blind Replicate Samples Analysed: 1 ▪ Blind Replicate Analyte Pairs: 28 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 0 ▪ Percentage of Analyte Pairs Exceeding Criteria: 0% There were no RPD exceedances observed for PFAS compounds. RPD results are presented in Table B4, Appendix B. ***Surface water*** ▪ Acceptance Criteria: RPD < 30 % ▪ Surface water Samples Analysed: 9 ▪ Blind Replicate Samples Analysed: 1 ▪ Blind Replicate Analyte Pairs: 28 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 2 ▪ Percentage of Analyte Pairs Exceeding Criteria: 7.14% The RPD exceedances observed were generally minor and likely attributed to the low concentration of analyte pairs. This is not considered to impact the results of the investigation. The RPD results are presented in Table B4, Appendix B.

QA/QC Aspects	Evidence and Evaluation
	Sediment ▪ Acceptance Criteria: RPD < 30 % ▪ Soil Samples Analysed: 11 ▪ Blind Replicate Samples Analysed: 1 ▪ Blind Replicate Analyte Pairs: 28 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 1 ▪ Percentage of Analyte Pairs Exceeding Criteria: 3.57% The RPD exceedances observed were generally minor and likely attributed to the low concentration of analyte pairs. This is not considered to impact the results of the investigation. The RPD results are presented in Table B4, Appendix B.
QC Testing – Field Splits (Secondary Lab)	***Groundwater*** ▪ Acceptance Criteria: RPD < 30% ▪ Groundwater Samples Analysed: 9 ▪ Field Split Samples Analysed: 1 ▪ Field Split Analyte Pairs: 28 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 0 ▪ Percentage of Analyte Pairs Exceeding Criteria: 0% There were no RPD exceedances observed for PFAS compounds. RPD results are presented in Table B4, Appendix B. ***Surface water*** ▪ Acceptance Criteria: RPD < 30 % ▪ Surface water Samples Analysed: 9 ▪ Field Split Samples Analysed: 1 ▪ Field Split Analyte Pairs: 28 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 3 ▪ Percentage of Analyte Pairs Exceeding Criteria: 10.7% The RPD exceedances associated with PFAS compounds are considered to be minor and likely attributed to low concentrations of analyte pairs. Analyte concentrations from the primary sample and their corresponding field split sample pairs did not differ by more than 50%. The RPD exceedances may also be attributed to interlaboratory differences, which can be common and significant, based on a study done by the Queensland Department of Environment and Science and the Victorian Environment Protection Authority Vardy et al, 2018). Overall, these RPD exceedances are not considered to impact the results of the investigation. RPD results are presented in Table B4, Appendix B. ***Sediment*** ▪ Acceptance Criteria: RPD < 30 % ▪ Soil Samples Analysed: 11 ▪ Field Split Samples Analysed: 1 ▪ Field Split Analyte Pairs: 28 (excludes 'analytes' that are a summation of other analytes) ▪ Number of Analyte Pairs Exceeding Criteria: 0 ▪ Percentage of Analyte Pairs Exceeding Criteria: 0% There were no RPD exceedances observed for PFAS compounds. RPD results are presented in Table B4, Appendix B.
Trip Blanks	Three (3) trip blanks were collected and laboratory tested for PFAS. All analytes were reported below the limit of reporting (LOR), with the exception of a result of PFOS that was detected in QC502 with a concentration of 0.02 ug/L. QC502 was the trip blank for the split samples that were delivered to Eurofins. This detection is not considered to affect the validity of the results, as one of the split samples

QA/QC Aspects	Evidence and Evaluation
	(QC202) reported all results <LOR and no significant interlaboratory RPD exceedances were noted. Trip blank results are presented in Table B6, Appendix B.
Laboratory Internal QC	Evidence of the laboratories internal QC testing is present and complete. Both ALS (the primary laboratory) and Eurofins-mgt performed internal QC with adequate testing and mostly satisfactory results for matrix spikes, method blanks and laboratory duplicates.
Laboratory Method Detection Limit	Laboratory reports indicate the method detection limits were lower than the respective assessment criteria.
NATA endorsement of laboratory reports	Laboratory reports were stamped with the NATA endorsement stamp and signature. Laboratory reports are included in Appendix C of this report.
Calibration of Field Equipment	All field equipment used was calibrated by the equipment supplier. Additionally, daily bump tests were performed of the water quality meter throughout the monitoring event. Certificates are included in Appendix D of this report.
Decontamination and Equipment Blanks	All re-usable sampling equipment was thoroughly washed using PFAS & phosphate-free detergent, then double rinsed with clean water before the sample collection. Twelve (12) rinsate blank samples were tested for PFAS, of which all reported PFAS concentrations below the laboratory LOR. Results are shown in Table B5, Appendix B.
Data Comparability	
Full Review of Data	Once all results have been received, Cardno undertook a full review of the data for any anomalies in consideration of historical data at each location (where available), such as first-time detections or new exceedances of adopted criteria being reported at locations which have not had detections or exceedances previously. Where potentially anomalous data is identified or suspected, further confirmatory measures were undertaken such as re-extraction and reanalysis of the sample by the laboratory and/or additional data quality review. The samples from the following monitoring locations were re-extracted and re-analysed by the laboratory: SW680. All originally reported results were confirmed through re-extraction and re-analysis.
Standard Procedures	Fieldwork procedures are detailed in the report and followed the work methods outlined in the SAQP.
Qualified Personnel	Staff involved in managing and reviewing the project and those involved in fieldwork are qualified personnel.
Volatile Losses	Volatile losses are not applicable to PFAS.
Sample Integrity	Field Chain of Custody forms are included in Appendix C of this report and demonstrate sample integrity.
Data Completeness	
Completeness of Test Program	The scope of work undertaken was generally consistent with that set out in the SAQP. Variations to the SAQP are detailed in the Factual Report.
Validity of Data Set	The data quality review indicates no significant systematic errors in the data collection process for surface water, groundwater or sediment and therefore, the data set used as the basis for the assessment is considered valid and complete.

APPENDIX

F

INFORMATION ABOUT ENVIRONMENTAL REPORTS

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About Site Environmental Assessment Reports

1. Introduction

This document explains the Environmental Site Assessment (ESA) process and the context that applies to the use of Environmental Reports issued by Cardno now Stantec.

2. What is an ESA?

Environmental Site Assessments (ESA) are undertaken for a range of purposes, specific to the brief issued by the client in each case. The scope may include one or a combination of any of the following:

- A factual report of the condition of a portion of the site or one aspect of an entire site.
- Assessment of the contamination levels in soil to be removed from a site – a waste classification assessment.
- Validation of the success of remediation of a site or a portion of a site.
- Provision of a professional opinion about the suitability of a site for one or more uses, in terms of its contamination status.

The scope of any ESA needs to be defined at the outset.

An ESA is not an Environmental Audit. Such audits are undertaken in accordance with the provisions of regulations enacted in various states of Australia, and are referred to as Site Audits in some jurisdictions. Statutory audits provide certification by EPA accredited auditors that a site is suitable for one or more uses. An ESA may provide similar advice but cannot be used in place of an audit if the latter is required by regulation in any instance. However in some circumstances and jurisdictions an ESA is sufficient to provide "environmental sign-off" of a site.

An ESA may be undertaken for due diligence purposes, to establish whether the site has been impacted to the extent that some beneficial uses of the site may be precluded. Due diligence audits in many cases may be completed as non-statutory Audits, although in some jurisdictions they can also be statutory audits, if defined as such at the outset.

3. The ESA Process

The Client generally initiates the ESA process by specifying a brief which identifies the specific objectives of the assessment. If not, it is the consultants' duty to so specify the ESA

In the case of an ESA to provide an opinion about the suitability of the site for use, it would be conducted in accordance with NEPM (Site Assessment). Such ESA would not commence until a thorough site history assessment (Phase 1 Assessment: to identify the potential for significant contamination at a site) is conducted. However, where the history is unclear, a broad screening of chemical parameters can be used to test environmental media. This normally includes a broad range of organic and inorganic compounds and elements, often referred to as an Environmental Screen.

(In the case of an ESA for a purpose other than to provide an opinion about the suitability of the site for use, it is not always necessary to undertake a Phase 1 assessment.)

The ESA requires sampling of soil at representative locations across the site. A NATA accredited laboratory performs the analysis of soil. It is impractical for all of the soil to be assessed. The ESA is often based on a statistical method of grid or random sampling, augmented by targeted sampling at locations known or suspected to be contaminated. Guidance on sampling strategy and density is provided in Australian Standard AS4482.1–2005. However, some considerable degree of judgement is still required in the application of any sampling and testing strategy. For example the blanket application of the "hot spot" method presented in this standard is often inappropriate given its limitations.

The field program also investigates the likelihood of contamination below the site surface. Field investigations must sample and test fill as well as the natural soils. If contamination is found then it is common for further work to be undertaken to characterise, to the extent practical, its vertical and horizontal extent. However, where fill is encountered and testing shows it to be uncontaminated, it must be realised that the heterogeneous nature of the material might mean that not all pockets of contaminated material can be detected using normal sampling regimes.

EPA guidelines for auditors, that may be relevant for an ESA, indicate the need in all cases to consider the potential for groundwater contamination in any site. This does not mean all sites need to be drilled to sample groundwater, but it is most often the case. Most hydrogeological settings and groundwater conditions are complex and vary in space and time. The condition of groundwater is investigated to identify if any beneficial use or environmental value of groundwater is precluded due to contamination.

As previously stated for soil, all groundwater at the site cannot be tested. The environmental investigations are conducted in accordance with industry standards and guidelines (e.g. EPA Vic Pub 668). This provides a level of confidence that a sufficiently comprehensive assessment of the groundwater at the site is achieved.

Where an investigation shows that groundwater is polluted, consideration should be given to assessing the risks and the need for and practicality of any clean up.

4. Environmental Assessment Report

The ESA Report details the findings of the ESA. It provides summary information on the site definition, the reasons for the assessment and other relevant facts. It reviews the scope and quality of the site investigations, laboratory testing and data analyses undertaken. These reports also present a review of the contamination status of the site, the need for any further clean up, and an opinion on the suitability of the site for a range of beneficial uses and land uses such as "residential – low density", "commercial" etc, as appropriate.

However, as noted above, some ESA have a narrow scope such as for classification of waste soil for removal from site, and do not make conclusions on suitability of site for use.

The ESA Report generally includes copies of other documents and reports, necessary to support the assessment findings, presented as appendices. These can contain more detailed information than the body of the ESA Report. Care should be taken to also read the appended documents and the ESA report in full.

Cardno now Stantec generally issues reports in electronic form (e-Report) on CD ROM. ESA Reports are issued in this format as Adobe Acrobat™ PDF files. However, a paper copy of the executive summary of the ESA Report is generally issued to the client, and others as required by the brief or by regulation.

5. Limitations of Environmental Assessment Report

The ESA Report is prepared in a manner that can be easily read by a lay person with a legitimate interest in the contamination status of the site, such as the site owner or occupier, EPA and Local Planning Authority. The ESA report is not intended for use by other parties or for other purposes. Anyone who uses the assessment report for purposes other than specified in the report, does so at their own risk.

The site should only be used for one or more of the beneficial uses and land uses identified in the ESA as suitable.

The conditions and qualifications may apply to the suitability of the site for use, and it is the responsibility of the Client to be cognizant of and accept these in accepting the report. Cardno now Stantec are only responsible for the issuing of the ESA report but accepts no liability for the costs incurred in the implementation of ESA findings.

The ESA provides a "snapshot" of the site conditions at the time of the site investigation. Consequently, the report may not be valid at a later time if there has been any change to the contamination status of the site in that time. Verification of the status of the site may be required in cases where a significant time has elapsed, or site conditions have changed since the assessment and audit.

The ESA is necessarily limited by constraints such as time, cost and available information; although normal professional practice at the time has been applied with all due care to prepare the report. A necessary requirement of this process is the horizontal and vertical interpolation of data from discrete locations. However, site conditions are generally not homogenous and some discrepancies will occur between the actual and predicted results at locations not directly sampled. There is a risk that contamination may occur at the site and not be identified by a competent investigation and assessment. The approach adopted in sampling (a combination of statistically based grid and judgmental sampling) seeks to reduce, but cannot eliminate, this risk.

Where unexpected occurrences of contamination arise, subsequent to the issue of the ESA Report, Cardno now Stantec should be permitted to make an interpretation of these facts in relation to the ESA Report findings. Consequently, the Client should inform Cardno now Stantec and seek their opinion. Cardno now Stantec accepts no liability for costs incurred due to such unexpected

occurrences, given the inherent uncertainties in the assessment process.

Cardno now Stantec uses information provided by other parties as the basis for the ESA, and reliance on this information is at the discretion of Cardno now Stantec. However, however Cardno now Stantec cannot guarantee any of the facts, findings or conclusions presented by other parties. Cardno now Stantec will not be liable for the use of information, provided by others that is subsequently found to be intentionally misleading.

The ESA Report is not and does not purport to be anything other than a contaminated land ESA. It is not a geotechnical report and bore logs reproduced are for interpretation of the likely distribution of contamination. They are not intended for geotechnical interpretations and may not be adequate for this purpose.

The ESA Report is not intended to be a comprehensive analysis of the presence and associated risk of asbestos in buildings and services. Where asbestos in buildings and services is known or likely, the report may only caution that an appropriately qualified person be engaged to undertake demolition to avoid contamination of the site.

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19 August 2022

Appendix F. Jacobs (2025). Blamey Barracks Kapooka, PFAS OMP Sampling Event Report: March 2025

Kapooka Barracks, PFAS OMP Sampling Event Report: February-March 2025

Document no: IS419100-KAP-NP-RPT-01
Revision: 2

Department of Defence
PFAS 2021/22 - 194

Kapooka Barracks, OMP
22 August 2025

Kapooka Barracks, PFAS OMP
Sampling Event Report: February-March 2025

Client name:	Department of Defence		
Project name:	Kapooka Barracks, OMP		
Client reference:	PFAS 2021/22 - 194	**Project no:**	IS419100
Document no:	IS419100-KAP-NP-RPT-01	**Project manager:**	GM
Revision:	2	**Prepared by:**	BG
Date:	22 August 2025	**File name:**	IS419100-KAP-NP-RPT-01 Rev 2 KAP OMP Sampling Event Report

Document status: Final

Document history and status

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1	4 Aug 2025	Revised draft to address client comments	AH	GM	DL
2	22 Aug 2025	Final	GM	GM	DL

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Acronyms and abbreviations

Acronym	Term
ADWG	Australian Drinking Water Guidelines
DCMM	Defence Contamination Management Manual
Defence	Department of Defence
DO	Dissolved Oxygen
DoH	Department of Health
DQI	Data Quality Indicator
DQO	Data Quality Objective
EC	Electrical Conductivity
FSANZ	Food Standards Australia New Zealand
HEPA	Heads of Environment Protection Authority
LOR	Limit of Reporting
MW	Monitoring Well
NATA	National Association of Testing Authorities
NEMP	National Environmental Management Plan
NEPM	National Environment Protection Measure
NHMRC	National Health and Medical Research Council
NSW	New South Wales
OMP	Ongoing Monitoring Plan
ORP	Oxidation Redox Potential
PFAS	Per- and poly-fluoroalkyl substances
PFHxS	Perfluorohexane sulfonic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
PMAP	PFAS Management Area Plan
QA/QC	Quality Assurance and Quality Control
Redox	Reduction-oxidation
RPD	Relative Percentage Difference
SAQP	Sampling and Analysis Quality Plan

Acronym	Term
SW	Surface Water

Units	Term
˚C	Degrees Celsius
µg/L	Micrograms per Litre
µS/cm	MicroSiemens per centimetre
g	Grams
km	Kilometre
L	Litre
m	Metre
mAHD	Metres Australian Height Datum
mbgl	Metres below ground level
mbTOC	Metres below Top of Casing
mg/kg	Milligrams per kilogram
mg/L	Milligrams per Litre
mV	MilliVolts

1. Introduction

The Department of Defence (Defence) has engaged Jacobs Group (Australia) Pty Ltd (Jacobs) as the Lead Consultant for the delivery of the Per- and polyfluoroalkyl substances (PFAS) Management Area Plan (PMAP) at Blamey Barracks Kapooka, NSW (the base, Site ID 0315).

Jacobs prepared a Sampling and Analysis Quality Plan (SAQP) for the implementation of the PFAS Ongoing Monitoring Plan (OMP) (Defence, 2021a) at the base and surrounding Management Area (refer to Figure A-1, Appendix A).

The purpose of this OMP is to collect data that will enable Defence to maintain an up to date understanding of the distribution, and transport (migration pathways and rates) of PFAS at the base and in the monitoring area. Refer to Figure A-2, Appendix A for an outline overview of Kapooka Barracks and the monitoring area.

The data 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, 2021a).

1.1 Purpose & Objectives

The objective of the ongoing monitoring plan for the base is to set out a program of monitoring to assess the changes in the nature and extent of PFAS within the environment, where Defence's historical use of legacy AFFF has led to an identified potentially elevated risk to a receptor, or potential future risk to a receptor.

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

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

An OMP Sampling Event Report is prepared after each sampling event. The objective of the sampling event report is to document the observations, information and data collected in accordance with the OMP during each PFAS sampling event.

A separate Ongoing Monitoring Report is prepared periodically to provide an interpretation of the data collected over multiple sampling events.

1.2 Guidelines & Legislation

The OMP and this sampling event report have been developed with reference to the following guidelines and legislation:

- Australian and New Zealand Guidelines (2018). Australian and New Zealand Guidelines for Fresh and Marine Water Quality.
- Australian Standard (2005), AS 4482-2005, Guide to the investigation and sampling of sites with potentially contaminated soils, Part 1 – Non-volatile and semi-volatile compounds (withdrawn as pending revision, referred to for 'state of knowledge').
- Department of Defence (2021b), Contamination Management Manual (DCMM), Annex L – Data Management, August 2019, Amended June 2021.
- Department of Defence (2021c), PFAS OMP Ongoing Monitoring Program Reporting Guidance, Version 0. February 2024.

- Department of Defence (2019), Pollution Prevention Management Manual – Annex 1L: Pollution Prevention Guidance - Routine Water Quality Monitoring.
- NSW EPA (2022), Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales, January 2022.
- Heads of Environmental Protection Authority's Australia and New Zealand (HEPA) (2025), PFAS National Environmental Management Plan (NEMP) Version 3.0, 2025.
- National Environment Protection Council (NEPC) (2018) , National Environmental Protection (Assessment of Site Contamination) Measure (as amended 2013a) (ASC NEPM).
- National Health and Medical Research Council (NHMRC) (2019), Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water, August 2019.
- USEPA (2006), Guidance for the Data Quality Objectives Process (EPA QA/G-4).
- USEPA (2002), Guidance on Environmental Data Verification and Data Validation (EPA QA/G-8).

2. Scope of Work

2.1 Scope

The OMP and SAQP include twice-annual sampling of specific groundwater monitoring wells and surface water sampling locations on base and in the management area off base.

The network of on-base and off-base groundwater monitoring wells included in the OMP is presented in Table 2-1. The groundwater sampling network is shown in Figure A-3, Appendix A.

The groundwater wells were installed with screened sections to target sampling of general formations, however due to the complexity of the sub-surface geology, the description of formations are considered indicative.

Table 2-1. OMP Groundwater Monitoring Network.

On/Off-base	Area	Location ID	Aquifer (Indicative)	Top of Casing (mAHD)	Screening Interval (mAHD)	Total
On-base	Wastewater Treatment Plant	MW103	Regional	225.8	176.8 to 173.8	3
		MW104	Regional	231.87	193.9 to 178.9	
		MW107	Perched	230.54	218.0 to 215.0	
	Former Commandants House	MW008*	Regional	N/A	N/A	1
		MW628*	Regional	177.58	162.6 to 156.6	4
		MW109	Regional	180.29	157.7 to 148.7	
		MW110	Regional	193.62	178.0 to 174.6	
Off-base		MW625	Regional	174.57	159.1 to 153.1	
	Kapooka Creek/flow path	MW601	Perched	205.3	195.3 to 189.3	2
		MW624	Regional	205.92	177.9 to 155.9	
					Total	**10**

Note: (*) At the completion of the Service Provider engagement, Stantec installed a replacement monitoring well for MW008 (old concrete well of unknown construction), with a new bore MW628. Only MW628 was sampled this round. .

Perched: Groundwater that is isolated and exists above an impermeable layer, leading to its separation from larger aquifer systems.

Regional: Typically composed of sedimentary materials such as sand, gravel, and clay, wherein groundwater is stored and transmitted through pore spaces.

Surface water and sediment sampling locations to be sampled on a twice-annual basis are provided in Table 2-2. The surface water and sediment sampling network are shown in Figure A-4, Appendix A.

Table 2-2. OMP Sewer, Surface Water and Sediment Monitoring Locations.

On/Off-base	Area	Location ID	Total
On-base	Overland drainage pathways	SW/SD136	5
		SW/SD103	
		SW/SD106	
		SW/SD107	
		SW/SD118	
	Sewer	SW140	4
		SW144	

On/Off-base	Area	Location ID	Total
		SW148	
		SW149	
	Wastewater Treatment Plant ponds	SW/SD108	2
		SW/SD111	
	Former Quarry	SW/SD127	1
	Kapooka Creek/flow path	SW/SD121	1
Off base		SW/SD614	3
		SW/SD677	
		SW680	
		Total	**16**

2.2 Deviations from the OMP or OMP SAQP

While the scope of works and methodology completed as part of the sampling event were generally consistent with that presented in the OMP and SAQP, points of deviation are noted in Table 2-3.

Table 2-3 Deviations from the OMP.

No.	Description	Rationale	Implications
1	The addition of twice annual surface water monitoring at location SW680 to the monitoring network as of October 2022.	This addition was made at the request of the property owner.	Positive impact – provides additional spatial coverage of PFAS concentrations in Kapooka Creek.
2	The replacement of the large diameter well MW008, with the new monitoring well MW628 that was installed by Stantec in July 2024 with a screened interval between 15 and 21m below top of casing.	The construction details of MW008 are unknown and Defence made the decision to install a replacement well (MW628) approximately 10m to the south east of MW008.	No impact – the replacement well allows for continued sampling at this location.

3. Methodology

3.1 Groundwater Sampling Methodology

The methodology used for this groundwater sampling event was in accordance with the SAQP (Jacobs, 2024) and is summarised in Table 3-1.

Table 3-1 Groundwater Sampling Methodology.

Activity	Details
Groundwater Gauging	The depth to groundwater was measured in each monitoring well immediately prior to collection of groundwater samples. Measurements of depth to groundwater were undertaken using an interface probe, which was serviced by the supplier prior to use. All wells were measured against a specified, previously surveyed mark at the top of the well casing.
Groundwater Sample Collection Methodology	Except for well MW008 (described below), groundwater samples were collected from monitoring wells using no-purge methodology with HydraSleeves™, which were installed within the screened interval (approximate mid-point) of the wells. Once sampling was completed, a new HydraSleeve™ was deployed at the screened interval depth at each location in preparation for the next scheduled sampling round, where practicable.
Field Parameters	Weather conditions, and visual or olfactory conditions at the location, coordinates and means of access, and any changes from previous access to a specific location were recorded. Field water quality parameters potential of hydrogen (pH), electrical conductivity (EC), dissolved oxygen (DO), oxidation/reduction potential (ORP) and temperature were recorded.
Sample identification, preservation transport and holding times	Each sample was labelled with the sample location, date, project identification number and sampler's initials. Sample labelling and naming was in accordance with Annex L of the DCMM (Defence, 2021b). Samples were collected directly into appropriately preserved laboratory supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under COC documentation. Sample containers, preservation procedures, sample storage requirements and holding times were implemented in accordance with the requirements set out in Australian Standard AS/NZS 5567.1:1998 and AS 4482.1.
QA/QC Samples to be Collected	A Quality Assurance and Quality Control (QA/QC) program was implemented for the sampling and analysis program to assess the representativeness and reliability of the data obtained. Accordingly, the following sample types were obtained during the sampling program: ▪ Intra-laboratory duplicates collected at a rate of 1 per 10 water samples or 1 per batch if the batch was less than 10 samples. ▪ Inter-laboratory duplicates collected at a rate of 1 per 10 water samples sent to a secondary laboratory. ▪ Rinsate blanks collected at a frequency of 1 per day collected off re-used sampling equipment, e.g. interface probe. ▪ Trip blank samples of 1 per shipment to be included in the chilled sample containers upon transport to the laboratory. ▪ All QC samples were tested for a full PFAS analytical suite as per the SAQP (Jacobs, 2024).

Activity	Details
	Jacobs personnel attempted to reduce potential heterogeneity in the sample media matrix by dividing the sample collected between primary and intra-laboratory jars or bottles during sampling. The data validation assessment is presented in Appendix C.
Sample Analysis	All primary and QC samples were submitted for analysis using the standard Defence PFAS analytical suite as per the SAQP (Jacobs, 2024). The LOR for groundwater, PFAS – Full Suite (28 Analytes), is 0.01-0.1 µg/L.
Decontamination	Used HydraSleeves™ were replaced with a new HydraSleeve™ after sample collection at each location, thus removing the need for decontamination. All re-usable sampling equipment (such as the interface probe) was thoroughly washed using 'PFAS free' and phosphate-free detergent (Liquinox®), then double rinsed with de-ionised water before the sample collection. Clean, disposable nitrile gloves were worn and replaced between each sample.
Laboratory Analytical Method Accreditation	All groundwater analysis was implemented by the following laboratories employing National Association of Testing Authorities, Australia (NATA) accredited analytical methods: ▪ Primary analysis was undertaken by ALS Global Laboratories. ▪ Secondary analysis was undertaken by Eurofins.

3.2 Surface Water Sampling Methodology

The methodology used for surface water in the sampling event was in accordance with the SAQP (Jacobs, 2024) and is summarised in Table 3-2.

Table 3-2. Surface Water Sampling Methodology.

Item	Details
Surface water sample collection methodology	Where possible, surface water samples were collected directly into laboratory supplied sample containers using a 'Grab' (manual) sample method via a long-handled sampling device. The sample container was secured to the end of the sampling device and was then lowered into the water, oriented with the capped opening facing downwards to avoid the collection of surface films. Where depth permitted, the sample container was positioned at least 20 cm below the surface water level and above the sediment bed before reorienting the sample container so that the capped opening was facing upwards, allowing it to fill. This approach is consistent with the Australian Water Quality Guidelines, which advises to '*immerse a sample bottle by hand to just below the surface (typically 0.25 to 0.50 m depth) and hold the sampler downstream of where the sample is to be collected*'. The description of each sampling location was recorded.
Field Records	Weather conditions, and visual or olfactory conditions at the location, coordinates and means of access, and any changes from previous access to a specific location were recorded. Field water quality parameters pH, EC, DO, ORP and temperature were recorded for all surface water samples except for sewer samples.
Sample identification, preservation, transport and holding times	Each sample was labelled with the sample location, date, project identification number and sampler's initials. Sample labelling and naming was in accordance with Annex L of the DCMM (Defence, 2021b). Samples were contained in appropriately preserved laboratory supplied bottles (Teflon-free) and packed in chilled containers for delivery to the laboratory under COC documentation.

Item	Details
	Sample containers, preservation procedures, sample storage requirements and holding times complied with the requirements set out in "Australian Standard AS/NZS 5567.1:1998 and AS 4482.1".
QA/QC Samples to be Collected	Surface water QC samples were collected at the following frequencies: ▪ Field duplicate (intra-laboratory) samples at 1 per 10 water samples or 1 per batch if the batch was less than 10 samples. ▪ Field triplicate (inter-laboratory) samples at 1 per 10 water samples should be sent to a secondary laboratory. ▪ Rinsate blank sample at 1 per day (collected off re-used sampling equipment). ▪ Trip blank samples of 1 per shipment to be included in the chilled sample containers upon transport to the laboratory. ▪ All QC samples were tested for a standard PFAS analytical suite as per the SAQP (Jacobs, 2024). Jacobs personnel attempt to reduce potential heterogeneity in the sample media matrix by dividing the sample collected between primary and intra-laboratory jars or bottles during sampling. The data validation assessment is presented in Appendix C.
Decontamination	All re-usable sampling equipment (such as the long-handled sampling device) were thoroughly washed using phosphate-free detergent (Liquinox®), then double rinsed with de-ionised water before the sample collection.
Sample Analysis	All surface water samples were analysed for the full PFAS analytical suite as per the SAQP (Jacobs, 2024). The LOR for surface water, PFAS – Full Suite (28 Analytes), is 0.01-0.1 µg/L.
Laboratory Analytical Method Accreditation	All surface water analysis was implemented by the following laboratories employing NATA accredited analytical methods: ▪ Primary analysis was undertaken by ALS Global Laboratories. ▪ Secondary analysis was undertaken by Eurofins.

3.3 Sediment Sampling Methodology

The methodology used for sediment in the sampling event was in accordance with the SAQP (Jacobs, 2024) and is summarised in Table 3-3.

Table 3-3. Sediment sampling methodology.

Item	Details
Sediment sample collection methodology	Sediment samples were collected from the approximate mid-point of the flow pathway, to the extent practicable, and collected from the top ten centimetres after removal of the immediate surface material using hand tools (e.g. trowel, hand auger, PVC pipe, etc.). Sediment samples were collected when insufficient surface water was present for surface water sampling. Samples were placed directly into appropriately labelled, laboratory supplied sample containers and packed in chilled containers for delivery to the laboratory under COC documentation. At each sampling location, the sediment sample was visually assessed and observations (physical description including makeup, colour, visible signs of contamination and moisture) recorded on field data sheets.

Item	Details
Field Records	Weather conditions, and visual or olfactory conditions at the location, coordinates and means of access, and any changes from previous access to a specific location were recorded. The observed characteristics of the sample (material type and description, including any observations of staining or odours), details of sampling collection (method, equipment used and confirmation of decontamination procedures when non-disposable equipment is used), sampling time, date and name of the sampler and weather conditions.
Decontamination	All re-usable sampling equipment (such as a trowel) was thoroughly washed using phosphate-free detergent (Liquinox®), then double rinsed with de-ionised water before the sample collection.
Sample identification, preservation, transport and holding times.	Each sample was labelled with the sample location, date, project identification number and sampler's initials. Sample labelling and naming was in accordance with Annex L of the DCMM (Defence, 2021b). Samples were collected directly in into laboratory supplied containers (Teflon-free) and packed in chilled containers for delivery to the laboratory under COC documentation. Sample containers, preservation procedures, sample storage requirements and holding times were implemented in accordance with the requirements set out in Australian Standard AS/NZS 5567.1:1998 and AS 4482.1.
QA/QC Samples to be Collected	Sediment QC samples were collected at the following frequencies: ▪ Field duplicate (intra-laboratory) samples at 1 per 10 sediment samples or 1 per batch if the batch is less than 10 samples. ▪ Field triplicate (inter-laboratory) samples at 1 per 10 sediment samples should be sent to a secondary laboratory. ▪ All QC samples were tested for a full PFAS analytical suite as per the SAQP (Jacobs, 2024).
Sample Analysis	All sediment samples were analysed for the full PFAS analytical suite as per the SAQP (Jacobs, 2024). The LOR for sediment, PFAS – Full Suite (28 Analytes), is 0.005-0.0002 mg/kg.
Laboratory Accreditation	All sediment sample analysis was implemented by the following laboratories employing NATA accredited analytical methods: ▪ Primary analysis was undertaken by ALS Global Laboratories. ▪ Secondary analysis was undertaken by Eurofins.

4. Assessment Criteria

Guidance documents used to assess the dataset include the following:

- Heads of EPAs Australia and New Zealand (HEPA, 2025). *PFAS National Environmental Management Plan 3.0*. 2025.
- Department of Health, (2017). *Health Based Guidance Values for PFAS for use in site investigations in Australia*. April 2017.
- Food Standards Australia New Zealand (FSANZ, 2017). *Supporting Document 1: Hazard assessment report – Perfluorooctane Sulfonate (PFOS), Perfluorooctanoic Acid (PFOA), Perfluorohexane Sulfonate (PFHxS).*
- National Health and Medical Research Council (NHMRC, 2019). *Guidance on PFAS in Recreational Water.* August 2019.
- National Health and Medical Research Council (NHMRC, 2025). National Water Quality Management Strategy, Australian Drinking Water Guidelines 6, version 4. June 2025.
- National Environment Protection Council (NEPC), 2013. *Schedule B1. National Environment Protection (Assessment of Site Contamination) Measure 1999* (as amended 2013b) *Schedule B1 Guideline on Investigation Levels for Soil and Groundwater.*

A review of all Water Use Surveys received by Defence from the Kapooka area confirms that there are no known locations that use groundwater for drinking purposes. The use of low-level detection limits and assessment against drinking water guidelines have therefore not been adopted for this sampling event.

The PFAS NEMP states that the guidelines do not account for effects which result from the biomagnification of toxicants in air-breathing animals or in animals which prey on aquatic organisms. For chemicals with the potential to bioaccumulate (such as PFAS), the ANZECC Guidelines recommend the use of a higher level of species protection. However, the guideline values for PFOS and PFOR for 99% species protection presented in the PFAS NEMP are ultra-trace levels presenting significant challenges for sampling and analysis. Therefore, screening of surface water data against the 95% species protection values was proposed for the OMP.

The adopted PFAS screening criteria to assess the data generated as part of the OMP are presented in Table 4-1.

Table 4-1. Summary of Adopted Screening Criteria: Water.

Pathway	Compound	Criteria	Comment/Reference
Human Health Receptors			
Recreational use	PFOS + PFHxS	2 µg/L	In August 2019, NHMRC released guidance on the assessment of PFAS in surface water. Rather than adopting an ingestion rate of 0.2 L of water per day (as per the ADWG formula), NHMRC adjusted this rate with consideration of an event frequency (150 events/year) to calculate an annual ingestion rate of 30 L per year. These values were adopted by the PFAS NEMP 2.0 (HEPA, 2025). All surface water and groundwater results were compared to these criteria.
	PFOA	10 µg/L	
Ecological Receptors			
Freshwater	PFOS	0.13 µg/L	The values are from the PFAS NEMP (HEPA, 2025) and endorsed the Australian and New Zealand Guidelines for Fresh and Marine Water Quality. The 95% species protection level (for freshwater and interim marine) has been applied for slightly to moderately disturbed systems. All groundwater and surface water results were compared to these criteria.
	PFOA	220 µg/L	

The PFAS NEMP 3.0 notes that there is insufficient ecotoxicity data for PFAS in freshwater sediments to provide guideline values. Therefore, concentrations of PFAS in sediment have been used to assess trends rather than comparing to screening criteria.

5. Quality Assurance and Quality Control

5.1 Assessment of Data Quality

The SAQP set out data quality objectives for the OMP as well as a process for assessing the quality of data collected. Data quality was assessed in accordance with the PARCCS parameters (Precision, Accuracy, Representation, Completeness, Comparability and Sensitivity) principles and indicators.

The project target for data completeness is to achieve 95% of data as suitable for use. Based on the QA/QC Reports presented in Appendix C, the data completeness for the project is well above the 95% target and closer to 100%.

The SAQP established Data Quality Indicators (DQI) relating to both field and laboratory procedures as well as acceptance criteria for the DQI's. The acceptance criteria for DQIs for samples are provided in Table 5-1.

Table 5-1. Data Quality Indicators.

Data quality indicator	Field	Laboratory method and results
Precision	▪ Compliance with Jacobs Work Instructions ▪ Investigation by suitably qualified and experienced personnel. ▪ Collection of blind replicate and split samples.	▪ Use of laboratories employing NATA accredited analytical methods. ▪ Analysis of inter- and intra-laboratory duplicate samples (1 in 10 primary). ▪ Laboratory internal duplicate samples.
Accuracy	▪ Compliance with Jacobs Work Instructions. ▪ Investigation by suitably qualified and experienced personnel. ▪ Collection of rinsate samples and trip blanks.	▪ Analysis of method blanks, matrix spike recoveries, surrogate spikes recoveries, laboratory control spike recoveries. ▪ Compliance with sample holding times.
Representativeness	▪ Compliance with Jacobs Work Instructions.	▪ Analysis of contaminants of potential concern.
Comparability	▪ Compliance with Jacobs Work Instructions.	▪ Use of laboratories employing NATA accredited analytical methods Analysis of split sample (1 in 10 primary). ▪ Comparison of data against historic data where available.
Completeness	▪ All critical locations sampled (spatially and temporally).	▪ All critical samples analysed. ▪ Assessment of the impact any spatial gaps in samples collected.
Sensitivity	▪ Personnel to ensure correct analytical methods are selected.	▪ Assessment of the impact any spatial gaps in samples collected Analytical methods to achieve the stated limits of detection.

5.2 Data Acceptance Criteria

Quality control parameters were assessed against the Data Acceptance Criteria presented in Table 5-2. Where data was found to fall outside the data acceptance criteria, an investigation was performed to determine if the data is acceptable or if corrective actions need to be instigated.

Table 5-2. Data Acceptance Criteria.

Element	Data quality indicator	Objectives	Acceptance Criteria	Assessment findings
Field QA/QC				
Field duplicate and split samples	Precision Comparability	▪ To ensure the primary data is reliable and fit for purpose. ▪ The assessment of blind replicate and split samples is undertaken by calculating the Relative Percent Difference (RPD) of the replicate or split concentration compared with the original sample concentration. The RPD is defined as: $RPD = 100 \times \frac{[x1 - x2]}{Average}$ Where: $x1$and $x2$ are the concentration of the original and replicate or split samples.	▪ Collection and analysis at rate of 1 field duplicate and 1 split sample per 10 primary samples ▪ Analysed for the same chemicals as the primary sample. ▪ A RPD ≤ 30% will be considered acceptable. Higher RPDs may be acceptable where concentrations are less than 10 times the LOR. This is in line with the general guidance (Queensland Government, 2018). ▪ Particulates or suspended solids in the water samples can affect analytical results. Field observations and turbidity measurements will also be considered in evaluating the data.	**Field duplicates:** 3x sets collected, 2x RPD exceedances. Analysis frequency of 1 in 5 complies with Defence acceptance criteria (DAC). **Split duplicates:** 3x sets collected, 1x exceedance. Analysis frequency of 1 in 5 complies with DAC.
Trip blanks and rinsate samples	Precision Accuracy Comparability	▪ Ensure that cross-contamination has not occurred from sampling equipment, sampling procedure, or during storage and transport of samples. ▪ Each trip blank and rinsate sample is analysed as per the original samples.	▪ Collection of one trip blank per shipment and one rinsate blank per day where reusable equipment was used. ▪ Each trip blank and rinsate sample is analysed for the full PFAS analytical suite as per the SAQP (Jacobs, 2024). ▪ Analytical result < LOR.	**Trip blanks**: 1x trip blank sample accompanied one physical batch submitted to the laboratory. No results above the LOR. **Rinsate samples:** 2x samples collected in total across all days where re-useable

Element	Data quality indicator	Objectives	Acceptance Criteria	Assessment findings
				equipment was decontaminated which complies with DAC. No results above the LOR.
Review of Analytical method	Comparability Sensitivity	▪ The analytical methods and limits of recovery must be confirmed to be appropriate for media and adopted Site assessment criteria	▪ Laboratory LOR ≤ site assessment criteria	All results were reported at LOR below the site assessment criteria.
Laboratory QA/QC				
Sample Holding Times	Precision Accuracy	▪ Period between sample collection, extraction and analysis as reported by the laboratory.	▪ For water samples, the samples are to be extracted within 14 days of sample collection and analysed within 28 days of extraction	All samples were extracted and analysed within the accepted criteria.
Laboratory duplicates	Precision	▪ To ensure precision of the analysis method and replicability of analysis due to potential sample heterogeneity. ▪ Assessment as per blind replicates and split samples.	▪ As specified in the laboratory QC report.	Laboratory duplicates from ALS were analysed at a reduced frequency. The frequency achieved does however meet NEPM requirements, the results were within tolerances and is considered acceptable.
Matrix spike recoveries	Accuracy	▪ To assess the effect of the matrix on the accuracy of the analytical method used. ▪ Assessment is undertaken by determining the percent recovery of the known spike or addition to the sample. $\%\ Recovery = 100 \times \frac{C - A}{B}$ Where:	▪ As specified in the laboratory QC report.	Matrix spikes were completed at the expected frequency.

Element	Data quality indicator	Objectives	Acceptance Criteria	Assessment findings
		A = Concentration of analyte determined in the original sample B = Added concentration C = Calculated concentration		
Method blanks	Accuracy	▪ To determine background contamination or interferences in the analytical process.	▪ Analytical result < LOR.	No method blank outliers were reported.

Note: LOR = Laboratory Level of Reporting (LOR) or the minimum detection limit for a particular analyte.

5.3 Summary of the QAQC assessment

The QA/QC assessment presented in Table 5-2 and detailed in Appendix C identified that the data quality indicators were satisfied with some minor exceptions. These exceptions, as discussed in Appendix C and in Table 5-2 above, are not considered to materially impact the suitability of the data for further interpretation and management actions.

All results that are presented within the report are considered appropriate and representative of the sample locations and the overall quality of the analytical data produced is acceptably reliable (i.e. >95% of the data were suitable for use and DQIs passed acceptance criteria) for the purpose of the report.

6. Field Observations and Results

6.1 General Observations

The weather conditions and general observations (including activities that may impact the monitoring program) recorded during the sampling event are summarised in Table 6-1.

Table 6-1. General Observations (20 Feb 2025 to 7 March 2025).

Items	Observations
Weather Conditions	Warm, mostly sunny to overcast on most days. Light rain and thunderstorms on 5 March 2025, however Bureau of Meteorology station no. 074272 reported 0 mm of rainfall (BoM, 2025a, 2025b). The station recorded 1 mm of total rain on 24 February 2025.
Estate Management Works, Training Activities and/or Construction Works.	None observed.

6.2 Field Observations and Measurements

Field observations and measurements were collated. A summary of the groundwater and surface water data from the February-March 2025 event and previous events for comparison, are presented in Table 6-2 and Table 6-3, respectively. Refer to Appendix D for field records and Table D-1 for comments on surface water flow conditions. No wells were found to be dry, 6 surface water sampling locations were found to be dry and therefore a sediment sample was collected from the location instead. Inferred groundwater contours for the regional groundwater aquifer are shown in Figure A-5 and Figure A-6, Appendix A.

Table 6-2. Groundwater Field Observations and Measurements.

Parameter	Recent (Mar 2025)	Previous (Mar 2017 to Apr 2024)	Trend
No. of Observations	9	58	
Temp. Range and Average (°C)	18.2 to 22.6 (20.47)	15.7 to 29.7 (19.44)	The temperature range is consistent with previous results and seasonal variability.
pH Range and Average (S.U.)	6.37 to 7.44 (6.824)	6.02 to 7.59 (6.78)	The pH range is consistent with previous results .
ORP Range and Average (Eh)	-111.9 to 122 (32.78)	-204.5 to 191.7 (53.96)	The decrease in ORP indicates possibly reducing conditions with less available dissolved oxygen. It is noted that the negative ORP values are not excessive.
EC Range and Average (µS/cm)	746 to 5,244 (2,550)	0 to 5,586 (2,054)	A slight increase in electrical conductivity is caused by the presence of dissolved ions from both natural processes and anthropogenic activities. The variability is not likely to impact the sampling results.
DO Range and Average (mg/L)	1.52 to 3.23 (2.32)	0 to 7.39 (2.18)	The DO range is consistent with previous sampling results.

Depth to groundwater Range (mAHD)	217.80 to 156.41	220.10 to 153.79	Groundwater depth fluctuation can be caused by rainfall and atmospheric pressure among other factors. The variability is not likely to impact the sampling results.
Inferred flow direction	North-west	North-west to north	-

Note: Excluding potentially erroneous data from MW104 for temperature (42.2 °C) and pH (12.74 pH units) on 4/03/2025.

Table 6-3. Surface Water Field Observations and Measurements.

Parameter	Recent (Feb 2025)	Previous (Nov 2018 to Apr 2024)	Trend
No. of Observations	6	131	-
Temp. Range and Average (°C)	20.8 to 31.2 (24.7)	10.5 to 34.5 (17.9)	The temperature increase is likely due to seasonal temperature fluctuation, also shallow surface waters are more conducive to temperature variability..
pH Range and Average (S.U.)	7.10 to 9.65 (7.96)	6.33 to 9.93 (7.54)	Most pH were consistent with previous results, the highest pH was collected from the Wastewater Treatment Plant (SW108), and is not considered to be representative of natural conditions.
ORP Range and Average (Eh)	-7.3 to 119.5 (50.6)	-169.6 to 258.6 (68.4)	ORP conditions are generally consistent with previous results. The minor reduction shows a movement toward reducing conditions, but are currently neutral.
EC Range and Average (µS/cm)	183.9 to 1,287 (501)	0.006 to 1,396 (355.1)	The electrical conductivity range is consistent with previous sampling results.
DO Range and Average (mg/L)	1.60 to 8.01 (3.35)	0 to 14.75 (4.88)	The DO range is generally consistent with previous sampling results, with a slight increase. DO can be dependent on atmospheric conditions particularly in shallow waters with low flows and organic matter present.

6.3 Summary of Analytical Results

6.3.1 Groundwater Analytical Results

Analytical groundwater results of the primary data set (including duplicates) were compared with the assessment criteria presented in Section 4. A summary of the data from the March 2025 sampling event and previous events for comparison, is presented in Table 6-4. Mann-Kendall trend analysis was completed to identify increasing or decreasing monatomic trends (or no trends) based available data from each location. A summary of the results that met the OMP triggers is presented in Table 6-5. Refer to Appendix B for summary tables of results, Appendix E for

details of the Mann-Kendall trend analysis and 0 for laboratory certificates. The distribution of PFAS concentrations is shown in Figure A-7, Appendix A.

Table 6-4. Exceedances of Tier 1 Screening Criteria in Groundwater.

Analyte	Range of Results (µg/L)	Detection Frequency (Locations)	Lowest Criteria (µg/L)	# Exceedances (Locations)	Maximum	
					Location ID	Date
Recent (Mar 2025)						
PFOA	<0.01 – 0.01	3 / 9	10	0	MW103*	04/03/25
PFOS	<0.01 – 0.25	4 / 9	0.13	1	MW601*	06/03/25
Sum of PFOS+PFHxS	<0.01 - 0.67	4 / 9	2	0	MW601*	06/03/25
Previous (Mar 2017 to Apr 2024)						
PFOA	<0.0005 - 0.06	10 / 69	10	0	MW103	16/04/24
PFOS	<0.01 – 0.37	20 / 69	0.13	8	MW601	12/10/23
Sum of PFOS+PFHxS	<0.01 - 0.89	24 / 69	2	0	MW601	12/03/20

* denotes a QC sample (duplicate or triplicate) recorded the maximum concentration.

Table 6-5. Activation of OMP Triggers in Groundwater.

Analyte	First-time Result > LOR	First-time Exceedance of Adopted Criteria	Increasing/ Decreasing Trend
PFOA	None	None	All areas: No trends
PFOS	None	None	Kapooka Creek/flow path : MW601 (increasing) Other areas: No trends
PFHxS	None	None	Wastewater Treatment Plant: MW103 (increasing) Other areas: No trends
Sum of PFOS+PFHxS	None	None	Wastewater Treatment Plant: MW103 (increasing) Other areas: No trends

Note: No Trend, Increasing, Decreasing Trends indicated by Mann-Kendall analysis (Appendix E).

6.3.2 Surface Water Analytical Results

Analytical surface water results of the primary data set (including duplicates) were compared with the assessment criteria presented in Section 4. A summary of the data from the March 2025 sampling event and previous events for comparison, is presented in Table 6-6. Mann-Kendall trend analysis was completed to identify increasing or decreasing monatomic trends (or no trends) based available data from each location. A summary of the results that met the OMP triggers is presented in Table 6-7. Refer to Appendix B for summary tables of results, Appendix E for details of the Mann-Kendall trend analysis and 0 for laboratory certificates. The distribution of PFAS concentrations is shown in Figure A-8, Appendix A.

Table 6-6. Exceedances of Tier 1 Screening Criteria in Surface Water.

Analyte	Range of Results (µg/L)	Detection Frequency (Locations)	Lowest Criteria (µg/L)	# Exceedances (Locations)	Maximum	
					Location ID	Date
Recent (Feb 2025)						
PFOA	<0.01 - 0.02	3 / 10	10	0	SW103	06/03/25
PFOS	<0.01 – 0.88	7 / 10	0.13	3	SW103	06/03/25
Sum of PFOS+PFHxS	<0.01 - 1.22	7 / 10	2	0	SW103	06/03/25
Previous (Nov 2018 to Apr 2024)						
PFOA	<0.01 - 0.11	29/111	10	0	SW136	29/01/19
PFOS	<0.01 – 1.48	84/111	0.13	38	SW136	29/01/19
Sum of PFOS+PFHxS	<0.01 – 4.15	90/111	2	1	SW136	29/01/19

Table 6-7. Activation of OMP Triggers in Surface Water.

Analyte	First-time Result > LOR	First-time Exceedance of Adopted Criteria	Increasing/ Decreasing Trend
PFOA	None	None	All areas: No trends
PFOS	None	None	Kapooka Creek: SW680 (increasing) All areas: No trends
PFHxS	None	None	All areas: No trends
Sum of PFOS+PFHxS	None	None	Kapooka Creek: SW680 (increasing) All areas: No trends

Note: No Trend, Increasing, Decreasing Trends indicated by Mann-Kendall analysis (Appendix E).

6.3.3 Sediment Analytical Results

Analytical sediment results of the primary data set (including duplicates) for are presented in Table 6-8 and includes a summary of data from the March 2025 sampling event and previous events for comparison. A summary of the results that met the OMP triggers is presented in Table 6-9. Refer to Appendix B for summary tables of results and 0 for laboratory certificates. The distribution of PFAS concentrations is shown in Figure A-9, Appendix A.

Table 6-8. Exceedances of Tier 1 Screening Criteria in Sediment.

Analyte	Range of Results (mg/kg)	Detection Frequency (Locations)	Maximum	
			Location ID	Date
Recent (Mar 2025)				
PFOA	<0.0002	0/6	N/A	-
Sum (PFHxS & PFOS)	0.0004-0.0235	6/6	SD121	4/03/2025
Previous (Nov 2018 to Apr 2024)				
PFOA	<0.0002	0/42	N/A	-
Sum (PFHxS & PFOS)	<0.0002-0.0246	39/42	SD121	30/11/2018

Table 6-9. Activation of OMP Triggers in Sediment.

Analyte	Increasing/ Decreasing Trend
PFOA	All areas: No trends
Sum (PFHxS & PFOS)	All areas: No trends

Note: Mann-Kendall analysis was not completed on Sediment samples as there is too much potential variability on sediment/soil sampling based on the material collected.

6.4 Discussion of Results

In relation to PFOA, no trends were identified. Maximum concentrations across all groundwater and surface water sampling locations were well below the assessment criteria. Additionally, concentrations were identified below LOR at six of the nine groundwater sampling locations and three of six surface water sampling locations. No first-time detects or exceedances were reported.

Increasing trends were identified in groundwater samples MW103 (PFHxS and Sum of PFOS+PFHxS) and MW601 (PFOS and Sum of PFOS+PFHxS); and surface water sample SW680 (PFOS and Sum of PFOS+PFHxS). MW103 is a groundwater well located close to the Wastewater Treatment Plant with a screened section in the fractured rock representing the regional aquifer. MW601 is located in the field surrounding Norman Duck Oval, adjacent to Kapooka Creek and screened in the perched aquifer. SW680 is a private property dam within the Kapooka Creek flow path. Figure 6-1 and Figure 6-2 provide time series charts of PFOS, PFHxS and Sum of PFOS+PFHxS.

The increasing trend identified through Mann-Kendall assessment for MW103 (PFHxS and sum (PFHxS & PFOS)) is due to a previous maximum result that peaked in 2024. The increasing trends in MW601 (PFOS and Sum of PFOS+PFHxS) also appears to be related to previous peaks in 2022 and 2023. The increasing trend for SW680 (PFOS and sum (PFHxS & PFOS)) appears to have been consistent over the last four sampling events since a minimum in November 2022. It is noted that the concentrations are still below the adopted assessment criteria. The minimum concentration in November 2022 appears to be correlated with increased rainfall as observed at Bureau of Meteorology station no. 074272 (BoM, 2025a, 2025b). No first-time detects or exceedances were reported.

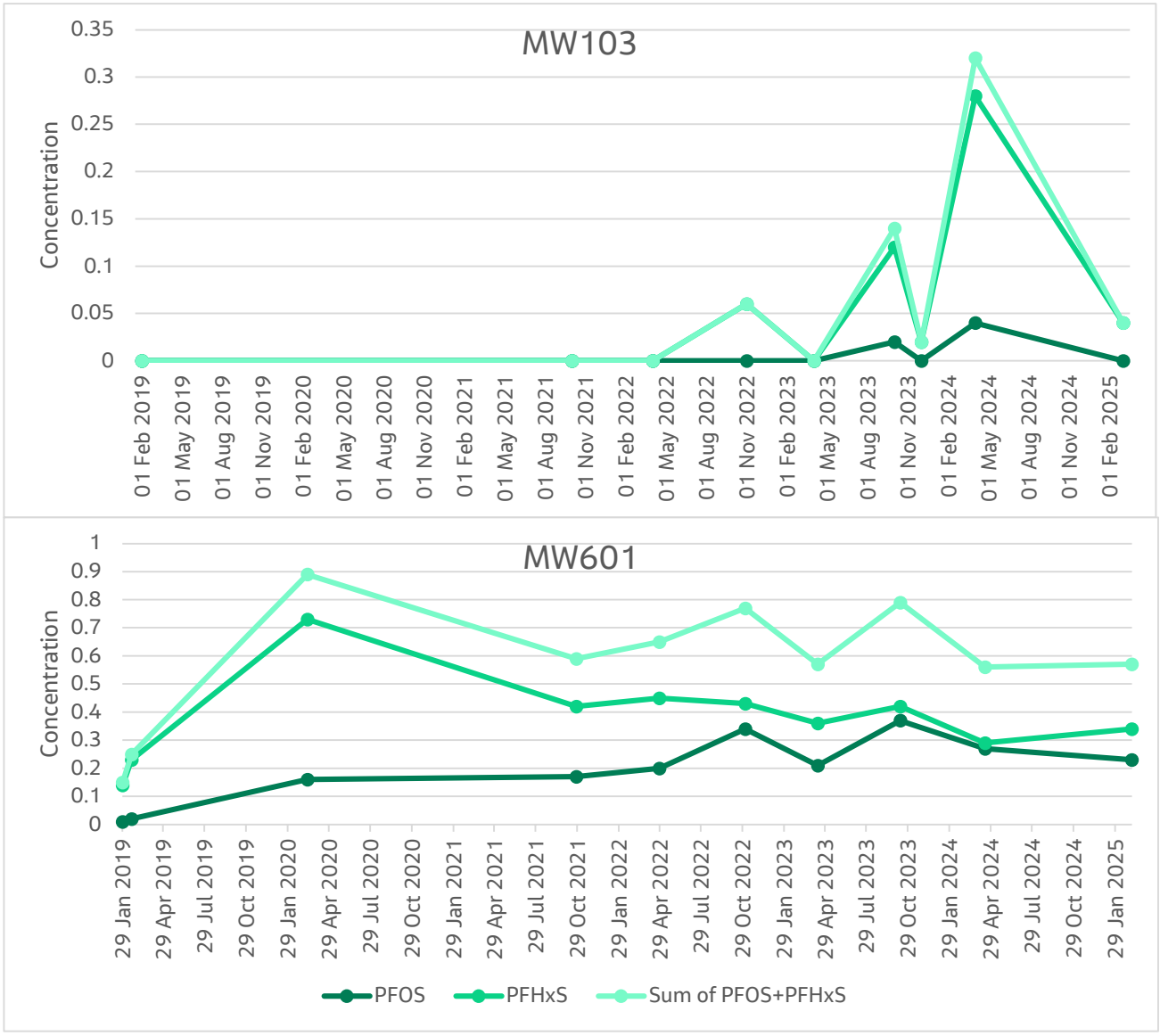

Figure 6-1. Time series of PFOS, PFHxS and Sum (PFHxS & PFOS) results (µg/L) from MW103 and MW601.

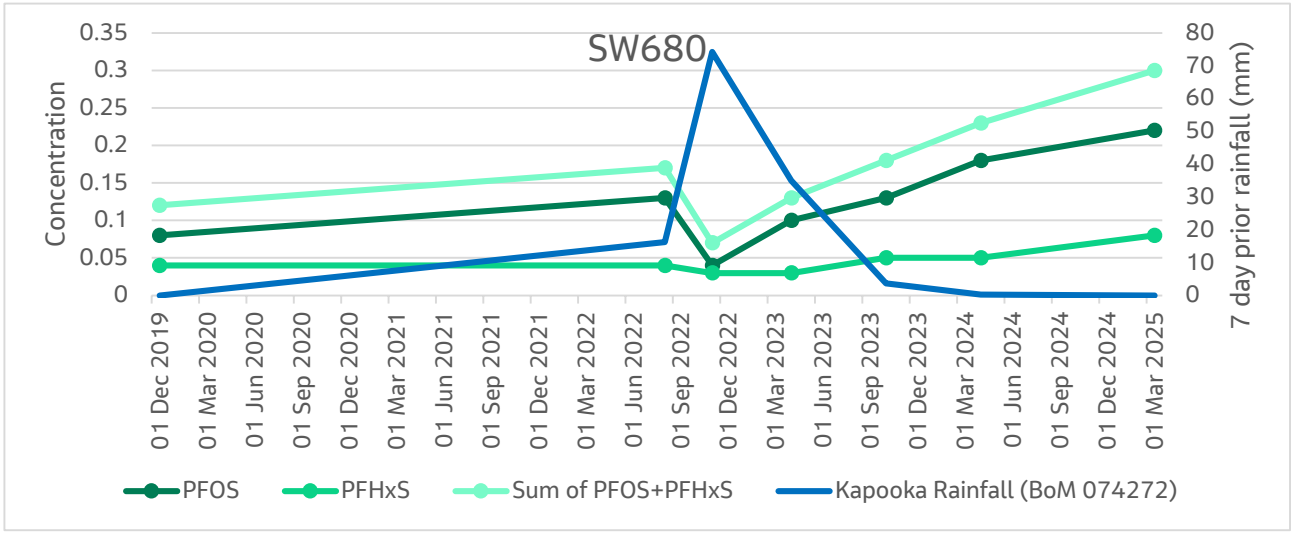

Figure 6-2. Time series of PFOS, PFHxS and Sum (PFHxS & PFOS) results (µg/L) from SW680, with rainfall.

A summary of the OMP trigger levels and responses that were followed based on the results, in line with the SAQP are presented below in Table 6-10.

Table 6-10. Summary of OMP trigger levels and responses

Trigger	Response	Evaluation
First time detect of PFAS above laboratory LOR in groundwater	▪ No response required other than the regular ongoing monitoring.	▪ There were no-first time detects (results above the LOR that had not been reported on).
Increasing PFAS trends in surface water or sewer	▪ Further assessment of the data to determine if additional management actions are required. ▪ Review data against recent rainfall (for surface water and WTP ponds), check if comparing like conditions for samples of surface water across monitoring events. ▪ If increasing PFAS levels in surface water samples from Kapooka Creek are identified then this may indicate the potential for higher PFAS uptake in aquatic biota in Murrumbidgee River. Further sampling and risk assessment may be required. ▪ If increasing PFAS levels in surface water samples from near the Former Quarry are detected, review of sampling plan and addition of sampling points within Sandy Creek may be required	▪ SW680 – an increasing trend for sum (PFHxS + PFOS) was identified based on a Mann-Kendall analysis of seven observations and S value of 15. A separate risk review has been undertaken to assess the trend and determine actions with Defence.
Decreasing PFAS trends in surface water or sewer	▪ Review monitoring frequency and / or need for ongoing monitoring at this location as part of annual OMP review.	▪ No trends were identified
Increasing PFAS trends in sediment	▪ Review data along with surface water results ▪ Review surface water levels from time of sampling, consider if additional sampling during a rain event is required. ▪ Review data against the conceptual site model ▪ Consider increasing the monitoring frequency at the location ▪ Implement additional investigations or management actions as required	▪ Increasing trends observed in MW103, MW601 and SW680 have been considered and appear to be due to seasonal variability or a result of previous results that were higher influencing the trend assessment. ▪ Further evaluation will be completed in the Ongoing Monitoring Report (OMR).

7. Conclusions & Recommendations

7.1 Conclusions

Jacobs conducted this sampling event at Blamey Barracks, Kapooka as part of the OMP, which comprised targeting 10 groundwater monitoring wells,16 surface water sampling locations and 11 sediment sampling locations. Field observations and analytical results were generally consistent with previous results.

The sampling event indicates that there no significant changes compared to previous results. However, it is noted that an increasing trend in PFHxS and sum of PFOS+PFHxS concentrations was identified in groundwater at MW103, close to the wastewater treatment plant and screened in fractured bedrock. An increasing trend for PFOS was also identified in MW601 (perched aquifer adjacent Kapooka Creek); and PFOS and sum of PFOS+PFHxS in surface water at SW680, a private property dam along Kapooka Creek.

7.2 Summary of sampling event and recommendations

The findings and the recommended actions from the March 2025 sampling event are summarised in Table 7-1.

Table 7-1. Summary of Sampling Event.

Item	Comment	Recommended Action
Access to sampling locations	No access constraints occurred.	None
Location unable to be located, inaccessible or dry	SW106, SW118, SW121, SW127, SW614 and SW677 were reported to be dry, or the volume of water was insufficient for sampling and analysis. Sediment samples were collected from these locations in lieu of surface water.	None, this approach is consistent with the OMP.
Monitoring well network condition	Groundwater monitoring wells were observed to be in generally good condition.	None
Analytical Results	Generally consistent with previous results.	None
First-time detections of sum (PFHxS & PFOS) and/or PFOA	None	None
New exceedance of adopted human health screening criteria	None	None
New exceedance of adopted ecological screening criteria	None	None

Item	Comment	Recommended Action
Increasing or decreasing trend at Kapooka Creek and/or Former Quarry	Increasing trends for sum (PFHxS & PFOS) were found in groundwater at the Wastewater Treatment Plant (MW103, regiuonal aquifer); off-base in the perched aquifer adjacent Kapooka Creek (MW601); and a private property surface water from within the Kapooka Creek flow path (SW680). No trends were found at other groundwater, surface water and sediments locations.	Further assessment of PFAS concentrations in the regional aquifer at MW103 should be undertaken as part of the Ongoing Monitoring Report. The reported PFAS concentrations at SW680 should be reviewed based on the assumptions in the Human Health and Ecological Risk Assessment (Jacobs, to determine if a potential change in risk profile has occurred.

7.2.1 Upcoming sampling events

The next OMP sampling event is scheduled to be completed between August to October 2025.

7.2.2 Upcoming Ongoing Monitoring Report

An Ongoing Monitoring Report (OMR) will be prepared in accordance with PFAS Investigation and Management Program, Guidance – Ongoing Monitoring Program Reporting (Defence 2024). The next OMR will include results and discuss trends for the OMP monitoring rounds between October 2023 and March 2025.

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Appendix A. Figures

Figure A-1. Blamey Barracks Kapooka, Site Locality Plan

Figure A-2. Blamey Barracks Kapooka, PFAS Sources and Management Areas

Figure A-3. Blamey Barracks Kapooka, Groundwater Monitoring Network

Figure A-4. Blamey Barracks Kapooka, Surface Water/Sediment Monitoring Network

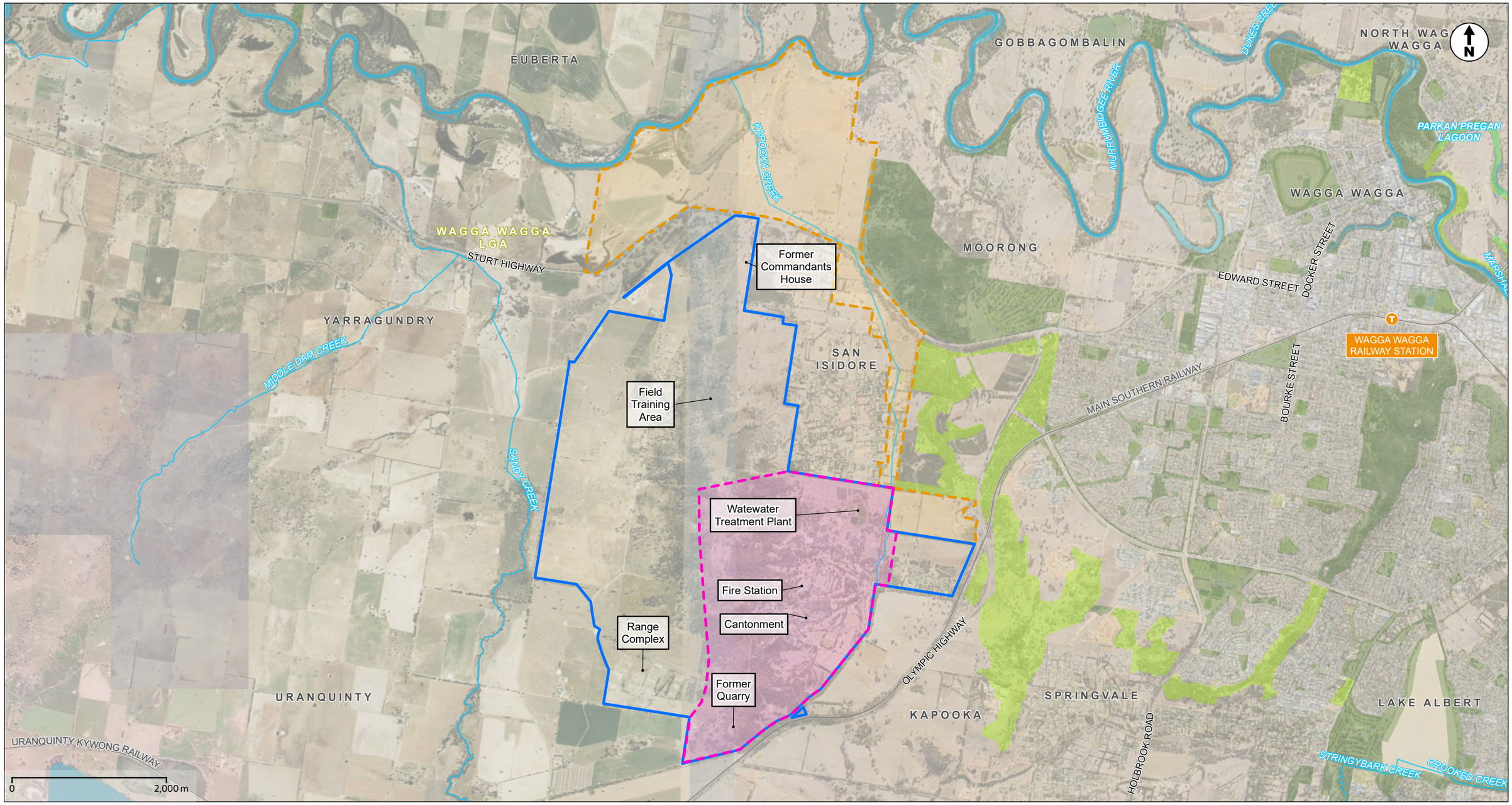
Figure A-5. Inferred Groundwater Contours (March 2025): Perched Wells

Figure A-6. Inferred Groundwater Contours (March 2025): Regional Wells

Figure A-7. PFAS Concentration Distribution – Groundwater (March 2025)

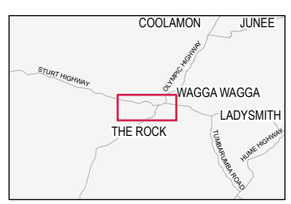
Figure A-8. PFAS Concentration Distribution – Surface Water (March 2025)

Figure A-9. PFAS Concentration Distribution – Sediments (March 2025)



Legend

- Site Boundary
- On-Base Management Area
- Off-Base Management Area
- Railway
- Watercourse
- Parks and recreation
- Environmental protection



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GDA2020 MGA Zone 55

Data sources: Jacobs 2025, DCS 2025
Basemap: Metromaps, ESRI Imagery 2025

Figure A-1: Blamey Barracks Kapooka, Site Locality Plan

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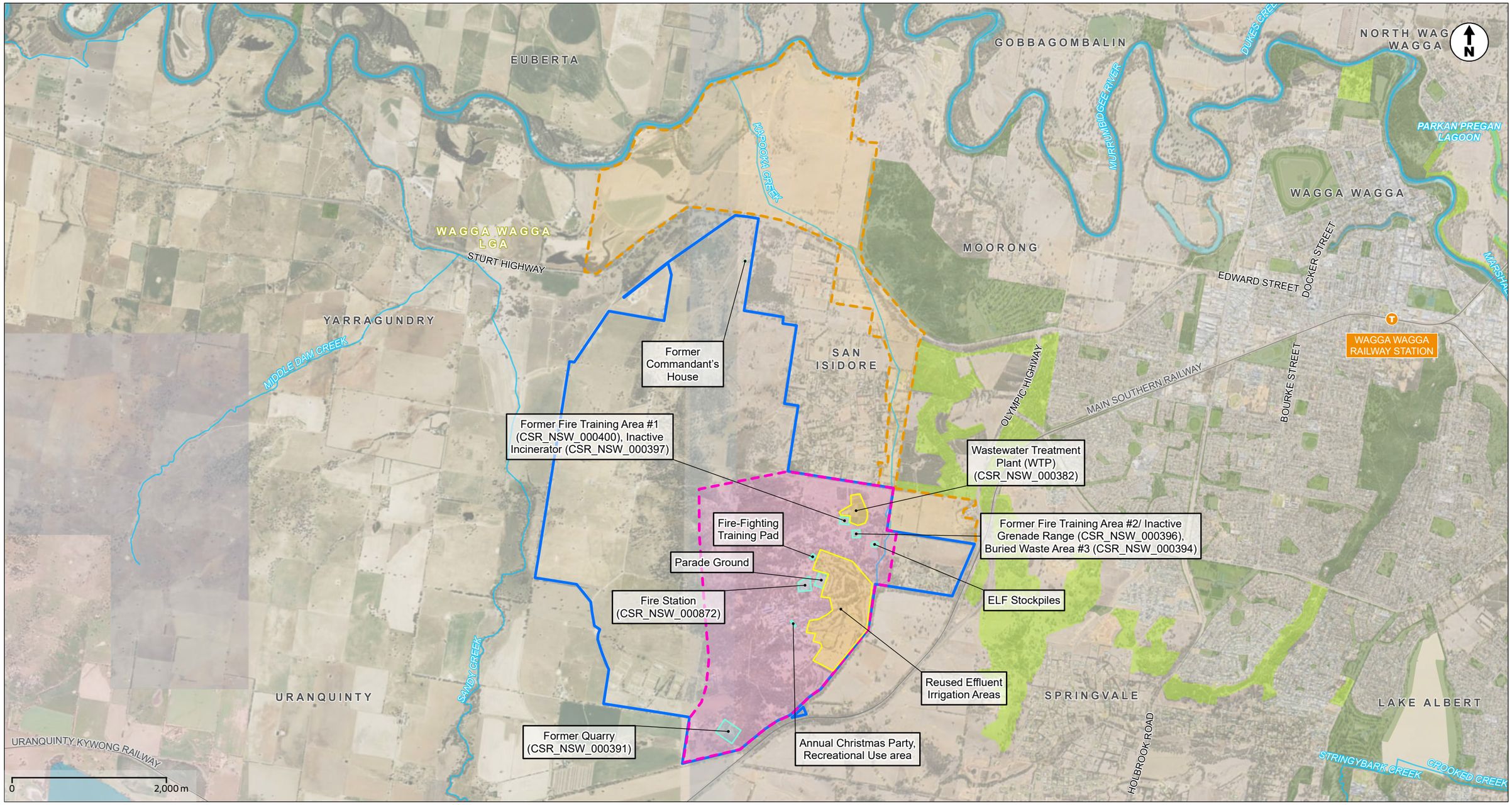


Legend

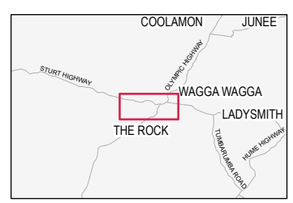
- Site Boundary
- On-Base Management Area
- Off-Base Management Area

Source areas

- Primary source area
- Secondary source area

- Railway
- Watercourse

- Parks and recreation
- Environmental protection



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Data sources: Jacobs 2025, DCS 2025
Basemap: Metromaps, ESRI Imagery 2025

Figure A-2: Blamey Barracks Kapooka, PFAS Sources and Management Areas

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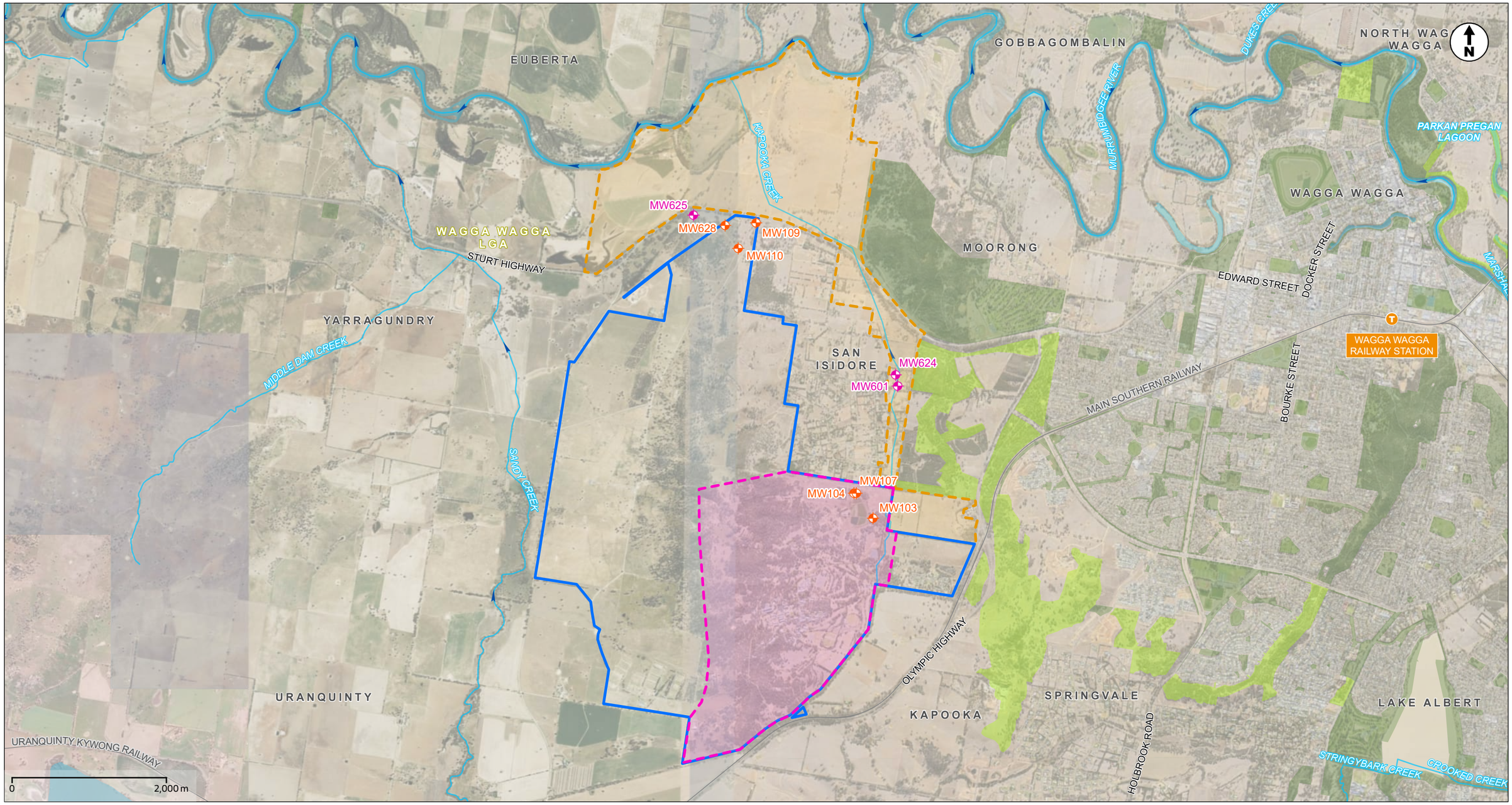


Legend

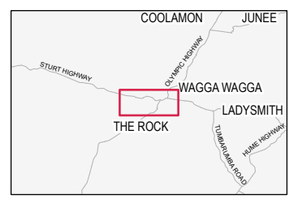
- Site Boundary
- On-Base Management Area
- Off-Base Management Area

Location type

- On-Site Groundwater Monitoring Well
- Off-Site Groundwater Monitoring Well

- Railway
- Watercourse

- Parks and recreation
- Environmental protection



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Data sources: Jacobs 2025, DCS 2025
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Figure A-3: Blamey Barracks Kapooka, Groundwater Monitoring Network

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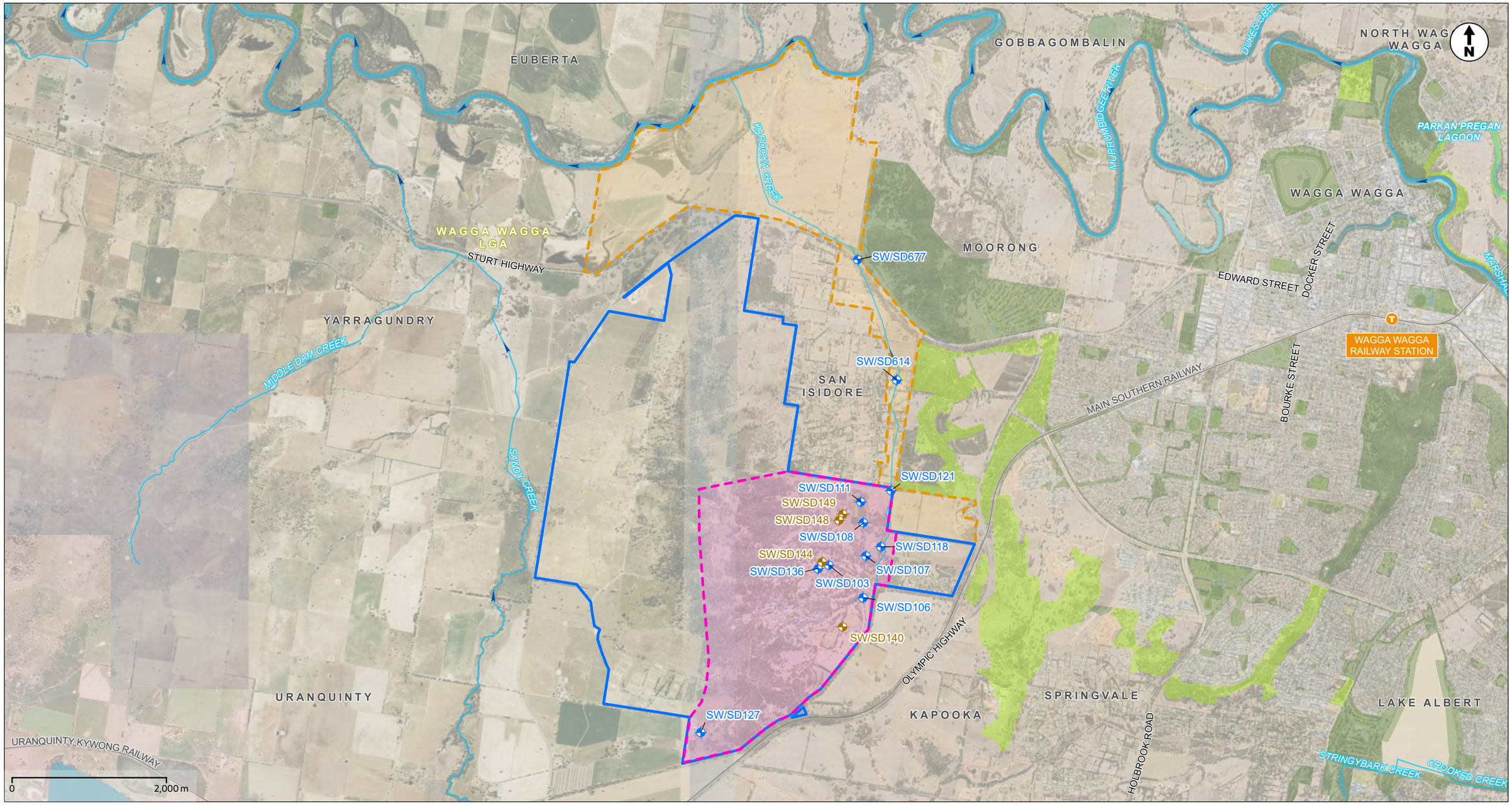


Legend

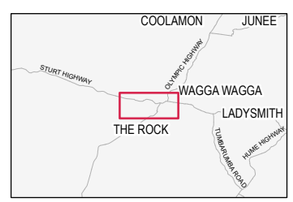
- Site Boundary
- On-Base Management Area
- Off-Base Management Area

Location Code

- Surface Water and Sediment Sampling
- Sewer Sampling

- Railway
- Watercourse

- Parks and recreation
- Environmental protection



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Data sources: Jacobs 2025, DCS 2025
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Figure A-4: Blamey Barracks Kapooka, Surface Water/Sediment Monitoring Network

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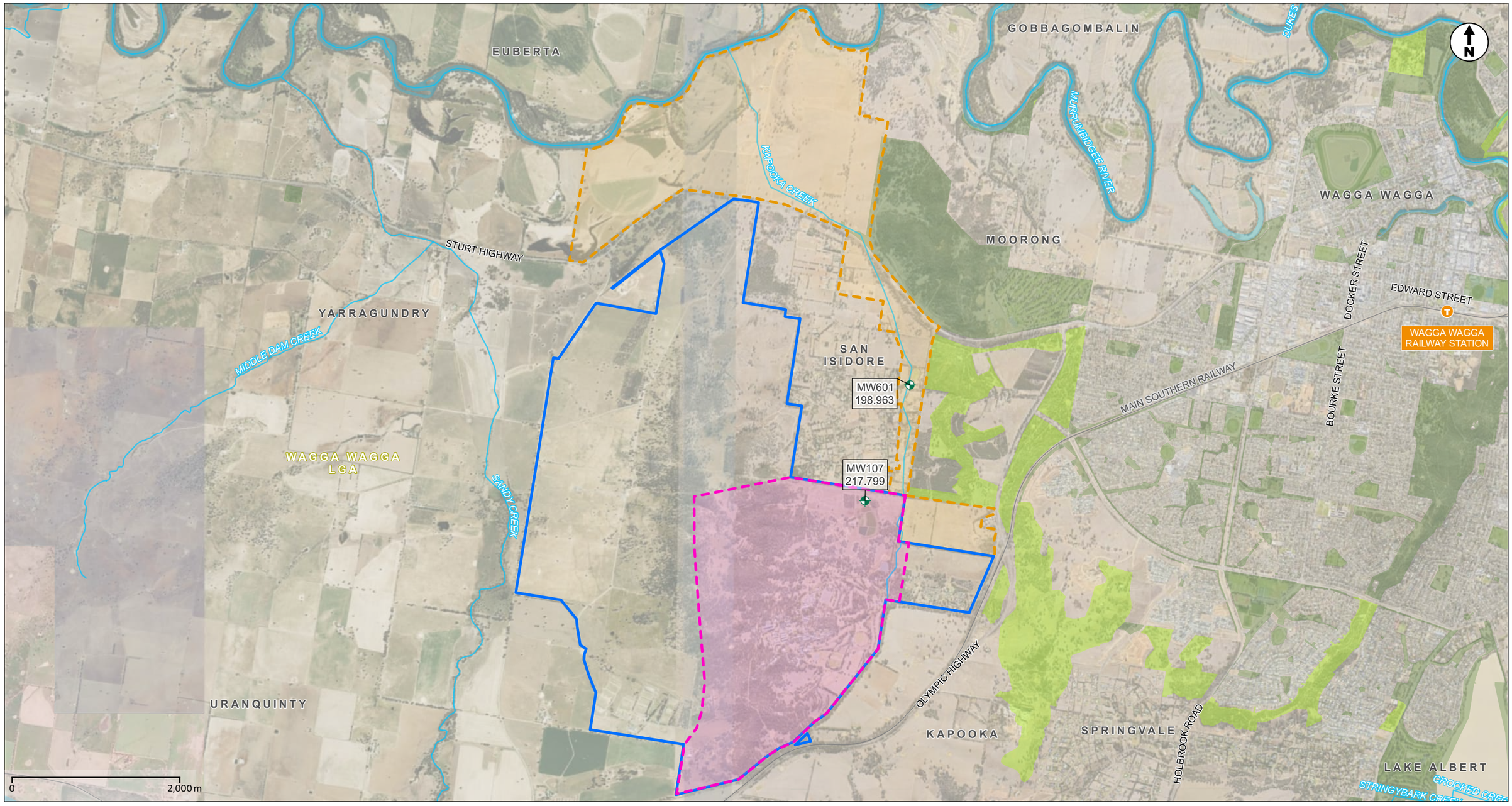
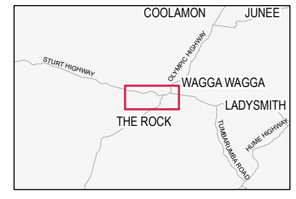


Legend

- Site Boundary
- On-Base Management Area
- Off-Base Management Area
- Perched wells

Groundwater contours have been developed based on static water levels (mAHD) in the regional groundwater aquifer. Insufficient data points exist to develop contours for the perched aquifer.

- Railway
- Watercourse
- Parks and recreation
- Environmental protection



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GDA2020 MGA Zone 55

Data sources: Jacobs 2025, DCS 2025
Basemap: Metromaps, ESRI Imagery 2025

Figure A-5: Inferred Groundwater Contours (March 2025): Perched wells

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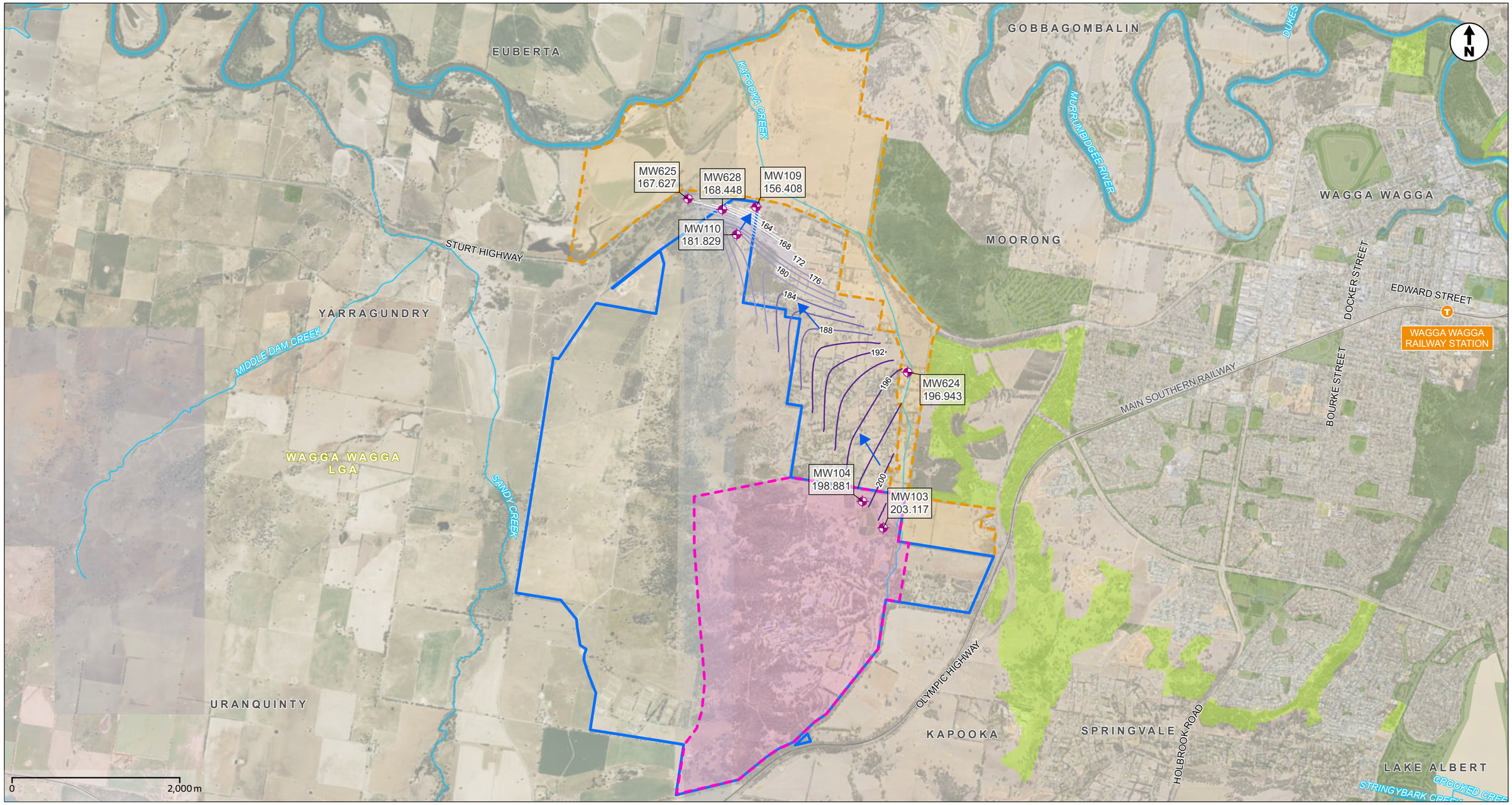


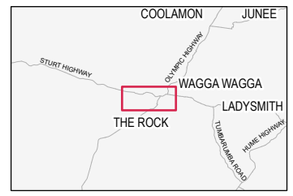
Legend

- Site Boundary
- On-Base Management Area
- Off-Base Management Area
- Regional wells

Groundwater contours have been developed based on static water levels (mAHD) in the regional groundwater aquifer.

Groundwater contours (mAHD)

- 157 - 168
- 169 - 174
- 175 - 182
- 183 - 189
- 190 - 203
- Groundwater flow direction
- Railway
- Watercourse
- Parks and recreation
- Environmental protection



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Data sources: Jacobs 2025, DCS 2025
Basemap: Metromaps, ESRI Imagery 2025

Figure A-6: Inferred Groundwater Contours (March 2025): Regional wells

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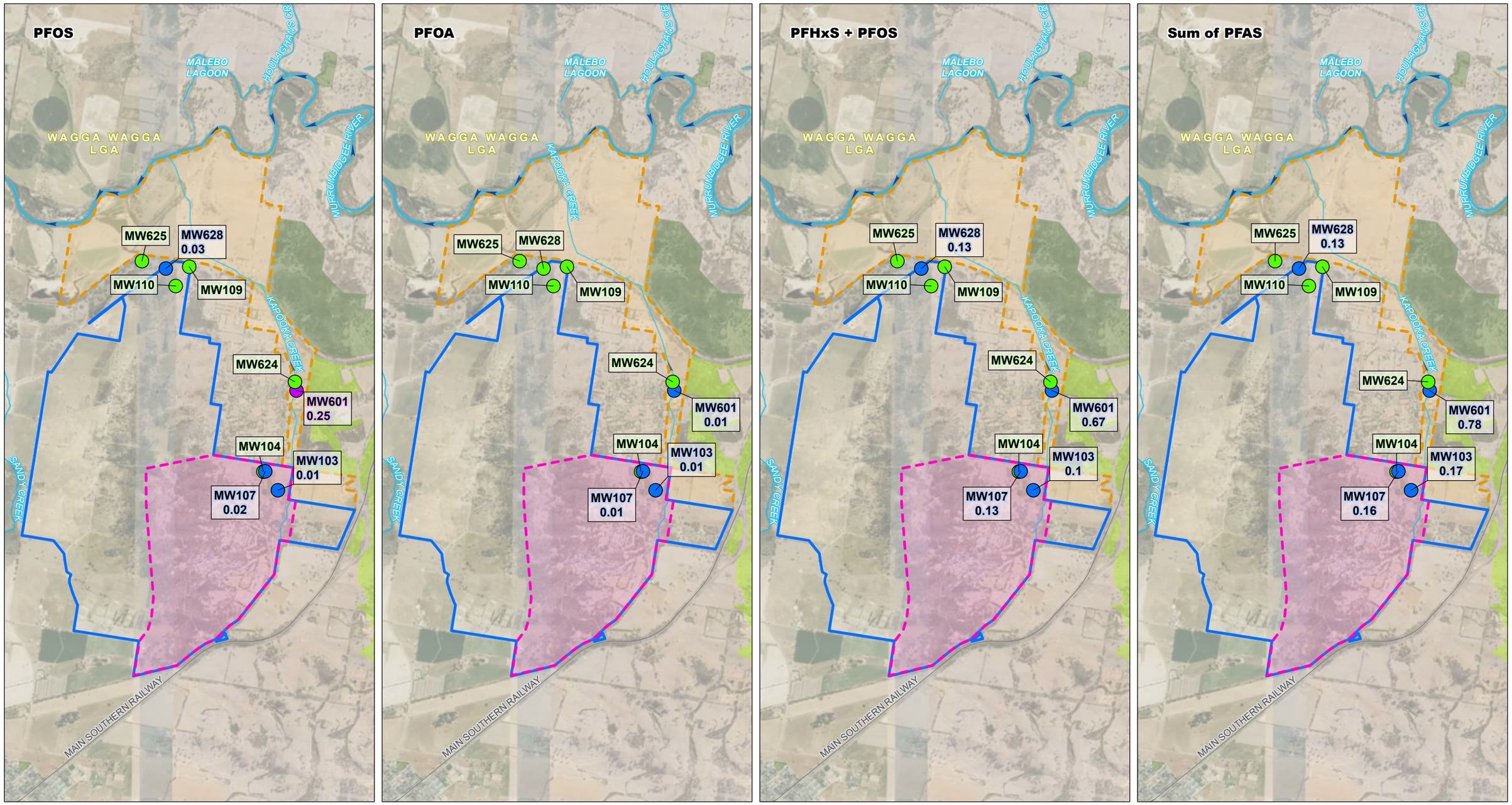


Legend

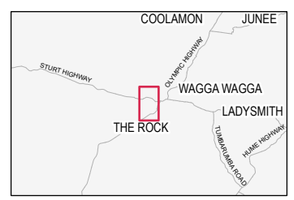
- Site Boundary
- On-Base Management Area
- Off-Base Management Area

Groundwater samples (result units are in µg/L)

- Not sampled
- <LOR
- ≥LOR
- ≥Ecology

- Railway
- Watercourse
- Parks and recreation
- Environmental protection

	PFOS	PFOA	PFOS+PFHxS	Sum of PFAS
<LOR	<0.01	<0.01	<0.01	<0.01
≥LOR	≥0.01 - <0.13	≥0.01 - <220	≥0.01	≥0.01
≥Ecology (Freshwater)	≥0.13	≥220		



N

0 2,000 m

Scale: 1:66,000 @ A4
GDA2020 MGA Zone 55

Data sources: Jacobs 2025, DCS 2025
Basemap: Metromaps, ESRI Imagery 2025

Figure A-7: PFAS Concentration Distribution - Groundwater (March 2025)

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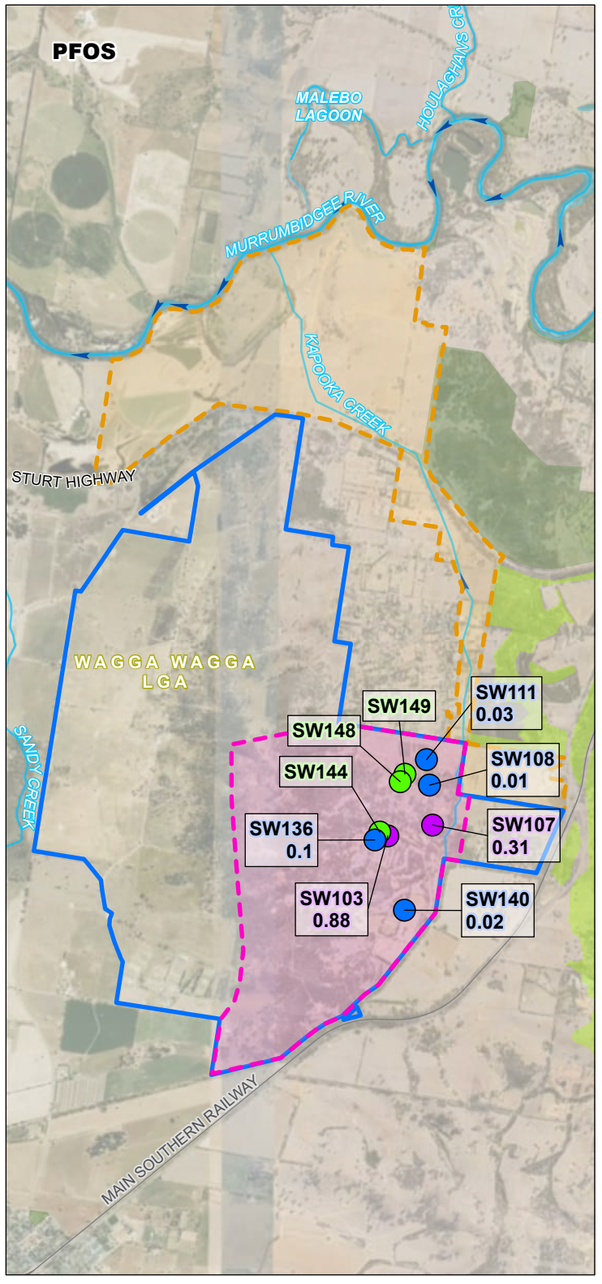
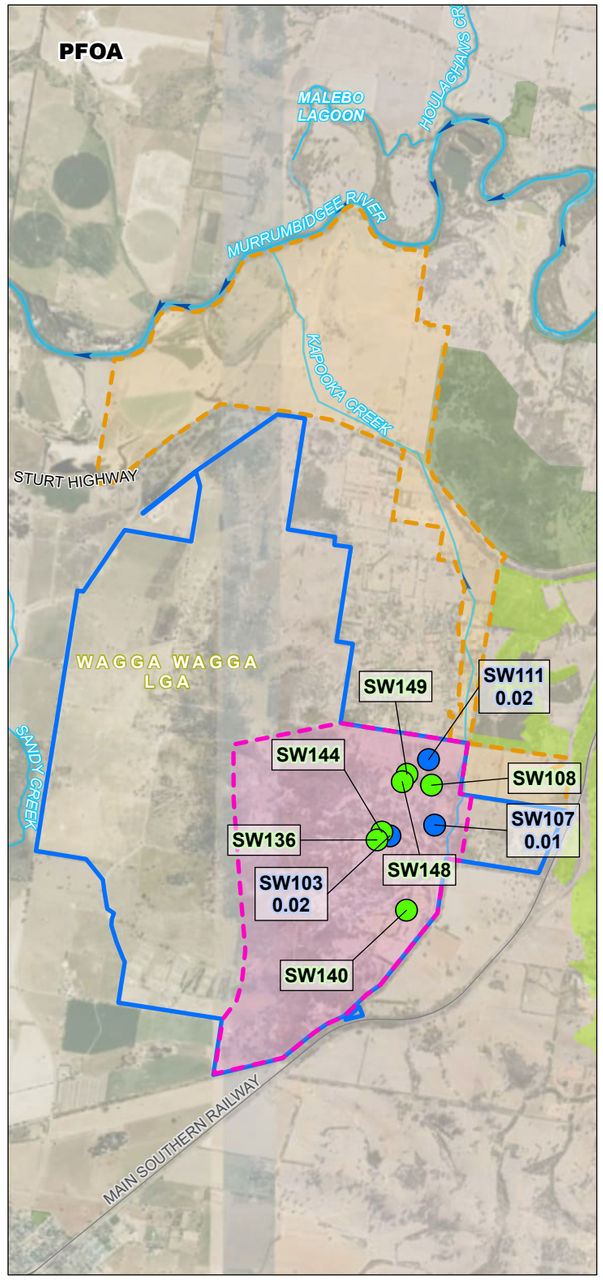
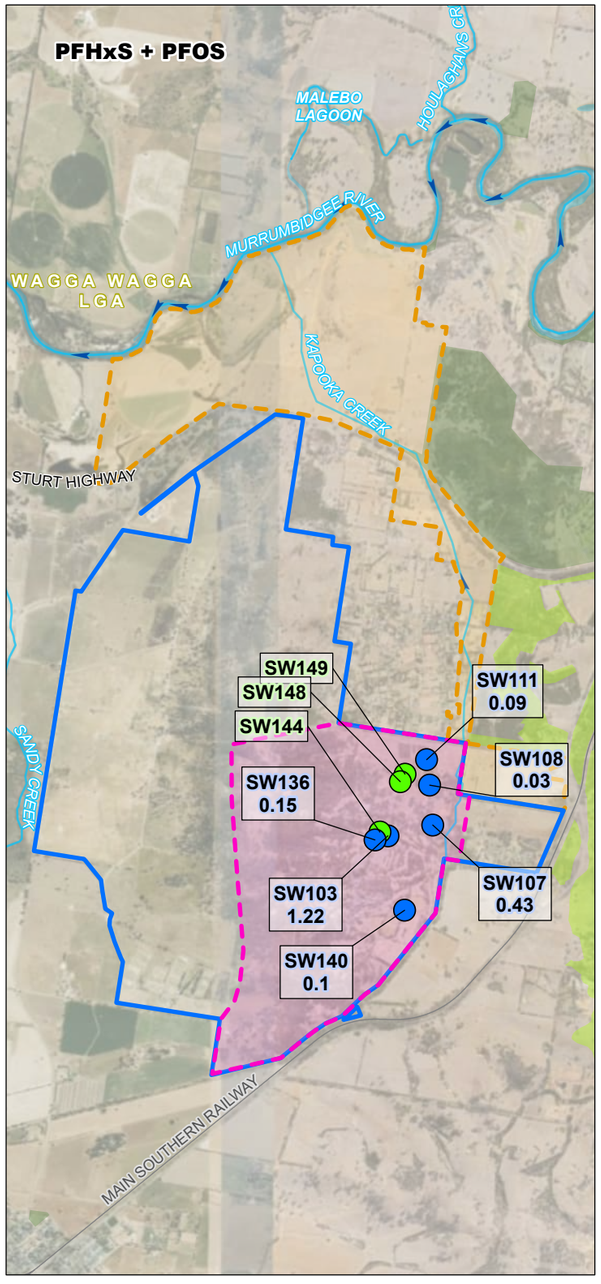
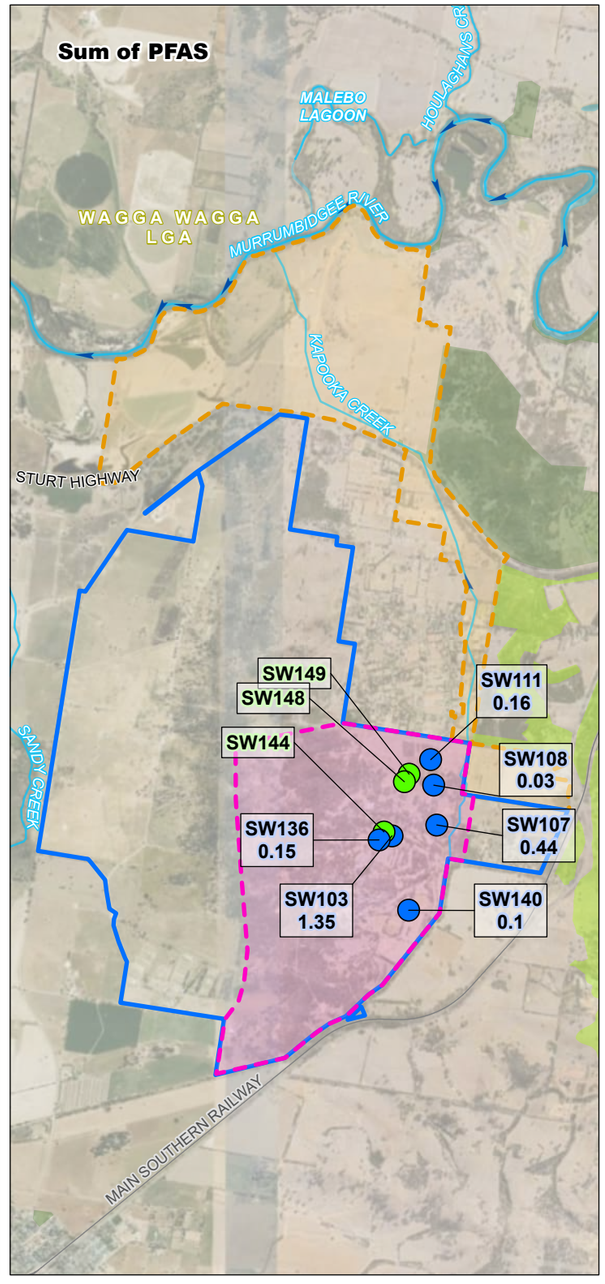








Legend

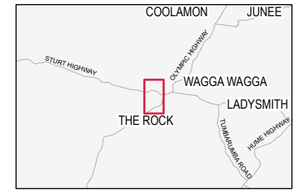
- Site Boundary
- On-Base Management Area
- Off-Base Management Area

Surface water samples (result units are in µg/L)

- Not sampled
- <LOR
- ≥LOR
- ≥Recreational
- ≥Ecology

- Railway
- Watercourse
- Parks and recreation
- Environmental protection

	PFOS	PFOA	PFOS+PFHxS	Sum of PFAS
<LOR	<0.01	<0.01	<0.01	<0.01
≥LOR	≥0.01 - <0.13	≥0.01 - <220	≥0.01	≥0.01
≥Recreational (Human)		≥10 - <220	≥2	
≥Ecology (Freshwater)	≥0.13	≥220		



N

0 2,000 m

Scale: 1:66,000 @ A4
GDA2020 MGA Zone 55

Data sources: Jacobs 2025, DCS 2025
Basemap: Metromaps, ESRI Imagery 2025

Figure A-8: PFAS Concentration Distribution - Surface Water (March 2025)

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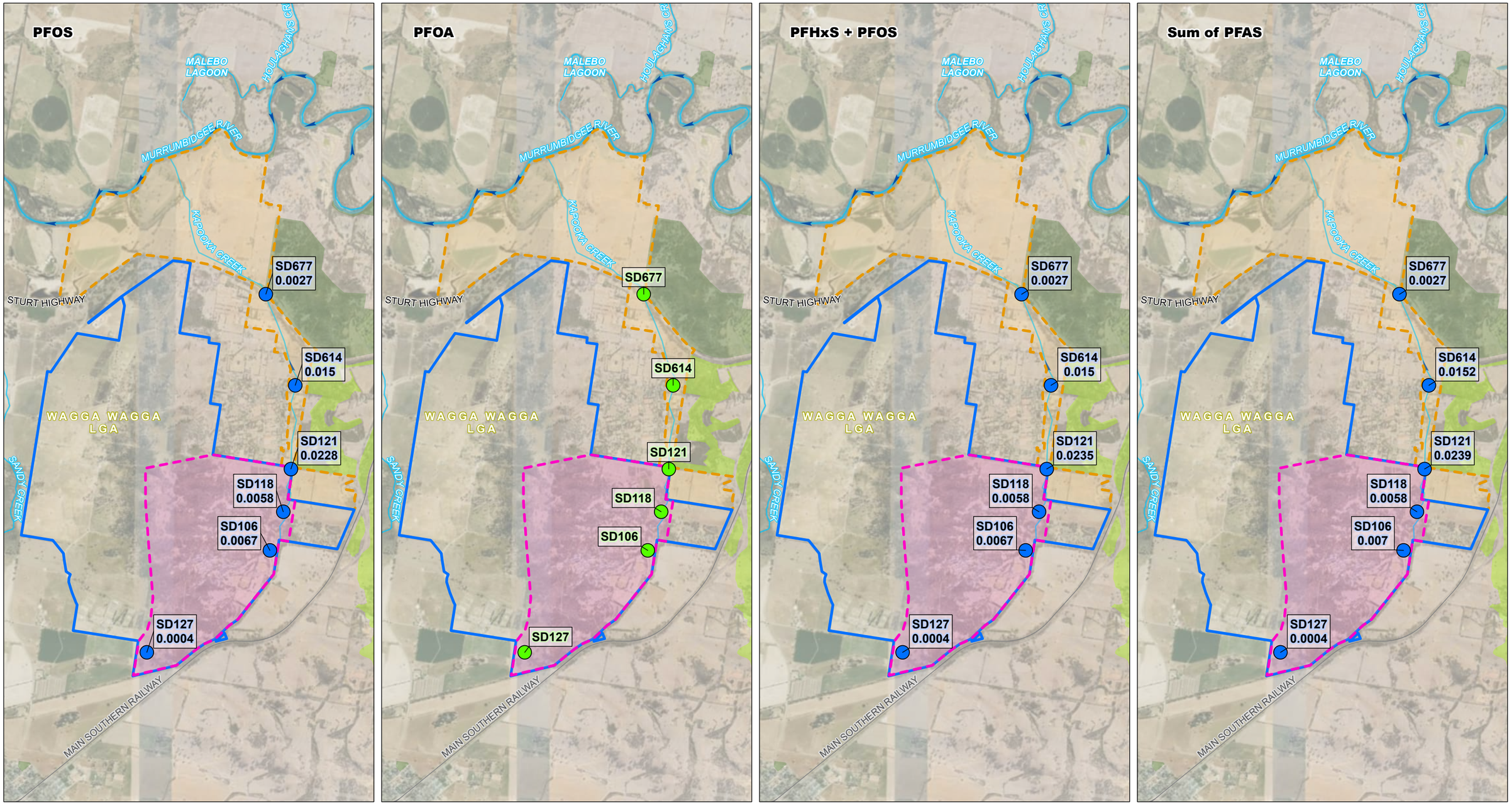


Legend

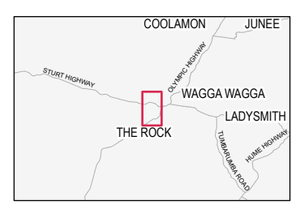
- Site Boundary
- On-Base Management Area
- Off-Base Management Area

Sediment samples (result units are in mg/kg)

- Not sampled
- <LOR
- ≥LOR

- Railway
- Watercourse
- Parks and recreation
- Environmental protection

	PFOS	PFOA	PFOS+PFHxS	Sum of PFAS
<LOR	<0.01	<0.01	<0.01	<0.01
≥LOR	≥0.01	≥0.01	≥0.01	≥0.01



N

0 2,000 m

Scale: 1:66,000 @ A4
GDA2020 MGA Zone 55
Data sources: Jacobs 2025, DCS 2025
Basemap: Metromaps, ESRI Imagery 2025

Figure A-9: PFAS Concentration Distribution - Sediments (March 2025)

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Appendix B. Summary Tables

Table B-1. Screening Summary – Groundwater Results

Table B-2. Screening Summary – Surface Water Results

Table B-3. Summary – Sediment Results

Table B-4. Relative Percentage Differences – Water Results

Table B-5. Blank Sample Results

							Per- and Poly-fluoroalkyl Substances (PFAS)																											(n:2) Fluorotelomer Sulfonic			
							Perfluorooctanesulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Perfluorooctanesulfonamide (PFOSA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoro-n-pentanoic acid (PFPeA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluorononanesulfonic acid (PFNS)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluorohexanesulfonic acid (PFHxS)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexadecanoic acid (PFHxDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorobutanesulfonic acid (PFBS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorobutanoic acid (PFBA)	N-ethyl perfluorooctane sulfonamido acetic acid (N-EtFOSSA)	N-ethyl perfluorooctane sulfonamide (N-EtFOSA)	N-methyl perfluorooctanesulfonamido ethanol (N-MeFOSE)	N-ethyl perfluorooctanesulfonamido ethanol (N-EtFOSE)	N-Methyl perfluorooctane sulfonamide (N-MeFOSA)	N-methyl perfluorooctane sulfonamido acetic acid (N-MeFOSAA)	Sum (PFHxS + PFOS)	Sum of PFAS	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)
							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	0.02	0.01	0.01	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	0.05	0.02	0.05	0.05	0.05	0.05	0.02	0.01	0.01	0.01	0.05	0.01	0.01
PFAS NEMP 2025 Table 4 Recreational water quality								10[#1]																										2					
PFAS NEMP 2025 Table 8 Freshwater 95%							0.13[#2]	220[#2]																															
Location Code	Field ID	Date	Lab Report Number	Sample Type	Sample Code																																		
MW103	0315_MW103_250304	04 Mar 2025	ES2506877	Normal	ES2506877001		<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.1	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	0.04	0.04	<0.05	<0.05	<0.05	<0.05
	0315_QC101_250304	04 Mar 2025	ES2506877	Field_D	ES2506877002		0.01	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.09	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.02	<0.05	<0.02	<0.02	<0.1	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	0.10	0.15	<0.05	<0.05	<0.05	<0.05
	0315 QC201 250304	04 Mar 2025	1197125	Interlab_D	S25-Ma0026829		<0.01	0.01[#3]	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	0.04	0.09[#3]	<0.01	-	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.09	0.17	<0.01	<0.05	<0.01	<0.01
MW104	0315_MW104_250304	04 Mar 2025	ES2506877	Normal	ES2506877004		<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.1	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05
MW107	0315_MW107_250304	04 Mar 2025	ES2506877	Normal	ES2506877005		0.02	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.11	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.02	<0.05	<0.02	<0.02	<0.1	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	0.13	0.16	<0.05	<0.05	<0.05	<0.05
MW109	0315_MW109_250306	06 Mar 2025	ES2506877	Normal	ES2506877011		<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.1	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05
MW110	0315_MW110_250306	06 Mar 2025	ES2506877	Normal	ES2506877012		<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.1	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05
MW601	0315_MW601_250306	06 Mar 2025	ES2506716	Normal	ES2506716004		0.23	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.34	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	<0.02	<0.05	<0.02	<0.02	<0.1	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	0.57	0.63	<0.05	<0.05	<0.05	<0.05
	0315_QC101_250306	06 Mar 2025	ES2506716	Field_D	ES2506716005		0.24	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.34	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	<0.02	<0.05	<0.02	<0.02	<0.1	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	0.58	0.64	<0.05	<0.05	<0.05	<0.05
	0315_QC201_250306	06 Mar 2025	1197133	Interlab_D	S25-Ma0026923		0.25[#3]	0.01[#3]	<0.05	0.03	<0.01	<0.01	<0.01	<0.01	0.02	0.42[#3]	<0.01	-	<0.01	<0.01	0.02	0.03	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.67	0.78	<0.01	<0.05	<0.01	<0.01
MW624	0315_MW624_250306	06 Mar 2025	ES2506716	Normal	ES2506716003		<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.1	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05
MW625	0315_MW625_250306	06 Mar 2025	ES2506882	Normal	ES2506882001		<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.1	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05
MW628	0315_MW628_250306	06 Mar 2025	ES2506877	Normal	ES2506877014		0.03	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.10	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.1	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	0.13	0.13	<0.05	<0.05	<0.05	<0.05

Comments
#1 Refer to Table 4 in PFAS NEMP 3.0 (2025) for comments and notes
#2 Refer to Table 8 in PFAS NEMP 2025 for comments and notes
#3 Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.

Environmental Standards
HEPA, March 2025, PFAS NEMP 2025 Table 4 Drinking water quality
HEPA, March 2025, PFAS NEMP 2025 Table 4 Recreational water quality
HEPA, March 2025, PFAS NEMP 2025 Table 8 Freshwater 95%

| | | |

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			0315_MW103_	0315_QC101_2		0315 QC201		0315_MW601_	0315_QC101_2		0315_QC201_2		0315_SW111_2	0315_QC101_2		0315_QC201_2		0315_SW148_2502	0315_QC202_2502		0315_SW148_2502	0315_QC201_2	
			50.5_250304	50304		250304		13_250306	50306		50306		50307	50307		50307		20	20		20	50220	
			04 Mar 2025	04 Mar 2025		04 Mar 2025		06 Mar 2025	06 Mar 2025		06 Mar 2025		07 Mar 2025	07 Mar 2025		07 Mar 2025		20 Feb 2025	20 Feb 2025		20 Feb 2025	20 Feb 2025	
			ES2506877	ES2506877		1197125		ES2506716	ES2506716		1197133		ES2506877	ES2506877		1197125		ES2505157	1192086		ES2505157	1192086	
			Normal	Field_D		Interlab_D		Normal	Field_D		Interlab_D		Normal	Field_D		Interlab_D		Normal	Interlab_D		Normal	Interlab_D	
			Water	Water	RPD	Water	RPD	Water	Water	RPD	Water	RPD	Water	Water	RPD	Water	RPD	Water	Water	RPD	Water	Water	RPD
	Unit	LOR																					
Per- and Poly-fluoroalkyl Substances (PFAS)																							
Perfluorooctanesulfonic acid (PFOS)	µg/L	0.01	<0.01	0.01	0	<0.01	0	0.23	0.24	4	0.25[#1]	8	0.03	0.03	0	0.03[#1]	0	<0.01	0.13	171	<0.01	<0.01	0
Perfluorooctanoic acid (PFOA)	µg/L	0.01	<0.01	0.01	0	0.01[#1]	0	<0.01	<0.01	0	0.01[#1]	0	0.02	0.02	0	0.02[#1]	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorooctanesulfonamide (PFOSA)	µg/L	0.02	<0.02	<0.02	0	<0.05	0	<0.02	<0.02	0	<0.05	0	<0.02	<0.02	0	<0.05	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	0.03	40	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoro-n-pentanoic acid (PFPeA)	µg/L	0.01	<0.02	<0.02	0	0.01	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	0.03	40	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoropropanesulfonic acid (PFPrS)	µg/L	0.01	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorononanesulfonic acid (PFNS)	µg/L	0.01	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorononanoic acid (PFNA)	µg/L	0.01	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.01	<0.02	0.02	0	0.04	67	0.03	0.03	0	0.02	40	0.02	<0.02	0	<0.01	67	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorohexanesulfonic acid (PFHxS)	µg/L	0.01	0.04	0.09	77	0.09[#1]	77	0.34	0.34	0	0.42[#1]	21	0.06	0.06	0	0.05[#1]	18	<0.01	0.01	0	<0.01	<0.01	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorohexadecanoic acid (PFHxDA)	µg/L	0.05	<0.05	<0.05	0	-	-	<0.05	<0.05	0	-	-	<0.05	<0.05	0	-	-	<0.05	<0.05	0	<0.05	<0.05	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.01	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorodecanoic acid (PFDA)	µg/L	0.01	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	0.02	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorobutanesulfonic acid (PFBS)	µg/L	0.01	<0.02	0.02	0	0.02	0	0.03	0.03	0	0.03	0	0.02	0.02	0	0.03	40	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.01	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.01	<0.05	<0.05	0	<0.01	0	<0.05	<0.05	0	<0.01	0	<0.05	<0.05	0	<0.01	0	<0.05	<0.05	0	<0.05	<0.05	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.01	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.01	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorobutanoic acid (PFBA)	µg/L	0.05	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.1	<0.1	0
N-ethyl perfluorooctane sulfonamido acetic acid (N-EtFOSSA)	µg/L	0.02	<0.02	<0.02	0	<0.05	0	<0.02	<0.02	0	<0.05	0	<0.02	<0.02	0	<0.05	0	<0.02	<0.02	0	<0.02	<0.02	0
N-ethyl perfluorooctane sulfonamide (N-EtFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-methyl perfluorooctanesulfonamido ethanol (N-MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-ethyl perfluorooctanesulfonamido ethanol (N-EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamide (N-MeFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-methyl perfluorooctane sulfonamido acetic acid (N-MeFOSAA)	µg/L	0.02	<0.02	<0.02	0	<0.05	0	<0.02	<0.02	0	<0.05	0	<0.02	<0.02	0	<0.05	0	<0.02	<0.02	0	<0.02	<0.02	0
Sum (PFHxS + PFOS)	µg/L	0.01	0.04	0.10	86	0.09	77	0.57	0.58	2	0.67	16	0.09	0.09	0	0.08	12	<0.01	0.14	173	<0.01	<0.01	0
Sum of PFAS	µg/L	0.01	0.04	0.15	116	0.17	124	0.63	0.64	2	0.78	21	0.15	0.13	14	0.16	6	<0.01	0.14	173	<0.01	<0.01	0
(n:2) Fluorotelomer Sulfonic Acids																							
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01	<0.05	<0.05	0	<0.01	0	<0.05	<0.05	0	<0.01	0	<0.05	<0.05	0	<0.01	0	<0.05	<0.05	0	<0.05	<0.05	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05	<0.05	<0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.01	<0.05	<0.05	0	<0.01	0	<0.05	<0.05	0	<0.01	0	<0.05	<0.05	0	<0.01	0	<0.05	<0.05	0	<0.05	<0.05	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.01	<0.05	<0.05	0	<0.01	0	<0.05	<0.05	0	<0.01	0	<0.05	<0.05	0	<0.01	0	<0.05	<0.05	0	<0.05	<0.05	0

Comments
#1 Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 80 (1 - 10 x EQL); 50 (10 - 30 x EQL); 30 (> 30 x EQL))
***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

		Field ID	0315_QC301_250304	0315_QC301_250306	0315_QC501_250307
		Date	04 Mar 2025	06 Mar 2025	07 Mar 2025
		Lab Report Number	ES2506877	ES2506877	ES2506877
		Sample Type	Rinsate	Rinsate	Trip_B
		Matrix Type	Water	Water	Water
	Unit	LOR			
Per- and Poly-fluoroalkyl Substances (PFAS)					
Perfluorooctanesulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonamide (PFOSA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluoro-n-pentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluoropropanesulfonic acid (PFPrS)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorononanesulfonic acid (PFNS)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorohexanesulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorohexadecanoic acid (PFHxDA)	µg/L	0.05	<0.05	<0.05	<0.05
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorobutanesulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1	<0.1
N-ethyl perfluorooctane sulfonamido acetic acid (N-EtFOSSA)	µg/L	0.02	<0.02	<0.02	<0.02
N-ethyl perfluorooctane sulfonamide (N-EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05
N-methyl perfluorooctanesulfonamido ethanol (N-MeFOSE)	µg/L	0.05	<0.05	<0.05	<0.05
N-ethyl perfluorooctanesulfonamido ethanol (N-EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamide (N-MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05
N-methyl perfluorooctane sulfonamido acetic acid (N-MeFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02
Sum (PFHxS + PFOS)	µg/L	0.01	<0.01	<0.01	<0.01
Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01
(n:2) Fluorotelomer Sulfonic Acids					
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	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
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	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

Appendix C. QA/QC Report

This data quality appraisal is of data collected as part of the scope of works presented in this report in accordance with the SAQP (Jacobs, 2024). It is noted that the '0315_' prefix is omitted from sample IDs for brevity.

Table C-1. Validation for reports: ES2505157

Project and Data Details								
Project number	IS41900			**Client**	Department of Defence			
Site	Blamey Barracks			**Laboratory report number**	ES2505157, 1192086			
Validated by	BG			**Matrix type/s**	Water			
Validation date	17/03/2025			**Primary laboratory**	ALS			
Sampling date range	21/02/25 – 22/02/25			**Secondary laboratory**	Eurofins			
Primary Samples	Duplicate Samples			**Triplicate Samples**				
0315_SW148_250220	0315_QC101_250220			0315_QC201_250220				
Rinsate Samples				**Trip Blank Samples**				
-				0315_QC503_250221				
Field QAQC	**Yes**	**No**	**NA**		**Yes**	**No**	**NA**	
Correct sample naming on COC?	☒	☐	☐	**Were field blank/s collected?**	☐	☒	☐	
Correct sample naming in laboratory SRN?	☒	☐	☐	**Trip blank/s collected?**	☒	☐	☐	
Do the requested limits of reporting match the project SAQP?	☒	☐	☐	**Intra and inter laboratory duplicate/s?**	☒	☐	☐	
Analysis on COC correct compared to project SAQP?	☒	☐	☐	**Do field blank/s results meet criteria?**	☐	☐	☒	
Analysis on SRN correct as compared to COC?	☒	☐	☐	**Do trip blank/s results meet criteria?**	☒	☐	☐	
All samples received intact and within acceptable temp. range?	☐	☒	☐	**Do duplicate results meet criteria?**	☒	☐	☐	
Laboratory QAQC	**Yes**	**No**	**NA**		**Yes**	**No**	**NA**	
Do samples meet analysis holding times?	☒	☐	☐	**Are laboratory duplicate RPDs < 30%?**	☒	☐	☐	
Do analytes reported in COA match SRN?	☒	☐	☐	**Are LCS/standards within laboratory specified ranges?**	☒	☐	☐	
Is internal laboratory QAQC frequency adequate?	☒	☐	☐	**Are laboratory MS recoveries within laboratory specified ranges?**	☒	☐	☐	
Do lab reports and EDD match?	☒	☐	☐	**Are surrogate spikes recoveries within laboratory specified ranges?**	☒	☐	☐	
Are all results below LOR for method blanks?	☒	☐	☐					
Acronyms								
COA – Certificate of analysis **COC – Chain of custody** **EDD – Electronic data deliverable**	LCS – Laboratory control spike LOR – Limit of reporting MS – Matrix spike			RPD – Relative percentage difference SAQP – Sample analysis quality plan SRN – Service recipient notice				

B-#Comments
Sample Receipt The ALS SRN/COC notes samples were received in cooler with ice, with temperature (8.3, 7.9 and 8.7C) outside of the NEPM recommended 6°C. Samples were collected and freighted from Wagga to the ALS laboratory and only marginally exceeded the recommended temperature. The recommended temperature under NEPM also generally applies to analysis of volatiles and is unlikely to impact PFAS. Therefore the temperatures upon delivery are considered acceptable for the purposes of the study. **Equipment Rinsate** The sewer samples analysed as part of this batch for the OMP were collected using single-use containers supplied by the laboratory and disposed of after each sample was collected. An equipment rinsate was therefore not considered necessary for this batch of samples.
The analytical data provided within reports ES2505157 and 1192086 are considered acceptable and appropriate for use in this investigation.

Table C-2. Validation for reports: ES2506716

Project and Data Details			
Project number	IS41900	**Client**	Department of Defence
Site	Blamey Barracks	**Laboratory report number**	ES2506716,1197133
Validated by	BG	**Matrix type/s**	Sediment, Water
Validation date	17/03/2025	**Primary laboratory**	ALS
Sampling date range	06/03/2025	**Secondary laboratory**	Eurofins

Primary Samples	Duplicate Samples	Triplicate Samples
0315_MW601_250306 0315_SD614_250306	0315_QC101_250306 0315_QC102_250306	0315_QC201_250306 0315_QC202_250306

Rinsate Samples	Trip Blank Samples
-	-

Field QAQC	Yes	No	NA		Yes	No	NA
Correct sample naming on COC?	☒	☐	☐	**Were field blank/s collected?**	☐	☒	☐
Correct sample naming in laboratory SRN?	☒	☐	☐	**Trip blank/s collected?**	☐	☒	☐
Do the requested limits of reporting match the project SAQP?	☒	☐	☐	**Intra and inter laboratory duplicate/s?**	☒	☐	☐
Analysis on COC correct compared to project SAQP?	☒	☐	☐	**Do field blank/s results meet criteria?**	☐	☐	☒
Analysis on SRN correct as compared to COC?	☒	☐	☐	**Do trip blank/s results meet criteria?**	☐	☐	☒
All samples received intact and within acceptable temp. range?	☐	☒	☐	**Do duplicate results meet criteria?**	☒	☐	☐
Laboratory QAQC	**Yes**	**No**	**NA**		**Yes**	**No**	**NA**
Do samples meet analysis holding times?	☒	☐	☐	**Are laboratory duplicate RPDs < 30%?**	☒	☐	☐
Do analytes reported in COA match SRN?	☒	☐	☐	**Are LCS/standards within laboratory specified ranges?**	☒	☐	☐
Is internal laboratory QAQC frequency adequate?	☒	☐	☐	**Are laboratory MS recoveries within laboratory specified ranges?**	☒	☐	☐
Do lab reports and EDD match?	☒	☐	☐	**Are surrogate spikes recoveries within laboratory specified ranges?**	☒	☐	☐
Are all results below LOR for method blanks?	☒	☐	☐				

Acronyms		
COA – Certificate of analysis COC – Chain of custody EDD – Electronic data deliverable	LCS – Laboratory control spike LOR – Limit of reporting MS – Matrix spike	RPD – Relative percentage difference SAQP – Sample analysis quality plan SRN – Service recipient notice

Comments

Sample Receipt

The ALS SRN/COC notes samples were received in cooler with ice, with temperature (8.9, 13.3 and 14.7C) outside of the NEPM recommended 6°C. Samples were collected and freighted from Wagga to the ALS laboratory and only marginally exceeded the recommended temperature. The recommended temperature under NEPM also generally applies to analysis of volatiles and is unlikely to impact PFAS. Therefore the temperatures upon delivery are considered acceptable for the purposes of the study.

Field Duplicates

The RPDs of the field duplicate/triplicates are presented in Table B-4 The RPD results were within data quality criteria.

Rinsate Blanks and Trip Blanks

Rinsate blanks and Trip Blanks were not analysed within this lab batch, but a rinsate was collected on 6/3/25 and was analysed within batch ES250877 and trip blanks were sent in the esky with the samples. These samples were taken from Council property and were therefore kept on a separate COC/lab batch.

The analytical data provided within report EES2506716 is considered acceptable and appropriate for use in this investigation.

Table C-3. Validation for reports: ES2506877

Project and Data Details			
Project number	IS41900	**Client**	Department of Defence
Site	Blamey Barracks	**Laboratory report number**	ES2506877, 1197125
Validated by	BG	**Matrix type/s**	Water
Validation date	17/03/2025	**Primary laboratory**	ALS
Sampling date range	04/03/2025 - 06/03/2025	**Secondary laboratory**	Eurofins

Primary Samples	Duplicate Samples	Triplicate Samples
0315_MW103_250304 0315_SW111_250307 0315_MW110_250306	0315_QC101_250304, 0315_QC101_250307 0315_QC103_250306	0315_QC201_250304 0315_QC201_250307 0315_QC203_250306

Rinsate Samples	Trip Blank Samples
0315_QC301_250304, 0315_QC301_250306	0315_QC501_250307

Field QAQC	Yes	No	NA		Yes	No	NA
Correct sample naming on COC?	☒	☐	☐	**Were field blank/s collected?**	☒	☐	☐
Correct sample naming in laboratory SRN?	☒	☐	☐	**Trip blank/s collected?**	☒	☐	☐
Do the requested limits of reporting match the project SAQP?	☒	☐	☐	**Intra and inter laboratory duplicate/s?**	☒	☐	☐
Analysis on COC correct compared to project SAQP?	☒	☐	☐	**Do field blank/s results meet criteria?**	☒	☐	☐
Analysis on SRN correct as compared to COC?	☒	☐	☐	**Do trip blank/s results meet criteria?**	☒	☐	☐
All samples received intact and within acceptable temp. range?	☐	☒	☐	**Do duplicate results meet criteria?**	☐	☒	☐

Laboratory QAQC	Yes	No	NA		Yes	No	NA
Do samples meet analysis holding times?	☒	☐	☐	**Are laboratory duplicate RPDs < 30%?**	☒	☐	☐
Do analytes reported in COA match SRN?	☒	☐	☒	**Are LCS/standards within laboratory specified ranges?**	☒	☐	☐
Is internal laboratory QAQC frequency adequate?	☐	☒	☐	**Are laboratory MS recoveries within laboratory specified ranges?**	☒	☐	☐
Do lab reports and EDD match?	☒	☐	☐	**Are surrogate spikes recoveries within laboratory specified ranges?**	☒	☐	☐
Are all results below LOR for method blanks?	☒	☐	☐				

Acronyms		
COA – Certificate of analysis	LCS – Laboratory control spike	RPD – Relative percentage difference
COC – Chain of custody	LOR – Limit of reporting	SAQP – Sample analysis quality plan
EDD – Electronic data deliverable	MS – Matrix spike	SRN – Service recipient notice

Comments

Sample Receipt

The ALS SRN/COC notes samples were received in cooler with ice, with temperature (8.3, 13.3 and 14.7C) outside of the NEPM recommended 6°C. Samples were collected and freighted from Wagga to the ALS laboratory and only marginally exceeded the recommended temperature. The recommended temperature under NEPM also generally applies to analysis of volatiles and is unlikely to impact PFAS. Therefore the temperatures upon delivery are considered acceptable for the purposes of the study.

Field Duplicates

The RPDs of the field duplicate/triplicates are presented in Table B-4. The RPD results were within data quality criteria.

Laboratory Internal QA/QC

ALS indicated it did only analysed 1 water PFAS laboratory duplicates within this batch using the standard EP231X method, instead of 2 samples to meet the expected rate of 10%. The sample was within acceptable RPD's and is noted to meet the NEPM requirement of a duplicates sample a minimum of 1 in every 20 samples. The reduced frequency is therefore not considered to materially impact the results reported.

The analytical data provided within report ES2506877 is considered acceptable and appropriate for use in this investigation.

Table C-4. Validation for reports: ES2506881

Project and Data Details			
Project number	IS41900	**Client**	Department of Defence
Site	Blamey Barracks	**Laboratory report number**	ES2506881
Validated by	BG	**Matrix type/s**	Water
Validation date	17/03/2025	**Primary laboratory**	ALS
Sampling date range	06/03/2025	**Secondary laboratory**	-

Primary Samples	Duplicate Samples	Triplicate Samples
-	-	-

Rinsate Samples	Trip Blank Samples
-	-

Field QAQC	Yes	No	NA		Yes	No	NA
Correct sample naming on COC?	☒	☐	☐	**Were field blank/s collected?**	☐	☒	☐
Correct sample naming in laboratory SRN?	☒	☐	☐	**Trip blank/s collected?**	☐	☒	☐

Do the requested limits of reporting match the project SAQP?	☒	☐	☐	**Intra and inter laboratory duplicate/s?**	☒	☐	☐
Analysis on COC correct compared to project SAQP?	☒	☐	☐	**Do field blank/s results meet criteria?**	☐	☐	☒
Analysis on SRN correct as compared to COC?	☒	☐	☐	**Do trip blank/s results meet criteria?**	☐	☐	☒
All samples received intact and within acceptable temp. range?	☐	☒	☐	**Do duplicate results meet criteria?**	☐	☒	☐
Laboratory QAQC	**Yes**	**No**	**NA**		**Yes**	**No**	**NA**
Do samples meet analysis holding times?	☒	☐	☐	**Are laboratory duplicate RPDs < 30%?**	☒	☐	☐
Do analytes reported in COA match SRN?	☒	☐	☐	**Are LCS/standards within laboratory specified ranges?**	☒	☐	☐
Is internal laboratory QAQC frequency adequate?	☐	☒	☐	**Are laboratory MS recoveries within laboratory specified ranges?**	☒	☐	☐
Do lab reports and EDD match?	☒	☐	☐	**Are surrogate spikes recoveries within laboratory specified ranges?**	☒	☐	☐
Are all results below LOR for method blanks?	☐	☐	☒				

Acronyms

COA – Certificate of analysis	LCS – Laboratory control spike	RPD – Relative percentage difference
COC – Chain of custody	LOR – Limit of reporting	SAQP – Sample analysis quality plan
EDD – Electronic data deliverable	MS – Matrix spike	SRN – Service recipient notice

Comments

Sample Receipt

The ALS SRN/COC notes samples were received in cooler with ice, with temperature (8.9, 13.3 and 14.7C) outside of the NEPM recommended 6°C. Samples were collected and freighted from Wagga to the ALS laboratory and only marginally exceeded the recommended temperature. The recommended temperature under NEPM also generally applies to analysis of volatiles and is unlikely to impact PFAS. Therefore the temperatures upon delivery are considered acceptable for the purposes of the study.

Field Duplicates

Only one sample was analysed in this batch, from a private property. For rinsates, trip blanks and duplicate/triplicate assessment refer to QA/QC review of batch ES2506877 in Table C-3 that were also collected on 6/3/25.

Rinsate Blanks and Trip Blanks

Rinsate blanks and Trip Blanks were not analysed within this lab batch, but a rinsate was collected on 6/3/25 and was analysed within batch ES250877 and trip blanks were sent in the esky with the samples. These samples were taken from Council property and were therefore kept on a separate COC/lab batch.

Laboratory Internal QA/QC

ALS indicated it did only analysed 1 water PFAS laboratory duplicates within this batch using the standard EP231X method, instead of 2 samples to meet the expected rate of 10%. The sample was within acceptable RPD's and is noted to meet the NEPM requirement of a duplicates sample a minimum of 1 in every 20 samples. The reduced frequency is therefore not considered to materially impact the results reported.

The analytical data provided within report ES2506881 is considered acceptable and appropriate for use in this investigation.

Table C-5. Validation for reports: ES2506882

Project and Data Details			
Project number	IS41900	**Client**	Department of Defence
Site	Blamey Barracks	**Laboratory report number**	ES2506882
Validated by	BG	**Matrix type/s**	Water

Validation date	17/03/2025	**Primary laboratory**	ALS
Sampling date range	06/03/2025	**Secondary laboratory**	-

Primary Samples	**Duplicate Samples**	**Triplicate Samples**
-	-	-

Rinsate Samples	**Trip Blank Samples**
-	-

Field QAQC	Yes	No	NA		Yes	No	NA
Correct sample naming on COC?	☒	☐	☐	**Were field blank/s collected?**	☐	☒	☐
Correct sample naming in laboratory SRN?	☒	☐	☐	**Trip blank/s collected?**	☐	☒	☐
Do the requested limits of reporting match the project SAQP?	☒	☐	☐	**Intra and inter laboratory duplicate/s?**	☒	☐	☐
Analysis on COC correct compared to project SAQP?	☒	☐	☐	**Do field blank/s results meet criteria?**	☒	☐	☐
Analysis on SRN correct as compared to COC?	☒	☐	☐	**Do trip blank/s results meet criteria?**	☒	☐	☐
All samples received intact and within acceptable temp. range?	☐	☒	☐	**Do duplicate results meet criteria?**	☐	☒	☐
Laboratory QAQC	Yes	No	NA		Yes	No	NA
Do samples meet analysis holding times?	☒	☐	☐	**Are laboratory duplicate RPDs < 30%?**	☒	☐	☐
Do analytes reported in COA match SRN?	☒	☐	☐	**Are LCS/standards within laboratory specified ranges?**	☒	☐	☐
Is internal laboratory QAQC frequency adequate?	☐	☒	☐	**Are laboratory MS recoveries within laboratory specified ranges?**	☒	☐	☐
Do lab reports and EDD match?	☒	☐	☐	**Are surrogate spikes recoveries within laboratory specified ranges?**	☒	☐	☐
Are all results below LOR for method blanks?	☒	☐	☐				

Acronyms		
COA – Certificate of analysis	LCS – Laboratory control spike	RPD – Relative percentage difference
COC – Chain of custody	LOR – Limit of reporting	SAQP – Sample analysis quality plan
EDD – Electronic data deliverable	MS – Matrix spike	SRN – Service recipient notice

Comments
Sample Receipt The ALS SRN/COC notes samples were received in cooler with ice, with temperature (8.9,13.3 and 14.7C) outside of the NEPM recommended 6°C. Samples were collected and freighted from Wagga to the ALS laboratory and only marginally exceeded the recommended temperature. The recommended temperature under NEPM also generally applies to analysis of volatiles and is unlikely to impact PFAS. Therefore the temperatures upon delivery are considered acceptable for the purposes of the study. **Field Duplicates** Only one sample was analysed in this batch, from a private property. For rinsates, trip blanks and duplicate/triplicate assessment refer to QA/QC review of batch ES2506877 in Table C-3 that were also collected on 6/3/25. **Rinsate Blanks and Trip Blanks** Rinsate blanks and Trip Blanks were not analysed within this lab batch, but a rinsate was collected on 6/3/25 and was analysed within batch ES250877 and trip blanks were sent in the esky with the samples. These samples were taken from Council property and were therefore kept on a separate COC/lab batch. **Laboratory Internal QA/QC** ALS indicated it did only analysed 1 water PFAS laboratory duplicates within this batch using the standard EP231X method, instead of 2 samples to meet the expected rate of 10%. The sample was within acceptable RPD's and is noted to meet the NEPM requirement of a duplicates sample a minimum of 1 in every 20 samples. The reduced frequency is therefore not considered to materially impact the results reported.
The analytical data provided within report ES2506882 are considered acceptable and appropriate for use in this investigation.

Appendix D. Field Records & Calibration Certificates

Table D-1. Field measurements and sample comments

Location	Gauging Date	SWL (mAHD)	Bore Depth (mBTOC)	Sampling Method	Hydrasleeve Deployment Date	Hydrasleeve Depth (mBTOC)	Screened Interval (mBTOC)	Sampled Date	Equipment ID	Sample Comments	DO	Temp	ORP	EC	pH
											mg/L	°C	mV	µS/cm	pH Units
GROUNDWATER MONITORING WELLS															
MW103	24/02/2025	203.117	52.135	Hydrasleeve	24/02/25	50.5	49-52	4/03/2025	18D102941	Cloudy, grey, some suspended solids. No odour. Duplicate sample collected - 0315_QC101_250304/0315_QC201_250304	2.32	22.3	77.6	2,799	6.4
MW104	24/02/2025	198.881	53.103	Hydrasleeve	24/02/25	45.0	38-53	4/03/2025	18D102941	Cloudy to turbid at base of hydrasleeve, brown-orange, suspended solids towards base of Hydrasleeve. No odour.	3.23	21.1	101.3	5,244	6.37
MW107	24/02/2025	217.799	16.185	Hydrasleeve	24/02/25	14.2	12.5-15.5	4/03/2025	18D102941	Slightly cloudy, no odour, brown/orange tinge, some suspended solids towards at the base of Hydrasleeve.	2.96	20.2	-58.4	2,066	7.1
MW109	24/02/2025	156.408	34.695	Hydrasleeve	24/02/25	30.0	22.5-31.5	6/03/2025	18D102941	Clear to cloudy at base of hydrasleeve, slight grey-orange colour. No odour.	2.4	22.6	119.3	1,210	6.95
MW110	24/02/2025	181.829	21.89	Hydrasleeve	24/02/25	17.2	15.5-19.0	6/03/2025	18D102941	Clear, no odour. QAQC samples - QC102_250306/QC202_250306	1.53	20.9	122	2,462	6.73
MW601	25/02/2025	198.963	16.805	Hydrasleeve	25/02/25	13.0	10-16	6/03/2025	18D102941	No field observation recorded.	2.71	19	3.6	746	7.44
MW624	25/02/2025	196.943	53.094	Hydrasleeve	25/02/25	39.0	28.0-50.0	6/03/2025	18D102941	Slight sulfuric odour, clear to slightly cloudy, minimal sediment at base of Hydrasleeve.	1.91	18.2	-111.9	4,731	6.97
MW625	25/02/2025	167.627	21.88	Hydrasleeve	24/02/25	18.6	15.5-21.5	6/03/2025	18D102941	Slightly cloudy to cloudy, brown/orange. No odour.	1.52	19.9	-59.5	2,025	6.38
MW628	25/02/2025	168.448	21.094	Hydrasleeve	24/02/25	18.0	15-21	6/03/2025	18D102941	Slightly cloudy to turbid - orange/brown colour. No odour.	2.32	20	101	1,666	7.02
SURFACE WATER (OR SEDIMENT) SAMPLES															
SW103	N/A	N/A	N/A	Grab	N/A	N/A	-	6/03/2025	18D102941	Slightly cloudy, brown tinge, no flow in creek, no sheen, no odour	3.2	25.1	68.7	267.7	7.64
SD106	N/A	N/A	N/A	Grab	N/A	N/A	-	20/02/2025	Insufficient water, sediment sample collected.						
SW107	N/A	N/A	N/A	Grab	N/A	N/A	-	6/03/2025	18D102941	Turbid, brown suspended solids, no flow, no odour, no sheen	8.01	31.2	38.5	183.9	7.76
SW108	N/A	N/A	N/A	Grab	N/A	N/A	-	7/03/2025	18D102941	Cloudy, green-brown tinge, no odour, no sheen	3.48	22.8	50.6	888	9.65
SW111	N/A	N/A	N/A	Grab	N/A	N/A	-	7/03/2025	18D102941	Slightly cloudy, brown tinge, slight organic odour, no sheen, QAQC sample taken	1.6	20.8	33.4	1287	8.37
SD118	N/A	N/A	N/A	N/A	N/A	N/A	-	20/02/2025	Insufficient water, sediment sample collected.						
SD121	N/A	N/A	N/A	N/A	N/A	N/A	-	20/02/2025	Insufficient water, sediment sample collected.						

Location	Gauging Date	SWL (mAHD)	Bore Depth (mBTOC)	Sampling Method	Hydrasleeve Deployment Date	Hydrasleeve Depth (mBTOC)	Screened Interval (mBTOC)	Sampled Date	Equipment ID	Sample Comments	DO	Temp	ORP	EC	pH
											mg/L	℃	mV	µS/cm	pH Units
SD127	N/A	N/A	N/A	Grab	N/A	N/A	-	20/02/2025	Insufficient water, sediment sample collected.						
SW136	N/A	N/A	N/A	Grab	N/A	N/A	-	4/03/2025	18D102941	Clear to slightly cloudy, brown tinge, no flow, no odour, no sheen	1.75	24.4	-7.3	184	7.23
SD614	N/A	N/A	N/A	Grab	N/A	N/A	-	20/02/2025	Insufficient water, sediment sample collected.						
SD677	N/A	N/A	N/A	Grab	N/A	N/A	-	20/02/2025	Insufficient water, sediment sample collected.						
SW680	N/A	N/A	N/A	Grab	N/A	N/A	-	6/03/2025	18D102941	Clear to slightly cloudy, brown tinge, no flow, no odour, no sheen	2.08	23.7	119.5	193.3	7.1
SEWER SAMPLES															
SW140	N/A	N/A	N/A	Grab	N/A	N/A	-	20/02/2025	N/A	Stagnant, pit opens to tank. Roots growing. Clear, no suspended solids, odour, sheen.	N/A	N/A	N/A	N/A	N/A
SW144	N/A	N/A	N/A	Grab	N/A	N/A	-	20/02/2025	N/A	Clear to grey. Organic suspended solids, strong organic odour. Raw sewage.	N/A	N/A	N/A	N/A	N/A
SW148	N/A	N/A	N/A	Grab	N/A	N/A	-	20/02/2025	N/A	Algae on sides, raw sewerage. Grey/orange, cloudy, organic suspended solids, strong organic odour, no sheen. Strong flow towards the WWTP.	N/A	N/A	N/A	N/A	N/A
SW149	N/A	N/A	N/A	Grab	N/A	N/A	-	20/02/2025	N/A	Pit filled with crusted solids, informed by site operator that holding tank next to pit also contained same water. Sample from holding tank. Moderate flow up to pipes. Clear grey, organic suspended solids, strong organic odour. Raw sewage.	N/A	N/A	N/A	N/A	N/A

Multi Parameter Water Meter

Instrument YSI Quatro Pro Plus
Serial No. 18E104561

Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. mV	✓	
	3. EC	✓	
	4. D.O	✓	
	5. Temp	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor		Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 7.00		7.00		426181	6.98
2. pH 4.00		4.00		429462	3.99
3.ORP (mV)		228.72		426086/426087	224.6
4.EC (uS/cm)		2760		429463	2748
5. D.O (%)		0.0%		412773	0.1%
6. Temp (C)		25.6		MultiTherm	22.4

Calibrated by: **Athonis Popotas**

Calibration date: **18/02/2025**

Next calibration due: **20/03/2025**

Multi Parameter Water Meter

Instrument YSI Quatro Pro Plus
Serial No. 11K101260

Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. mV	✓	
	3. EC	✓	
	4. D.O	✓	
	5. Temp	✓	
Alarms	Beeper	✓	
	Settings	✓	
Software	Version	✓	
Data logger	Operation	✓	
Download	Operation	✓	
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
2. pH 7.00		7.00		433551	7.00
3. pH 4.00		4.00		429462	4.02
4. ORP (mV)		227.84		A426086/B435258	227.8
5. EC (uS/cm)		2760		436693	2768
6. D.O (%)		0.0%		412773	-0.5%
7. Temp (C)		23.8		MultiTherm	23.5

Calibrated by: **Athonis Popotas**

Calibration date: **25/02/2025**

Next calibration due: **28/03/2025**

Multi Parameter Water Meter

Instrument YSI Quatro Pro Plus
Serial No. 18D102941

Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. mV	✓	
	3. EC	✓	
	4. D.O	✓	
	5. Temp	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 7.00 (pH)		pH 7.00		433551	7.02
2. pH 4.00 (pH)		pH 4.00		429462	3.80
3. ORP (mV)		227.84		A426086/B435258	226.2
4. EC (µS/cm)		2760		436693	2773
5. D.O		0.0%		412773	0.2%
6. Temp (°C)		23.8		MultiTherm	23.7

Calibrated by: **Athonis Popotas**

Calibration date: **19/02/2025**

Next calibration due: **21/03/2025**

WQM Calibration YSI - 18E104561

Thursday, 19 October 2023 8:57 AM

Field Calibration Record Sheet

Project no.	IS419100
Project name	RAAF Base Wagga PFAS OMP
Instrument Name	YSI professional plus
Instrument ID	18E104561

Jacobs

Calibration date/Time	Analyte	Units	Standard used	Initial Reading	Calibrated Reading	Temp. (°C)	Drift Check	Comments	Calibrated By
8:55	pH	pH units	4	4.07	4.01	26.3			LE
8:55	pH	pH units	7	6.98	7	26			LE
9:00	EC	SPC	2760	2733	2813	26			LE
9:14	ORP	mV	245	201.7	220.9	26.2			LE
9:16	DO	%	0	-0.1	0.0	26			LE
9:18	DO	%	100	97.2	98	26.1			LE
27/02/25 8:00	pH	pH units	4	4.05	4.00	23.1			SB
27/02/25 8:00	pH	pH units	7	6.97	7.01	23.1			SB
27/02/25 8:00	EC	SPC	2760	2859	2655	23.1			Calibrated to temp - 2654.56.
27/02/25 8:00	ORP	mV	245	225.7	227.1	23.1			Calibrated to temp- 227.18
27/02/25 8:00	DO	%	0	-0.05	0	23.1			SB
27/02/25 8:00	DO	%	100	99.5	99.9	23.1			SB
28/2/25 6:30	pH	pH units	4	3.95	4.01	27.2			
	pH	pH units	7	6.91	7.00				
	EC	SPC	2760	2609	2813	26.7			Cal to 2812.72 - temp
	ORP	mV	245	220.6	219.7				Cal to 219.7 - temp
	DO	%	0	0			Y		

WQM Calibration YSI - 11K101260

Thursday, 19 October 2023 8:57 AM

Field Calibration Record Sheet

Project no.	IS419100
Project name	RAAF Base Wagga PFAS OMP
Instrument Name	YSI Professional Plus
Instrument ID	11K101260

Jacobs

Calibration date/Time	Analyte	Units	Standard used	Initial Reading	Calibrated Reading	Temp. (˚C)	Drift Check	Comments	Calibrated By
06/02/25 0707	pH	pH units	4	4.07	4.00	23.2	-	-	EM
06/02/25 0711	pH	pH units	7	6.96	7.00	23.3	-	-	EM
06/02/25 0714	EC	SPC	2654	2710	2658	23.0	-	-	EM
06/02/25 0716	ORP	mV	227.4	231.3	227.3	23.0	-	-	EM
06/02/25 0721	DO	%	0	0.2	-0.1	23.1	-	-	EM
06/02/25 0724	DO	%	100	100.0	97.2	22.2	-	-	EM
07/02/25 0937	pH	pH units	4	4.04	4.00	24.5	-	-	EM
07/02/25 0940	pH	pH units	7	6.93	7.00	24.6	-	-	EM
07/02/25 0941	EC	SPC	2760	2645	2765	24.6	-	-	EM
07/02/25 0943	ORP	mV	233.8	223.1	233.7	24.6	-	-	EM
07/02/25 0945	DO	%	0	0.0	-0.1	24.6	-	-	EM
07/02/25 0949	DO	%	100	94.1	95.0	26.0	-	-	EM

WQM Calibration YSI - 18D102941

Thursday, 19 October 2023 8:57 AM

Field Calibration Record Sheet

Project no.	IS419100
Project name	
Instrument Name	
Instrument ID	18D102941

Jacobs

Calibration date/Time	Analyte	Units	Standard used	Initial Reading	Calibrated Reading	Temp. (°C)	Drift Check	Comments	Calibrated By
27/02/25 8:00	pH	pH units	4	4.05	4.00	23.1			SB
27/02/25 8:00	pH	pH units	7	6.97	7.01	23.1			SB
27/02/25 8:00	EC	SPC	2760	2859	2655	23.1			Calibrated to temp - 2654.56.
27/02/25 8:00	ORP	mV	245	225.7	227.1	23.1			Calibrated to temp- 227.18
27/02/25 8:00	DO	%	0	-0.05	0	23.1			SB
27/02/25 8:00	DO	%	100	99.5	99.9	23.1			SB
28/2/25 6:30	pH	pH units	4	3.95	4.01	27.2			
	pH	pH units	7	6.91	7.00				
	EC	SPC	2760	2609	2813	26.7			Cal to 2812.72 - temp
	ORP	mV	245	220.6	219.7				Cal to 219.7 - temp
	DO	%	0	0			Y		
	DO	%	100						
4/3/25 11:10	pH	pH units	4	4.04	4.01	26.2			
4/3/25 11:15	pH	pH units	7	7.00	7.00	26.2			
4/3/25 11:20	EC	SPC	2760	2795		26.5			Calibrating to 2850. 26.5C
	ORP	mV	220.4	220.3		26.2			
	DO	%	0	-0.5	0	25.3			
4/3/25 11:41	DO	%	100						100% DO did not rise to 100, remained at 50%. Did not calibrate incase error - calibration aborted
6/3/25 7:15	pH	pH units	4	4.00	4.00	22.5			
6/3/25 7:18	pH	pH units	7	6.99	7.01	22.8			
6/3/25	EC	SPC	2760						
	ORP	mV	245						
	DO	%	0						
	DO	%	100						
7/3/25 7:07	pH	pH units	4	4.06	4.00	21.6			
7/3/25	pH	pH units	7.02	6.98	7.02	21.3			
	EC	SPC	2601.84	2954		21.6			Temp calibrated
7/3/25	ORP	mV	231.14	229.1	231.1	21.3			Temp calibrated

Appendix E. Mann-Kendall Analysis Results

Table E-1. Mann-Kendall Analysis Results - Groundwater (Significance Level= 0.05, primary samples only).

Monitoring Zone	Location Code	Monitoring Unit (Indicative)	PFOA (µg/L)	PFOS (µg/L)	PFHxS (µg/L)	PFOS+PFHxS (µg/L)
Wastewater Treatment Plant	MW103	Regional	No Trend, S=9, N=9	No Trend, S=9, N=9	**Increasing, S=18, N=9**	**Increasing, S=18, N=9**
	MW104	Regional	No Trend, S=0, N=8	No Trend, S=0, N=8	No Trend, S=0, N=8	No Trend, S=0, N=8
	MW107	Perched	No Trend, S=9, N=8	No Trend, S=9, N=8	No Trend, S=2, N=8	No Trend, S=8, N=8
Former Commandants House	MW109	Regional	No Trend, S=0, N=8	No Trend, S=0, N=8	No Trend, S=0, N=8	No Trend, S=0, N=8
	MW110	Regional	No Trend, S=0, N=8	No Trend, S=0, N=8	No Trend, S=0, N=8	No Trend, S=0, N=8
Kapooka Creek/flow path	MW601	Perched	No Trend, S=-6, N=10	**Increasing, S=33, N=10**	No Trend, S=2, N=10	No Trend, S=6, N=10
	MW624	Regional	No Trend, S=0, N=9	No Trend, S=0, N=9	No Trend, S=0, N=9	No Trend, S=0, N=9
Former Commandants House	MW625	Regional	No Trend, S=0, N=8	No Trend, S=0, N=8	No Trend, S=0, N=8	No Trend, S=0, N=8

Table E-2. Mann-Kendall Analysis Results - Surface Water (Significance Level= 0.05, primary samples only)

Monitoring Zone	Location Code	PFOA (µg/L)	PFOS (µg/L)	PFHxS (µg/L)	PFOS+PFHxS (µg/L)
Overland drainage pathways	SW103	No Trend, S=3, N=9	No Trend, S=2, N=9	No Trend, S=6, N=9	No Trend, S=4, N=9
	SW106	No Trend, S=0, N=3	No Trend, S=2, N=3	No Trend, S=2, N=3	No Trend, S=3, N=3
	SW107	No Trend, S=-5, N=8	No Trend, S=-2, N=8	No Trend, S=3, N=8	No Trend, S=4, N=8
Wastewater Treatment Plant ponds	SW108	No Trend, S=-5, N=8	No Trend, S=-5, N=8	No Trend, S=-3, N=8	No Trend, S=-5, N=8
	SW111	No Trend, S=0, N=8	No Trend, S=-1, N=8	No Trend, S=0, N=8	No Trend, S=-1, N=8
Overland drainage pathways	SW118	No Trend, S=0, N=6	No Trend, S=-3, N=6	No Trend, S=-2, N=6	No Trend, S=-3, N=6
Kapooka Creek	SW121	No Trend, S=-9, N=8	No Trend, S=-7, N=8	No Trend, S=-10, N=8	No Trend, S=-7, N=8
Former Quarry	SW127	No Trend, S=0, N=6	No Trend, S=0, N=6	No Trend, S=0, N=6	No Trend, S=0, N=6

Monitoring Zone	Location Code	PFOA (µg/L)	PFOS (µg/L)	PFHxS (µg/L)	PFOS+PFHxS (µg/L)
Sewer	SW140	No Trends, S=0, N=8	No Trend, S=2, N=8	No Trends, S=-2, N=8	No Trend, S=1, N=8
	SW144	No Trends, S=0, N=8	No Trend, S=-6, N=8	No Trends, S=-7, N=8	No Trend, S=8, N=8
	SW148	No Trends, S=-7, N=8	No Trend, S=-8, N=8	No Trends, S=-7, N=8	No Trend, S=-8, N=8
	SW149	No Trends, S=0, N=7	No Trend, S=1, N=7	No Trends, S=4, N=7	No Trend, S=2, N=7
Kapooka Creek/flow path	SW614	No Trend, S=0, N=5	No Trend, S=3, N=5	No Trend, S=3, N=5	No Trend, S=3, N=5
	SW680	No Trend, S=0, N=7	**Increasing, S=14, N=7**	No Trend, S=10, N=7	**Increasing, S=15, N=7**

Appendix F. Laboratory Certificates

CHAIN OF CUSTODY

COC#: 79441 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 24/2/25 12:25	DATE TIME:	DATE TIME:

CLIENT: SINKNI - JACOBS GROUP(AUSTRALIA)PTY LTD

PROJECT: Kapooka PMAP

SITE: Kapooka Remediation Sampling - Water

ORDER NO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: Sophia Berlyn CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Sophia Berlyn QUOTE NO: ES24SINKNI0001 - Compass / ES2025SINKNI0001

EMAIL REPORTS TO: sophia.berlyn@jacobs.com, grant.moylan@jacobs.com

EMAIL INVOICES TO: grant.moylan@jacobs.com

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	Water reduced PFAS WATER	Water standard PFAS WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0315_OTH051_250221		21/02/2025 01:11 PM	WATER	ALS: 6 Non ALS: 0	No		X		
002	0315_OTH052_250221		21/02/2025 01:12 PM	WATER	ALS: 6 Non ALS: 0	No		X		
003	0315_OTH053_250221		21/02/2025 01:14 PM	WATER	ALS: 6 Non ALS: 0	No		X		
004	0315_OTH054_250221		21/02/2025 01:15 PM	WATER	ALS: 6 Non ALS: 0	No		X		
005	0315_OTH055_250221		21/02/2025 01:10 PM	WATER	ALS: 4 Non ALS: 0	No		X		
006	0315_OTH056_250221		21/02/2025 01:13 PM	WATER	ALS: 4 Non ALS: 0	No		X		
007	0315_SW148_250220		20/02/2025 06:05 PM	WATER	ALS: 2 Non ALS: 0	No		X		

Environmental Division Sydney

Work Order Reference

ES2505157

Telephone : +61-2-8784 8555

CHAIN OF CUSTODY

COC#: 79441 ALS Laboratory: ES Sydney Environmental

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

CLIENT: SINKNI - JACOBS GROUP(AUSTRALIA)PTY LTD

PROJECT: Kapooka PMAP

SITE: Kapooka Remediation Sampling - Water

ORDER NO:

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: Sophia Berlyn CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Sophia Berlyn QUOTE NO: ES24SINKNI0001 - Compass / ES2025SINKNI0001

EMAIL REPORTS TO: sophia.berlyn@jacobs.com, grant.moylan@jacobs.com

EMAIL INVOICES TO: grant.moylan@jacobs.com

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Water reduced PFAS WATER	Water standard PFAS WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
008	0315_SW140_250220		20/02/2025 06:05 PM	WATER	ALS: 2 Non ALS: 0	No		X		
009	0315_SW142_250220		20/02/2025 06:02 PM	WATER	ALS: 2 Non ALS: 0	No		X		
010	0315_SW143_250220		20/02/2025 06:03 PM	WATER	ALS: 2 Non ALS: 0	No		X		
011	0315_SW150_250220		20/02/2025 06:06 PM	WATER	ALS: 2 Non ALS: 0	No		X		
012	0315_SW149_250220		20/02/2025 06:04 PM	WATER	ALS: 2 Non ALS: 0	No		X		
013	0315_QC101_250220		20/02/2025 06:01 PM	WATER	ALS: 2 Non ALS: 0	No		X		
014	0315_QC201_250220		20/02/2025 06:02 PM	WATER	ALS: 2 Non ALS: 0	No		X		

CHAIN OF CUSTODY

COC#: 79441 *ALS Laboratory:* ES Sydney Environmental

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

CLIENT: SINKNI - JACOBS GROUP(AUSTRALIA)PTY LTD

PROJECT: Kapooka PMAP

SITE: Kapooka Remediation Sampling - Water

ORDER NO:

PROJECT MANAGER: Sophia Berlyn CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Sophia Berlyn QUOTE NO: ES24SINKNI0001 - Compass / ES2025SINKNI0001

EMAIL REPORTS TO: sophia.berlyn@jacobs.com, grant.moylan@jacobs.com

EMAIL INVOICES TO: grant.moylan@jacobs.com

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	Water reduced PFAS WATER	Water standard PFAS WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
015	0315_QC202_250221		21/02/2025 01:15 PM	WATER	ALS: 4 Non ALS: 0	No	X			
016	0315_QC503_250221		21/02/2025 01:19 PM	WATER	ALS: 2 Non ALS: 0	No	X			
017	0315_SW226_250220		20/02/2025 06:07 PM	WATER	ALS: 2 Non ALS: 0	No		X		
018	0315_SW144_250220		20/02/2025 06:07 PM	WATER	ALS: 2 Non ALS: 0	No		X		

CHAIN OF CUSTODY

COC#: 79441 ALS Laboratory: ES Sydney Environmental

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

CLIENT: SINKNI - JACOBS GROUP(AUSTRALIA)PTY LTD

PROJECT: Kapooka PMAP

SITE: Kapooka Remediation Sampling - Water

ORDER NO:

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: Sophia Berlyn CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Sophia Berlyn QUOTE NO: ES24SINKNI0001 - Compass / ES2025SINKNI0001

EMAIL REPORTS TO: sophia.berlyn@jacobs.com, grant.moylan@jacobs.com

EMAIL INVOICES TO: grant.moylan@jacobs.com

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0315_OTH051_250221	HDPE (no PTFE)	20 mL	00352407144720	Grey	No	
001	0315_OTH051_250221	HDPE (no PTFE)	20 mL	00352407144601	Grey	No	
001	0315_OTH051_250221	HDPE (no PTFE)	20 mL	00352407144160	Grey	No	
001	0315_OTH051_250221	HDPE (no PTFE)	20 mL	00352407144550	Grey	No	
001	0315_OTH051_250221	HDPE (no PTFE)	20 mL	00352407144467	Grey	No	
001	0315_OTH051_250221	HDPE (no PTFE)	20 mL	00352407144713	Grey	No	
002	0315_OTH052_250221	HDPE (no PTFE)	20 mL	00352407144485	Grey	No	
002	0315_OTH052_250221	HDPE (no PTFE)	20 mL	00352407144196	Grey	No	
002	0315_OTH052_250221	HDPE (no PTFE)	20 mL	00352407144360	Grey	No	
002	0315_OTH052_250221	HDPE (no PTFE)	20 mL	00352407144595	Grey	No	
002	0315_OTH052_250221	HDPE (no PTFE)	20 mL	00352407144271	Grey	No	
002	0315_OTH052_250221	HDPE (no PTFE)	20 mL	00352407144605	Grey	No	
003	0315_OTH053_250221	HDPE (no PTFE)	20 mL	00352407144678	Grey	No	
003	0315_OTH053_250221	HDPE (no PTFE)	20 mL	00352407144175	Grey	No	
003	0315_OTH053_250221	HDPE (no PTFE)	20 mL	00352407144222	Grey	No	
003	0315_OTH053_250221	HDPE (no PTFE)	20 mL	00352407144533	Grey	No	
003	0315_OTH053_250221	HDPE (no PTFE)	20 mL	00352407144267	Grey	No	
003	0315_OTH053_250221	HDPE (no PTFE)	20 mL	00352407144419	Grey	No	
004	0315_OTH054_250221	HDPE (no PTFE)	20 mL	00352407144582	Grey	No	
004	0315_OTH054_250221	HDPE (no PTFE)	20 mL	00352407144362	Grey	No	
004	0315_OTH054_250221	HDPE (no PTFE)	20 mL	00352407144653	Grey	No	
004	0315_OTH054_250221	HDPE (no PTFE)	20 mL	00352407144685	Grey	No	
004	0315_OTH054_250221	HDPE (no PTFE)	20 mL	00352407144356	Grey	No	
004	0315_OTH054_250221	HDPE (no PTFE)	20 mL	00352407144478	Grey	No	
005	0315_OTH055_250221	HDPE (no PTFE)	20 mL	00352407144304	Grey	No	
005	0315_OTH055_250221	HDPE (no PTFE)	20 mL	00352407144602	Grey	No	

CHAIN OF CUSTODY

COC#: 79441 ALS Laboratory: ES Sydney Environmental

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

CLIENT: SINKNI - JACOBS GROUP(AUSTRALIA)PTY LTD

PROJECT: Kapooka PMAP

SITE: Kapooka Remediation Sampling - Water

ORDER NO:

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: Sophia Berlyn CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Sophia Berlyn QUOTE NO: ES24SINKNI0001 - Compass / ES2025SINKNI0001

EMAIL REPORTS TO: sophia.berlyn@jacobs.com, grant.moylan@jacobs.com

EMAIL INVOICES TO: grant.moylan@jacobs.com

005	0315_OTH055_250221	HDPE (no PTFE)	20 mL	00352407144206	Grey	No	
005	0315_OTH055_250221	HDPE (no PTFE)	20 mL	00352407144376	Grey	No	
006	0315_OTH056_250221	HDPE (no PTFE)	20 mL	00352407144600	Grey	No	
006	0315_OTH056_250221	HDPE (no PTFE)	20 mL	00352407144157	Grey	No	
006	0315_OTH056_250221	HDPE (no PTFE)	20 mL	00352407144514	Grey	No	
006	0315_OTH056_250221	HDPE (no PTFE)	20 mL	00352407144495	Grey	No	
007	0315_SW148_250220	HDPE (no PTFE)	20 mL	00352407144521	Grey	No	
007	0315_SW148_250220	HDPE (no PTFE)	20 mL	00352407144690	Grey	No	
008	0315_SW140_250220	HDPE (no PTFE)	20 mL	00352407144396	Grey	No	
008	0315_SW140_250220	HDPE (no PTFE)	20 mL	00352407144384	Grey	No	
009	0315_SW142_250220	HDPE (no PTFE)	20 mL	00352407144575	Grey	No	
009	0315_SW142_250220	HDPE (no PTFE)	20 mL	00352407144687	Grey	No	
010	0315_SW143_250220	HDPE (no PTFE)	20 mL	00352407144147	Grey	No	
010	0315_SW143_250220	HDPE (no PTFE)	20 mL	00352407144738	Grey	No	
011	0315_SW150_250220	HDPE (no PTFE)	20 mL	00352407144374	Grey	No	
011	0315_SW150_250220	HDPE (no PTFE)	20 mL	00352407144534	Grey	No	
012	0315_SW149_250220	HDPE (no PTFE)	20 mL	00352407144614	Grey	No	
012	0315_SW149_250220	HDPE (no PTFE)	20 mL	00352407144425	Grey	No	
013	0315_QC101_250220	HDPE (no PTFE)	20 mL	00352407144675	Grey	No	
013	0315_QC101_250220	HDPE (no PTFE)	20 mL	00352407144641	Grey	No	
014	0315_QC201_250220	HDPE (no PTFE)	20 mL	00352407144427	Grey	No	
014	0315_QC201_250220	HDPE (no PTFE)	20 mL	00352407144220	Grey	No	
015	0315_QC202_250221	HDPE (no PTFE)	20 mL	00352407144185	Grey	No	
015	0315_QC202_250221	HDPE (no PTFE)	20 mL	00352407144565	Grey	No	
015	0315_QC202_250221	HDPE (no PTFE)	20 mL	00352407144723	Grey	No	
015	0315_QC202_250221	HDPE (no PTFE)	20 mL	00352407144701	Grey	No	
016	0315_QC503_250221	HDPE (no PTFE)	20 mL	00352407144287	Grey	No	

CHAIN OF CUSTODY

COC#: 79441 *ALS Laboratory:* ES Sydney Environmental

CLIENT: SINKNI - JACOBS GROUP(AUSTRALIA)PTY LTD

PROJECT: Kapooka PMAP

SITE: Kapooka Remediation Sampling - Water

ORDER NO:

PROJECT MANAGER: Sophia Berlyn CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Sophia Berlyn QUOTE NO: ES24SINKNI0001 - Compass / ES2025SINKNI0001

EMAIL REPORTS TO: sophia.berlyn@jacobs.com, grant.moylan@jacobs.com

EMAIL INVOICES TO: grant.moylan@jacobs.com

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:

016	0315_QC503_250221	HDPE (no PTFE)	20 mL	00352407144461	Grey	No	
017	0315_SW226_250220	HDPE (no PTFE)	20 mL	00352407144250	Grey	No	
017	0315_SW226_250220	HDPE (no PTFE)	20 mL	00352407144237	Grey	No	
018	0315_SW144_250220	HDPE (no PTFE)	20 mL	00352407144452	Grey	No	
018	0315_SW144_250220	HDPE (no PTFE)	20 mL	00352407144696	Grey	No	

Total Bottle Count: ALS: 58, Non ALS: 0

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **ES2505157**		
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: SOPHIA BERLYN	Contact	: Sandy Phan
Address	: 177 Pacific Highway Level 7 NORTH SYDNEY 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: sophia.berlyn@jacobs.com	E-mail	: sandy.phan@alsglobal.com
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: 0315_NSW_PFASMGMT_24	Page	: 1 of 3
Order number	: -	Quote number	: ES2025SINKNI0001 (ES24SINKNI0001 - Compass)
C-O-C number	: 79441	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: 0315		
Sampler	: SOPHIA BERLYN		

Dates

Date Samples Received	: 24-Feb-2025 12:25	Issue Date	: 25-Feb-2025
Client Requested Due Date	: 03-Mar-2025	Scheduled Reporting Date	: **03-Mar-2025**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 5	Temperature	: 8.3°C, 7.9°C & 8.7°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 18 / 17

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
- Sample ID QC0315_QC201_2250220 & QC0315_QC202_2250221 will be forwarded to Eurofins as per COC.
- **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 direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- 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 - EP231 PFAS - Short Suite (12 analytes)	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2505157-001	21-Feb-2025 13:11	0315_OTH051_250221		✓
ES2505157-002	21-Feb-2025 13:12	0315_OTH052_250221		✓
ES2505157-003	21-Feb-2025 13:14	0315_OTH053_250221		✓
ES2505157-004	21-Feb-2025 13:15	0315_OTH054_250221		✓
ES2505157-005	21-Feb-2025 13:10	0315_OTH055_250221		✓
ES2505157-006	21-Feb-2025 13:13	0315_OTH056_250221		✓
ES2505157-007	20-Feb-2025 18:05	0315_SW148_250220		✓
ES2505157-008	20-Feb-2025 18:05	0315_SW140_250220		✓
ES2505157-009	20-Feb-2025 18:02	0315_SW142_250220		✓
ES2505157-010	20-Feb-2025 18:03	0315_SW143_250220		✓
ES2505157-011	20-Feb-2025 18:06	0315_SW150_250220		✓
ES2505157-012	20-Feb-2025 18:04	0315_SW149_250220		✓
ES2505157-013	20-Feb-2025 18:01	0315_QC101_250220	✓	
ES2505157-015	21-Feb-2025 13:15	0315_QC102_250221	✓	
ES2505157-016	21-Feb-2025 13:19	0315_QC503_250221	✓	
ES2505157-017	20-Feb-2025 18:07	0315_SW226_250220		✓
ES2505157-018	20-Feb-2025 18:07	0315_SW144_250220		✓

Proactive Holding Time Report

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

Requested Deliverables

DERP REPORTS		
- EDI Format - ESDAT (ESDAT)	Email	derp.labreports@esdat.com.au
ELLEN MARNOCK		
- *AU Certificate of Analysis - NATA (COA)	Email	ellen.marnock@jacobs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	ellen.marnock@jacobs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	ellen.marnock@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	ellen.marnock@jacobs.com
- Chain of Custody (CoC) (COC)	Email	ellen.marnock@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	ellen.marnock@jacobs.com
GRANT MOYLAN		
- *AU Certificate of Analysis - NATA (COA)	Email	grant.moylan@jacobs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	grant.moylan@jacobs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	grant.moylan@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	grant.moylan@jacobs.com
- A4 - AU Tax Invoice (INV)	Email	grant.moylan@jacobs.com
- Chain of Custody (CoC) (COC)	Email	grant.moylan@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	grant.moylan@jacobs.com
JACOBS INVOICES		
- A4 - AU Tax Invoice (INV)	Email	auapinvoices@jacobs.com
SOPHIA BERLYN		
- *AU Certificate of Analysis - NATA (COA)	Email	sophia.berlyn@jacobs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	sophia.berlyn@jacobs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	sophia.berlyn@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	sophia.berlyn@jacobs.com
- Chain of Custody (CoC) (COC)	Email	sophia.berlyn@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	sophia.berlyn@jacobs.com

CERTIFICATE OF ANALYSIS

Work Order	: **ES2505157**	Page	: 1 of 15
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: SOPHIA BERLYN	Contact	: Sandy Phan
Address	: 177 Pacific Highway Level 7 NORTH SYDNEY 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: 0315_NSW_PFASMGMT_24	Date Samples Received	: 24-Feb-2025 12:25
Order number	: 540003363	Date Analysis Commenced	: 25-Feb-2025
C-O-C number	: 79441	Issue Date	: 27-Feb-2025 16:03
Sampler	: SOPHIA BERLYN		
Site	: 0315		
Quote number	: ES24SINKNI0001 - Compass		
No. of samples received	: 18		
No. of samples analysed	: 17		

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*
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

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 Contract 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 QSM5.4 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 or as per tables in USEPA 1633 where listed. 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 and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: SURFACE WATER
(Matrix: WATER)

Compound	CAS Number	LOR	Unit	Sample ID	0315_OTH051_250221	0315_OTH052_250221	0315_OTH053_250221	0315_OTH054_250221	0315_OTH055_250221
				Sampling date / time	21-Feb-2025 13:11	21-Feb-2025 13:12	21-Feb-2025 13:14	21-Feb-2025 13:15	21-Feb-2025 13:10
					ES2505157-001	ES2505157-002	ES2505157-003	ES2505157-004	ES2505157-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
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	0.01	µg/L		<0.01	**0.02**	<0.01	**0.01**	<0.01
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	**0.14**	**0.10**	<0.01	<0.01
Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<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

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0315_OTH051_250221	0315_OTH052_250221	0315_OTH053_250221	0315_OTH054_250221	0315_OTH055_250221
				Sampling date / time	21-Feb-2025 13:11	21-Feb-2025 13:12	21-Feb-2025 13:14	21-Feb-2025 13:15	21-Feb-2025 13:10
Compound	CAS Number	LOR	Unit		ES2505157-001	ES2505157-002	ES2505157-003	ES2505157-004	ES2505157-005
					Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	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
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		**0.10**	<0.05	<0.05	**0.61**	**0.62**
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		**0.10**	**0.16**	**0.10**	**0.62**	**0.62**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.16**	**0.10**	**0.01**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.10**	**0.16**	**0.10**	**0.62**	**0.62**
EP231S: PFAS Surrogate									

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0315_OTH051_250221	0315_OTH052_250221	0315_OTH053_250221	0315_OTH054_250221	0315_OTH055_250221
				Sampling date / time	21-Feb-2025 13:11	21-Feb-2025 13:12	21-Feb-2025 13:14	21-Feb-2025 13:15	21-Feb-2025 13:10
Compound	CAS Number	LOR	Unit		ES2505157-001	ES2505157-002	ES2505157-003	ES2505157-004	ES2505157-005
					Result	Result	Result	Result	Result
EP231S: PFAS Surrogate - Continued									
13C4-PFOS	----	0.02	%		**102**	**99.4**	**100**	**104**	**99.1**
13C8-PFOA	----	0.02	%		**96.0**	**92.8**	**96.5**	**97.3**	**91.5**

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0315_OTH056_250221	0315_SW148_250220	0315_SW140_250220	0315_SW142_250220	0315_SW143_250220
				Sampling date / time	21-Feb-2025 13:13	20-Feb-2025 18:05	20-Feb-2025 18:05	20-Feb-2025 18:02	20-Feb-2025 18:03
Compound	CAS Number	LOR	Unit		ES2505157-006	ES2505157-007	ES2505157-008	ES2505157-009	ES2505157-010
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
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	0.01	µg/L		<0.01	<0.01	**0.08**	<0.01	<0.01
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		**0.08**	<0.01	**0.02**	<0.01	<0.01
Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<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

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0315_OTH056_250221	0315_SW148_250220	0315_SW140_250220	0315_SW142_250220	0315_SW143_250220
				Sampling date / time	21-Feb-2025 13:13	20-Feb-2025 18:05	20-Feb-2025 18:05	20-Feb-2025 18:02	20-Feb-2025 18:03
Compound	CAS Number	LOR	Unit		ES2505157-006	ES2505157-007	ES2505157-008	ES2505157-009	ES2505157-010
					Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	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
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**	<0.01	**0.10**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.08**	<0.01	**0.10**	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.08**	<0.01	**0.10**	<0.01	<0.01
EP231S: PFAS Surrogate									

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0315_OTH056_250221	0315_SW148_250220	0315_SW140_250220	0315_SW142_250220	0315_SW143_250220
				Sampling date / time	21-Feb-2025 13:13	20-Feb-2025 18:05	20-Feb-2025 18:05	20-Feb-2025 18:02	20-Feb-2025 18:03
Compound	CAS Number	LOR	Unit		ES2505157-006	ES2505157-007	ES2505157-008	ES2505157-009	ES2505157-010
					Result	Result	Result	Result	Result
EP231S: PFAS Surrogate - Continued									
13C4-PFOS	----	0.02	%		**105**	**97.7**	**98.5**	**97.6**	**107**
13C8-PFOA	----	0.02	%		**95.6**	**95.0**	**94.4**	**89.4**	**92.1**

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0315_SW150_250220	0315_SW149_250220	0315_QC101_250220	0315_QC102_250221	----
				Sampling date / time	20-Feb-2025 18:06	20-Feb-2025 18:04	20-Feb-2025 18:01	21-Feb-2025 13:15	----
Compound	CAS Number	LOR	Unit		ES2505157-011	ES2505157-012	ES2505157-013	ES2505157-015	--------
					Result	Result	Result	Result	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L		<0.02	<0.02	----	----	----
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	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	<0.01	**0.01**	----
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	<0.01	**0.15**	----
Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L		<0.02	<0.02	----	----	----
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	<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	----	----	----
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	----	----	----

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0315_SW150_250220	0315_SW149_250220	0315_QC101_250220	0315_QC102_250221	----
				Sampling date / time	20-Feb-2025 18:06	20-Feb-2025 18:04	20-Feb-2025 18:01	21-Feb-2025 13:15	----
Compound	CAS Number	LOR	Unit		ES2505157-011	ES2505157-012	ES2505157-013	ES2505157-015	--------
					Result	Result	Result	Result	----
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	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	----	----	----
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	<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	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	<0.01	**0.16**	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	<0.01	**0.16**	----
EP231S: PFAS Surrogate									

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0315_SW150_250220	0315_SW149_250220	0315_QC101_250220	0315_QC102_250221	----
				Sampling date / time	20-Feb-2025 18:06	20-Feb-2025 18:04	20-Feb-2025 18:01	21-Feb-2025 13:15	----
Compound	CAS Number	LOR	Unit		ES2505157-011	ES2505157-012	ES2505157-013	ES2505157-015	--------
					Result	Result	Result	Result	----
EP231S: PFAS Surrogate - Continued									
13C4-PFOS	----	0.02	%		**112**	**109**	**----**	**----**	**----**
13C8-PFOA	----	0.02	%		**91.6**	**90.8**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_QC503_250221	0315_SW226_250220	0315_SW144_250220	----	----
				Sampling date / time	21-Feb-2025 13:19	20-Feb-2025 18:07	20-Feb-2025 18:07	----	----
Compound	CAS Number	LOR	Unit		ES2505157-016	ES2505157-017	ES2505157-018	--------	--------
					Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L		----	<0.02	<0.02	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		----	<0.02	<0.02	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		----	<0.02	<0.02	----	----
Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L		----	<0.02	<0.02	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<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	<0.1	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<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	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_QC503_250221	0315_SW226_250220	0315_SW144_250220	----	----
				Sampling date / time	21-Feb-2025 13:19	20-Feb-2025 18:07	20-Feb-2025 18:07	----	----
Compound	CAS Number	LOR	Unit		ES2505157-016	ES2505157-017	ES2505157-018	--------	--------
					Result	Result	Result	----	----
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	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	----	----
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	<0.05	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<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	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<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	<0.01	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	<0.01	----	----
EP231S: PFAS Surrogate									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_QC503_250221	0315_SW226_250220	0315_SW144_250220	----	----
				Sampling date / time	21-Feb-2025 13:19	20-Feb-2025 18:07	20-Feb-2025 18:07	----	----
Compound	CAS Number	LOR	Unit		ES2505157-016	ES2505157-017	ES2505157-018	--------	--------
					Result	Result	Result	----	----
EP231S: PFAS Surrogate - Continued									
13C4-PFOS	----	0.02	%		**101**	**98.8**	**97.5**	**----**	**----**
13C8-PFOA	----	0.02	%		**94.7**	**98.3**	**95.7**	**----**	**----**

Surrogate Control Limits

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

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

QUALITY CONTROL REPORT

Work Order	: **ES2505157**	Page	: 1 of 7
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: SOPHIA BERLYN	Contact	: Sandy Phan
Address	: 177 Pacific Highway Level 7 NORTH SYDNEY 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: 0315_NSW_PFASMGMT_24	Date Samples Received	: 24-Feb-2025
Order number	: 540003363	Date Analysis Commenced	: 25-Feb-2025
C-O-C number	: 79441	Issue Date	: 27-Feb-2025
Sampler	: SOPHIA BERLYN		
Site	: 0315		
Quote number	: ES24SINKNI0001 - Compass		
No. of samples received	: 18		
No. of samples analysed	: 17		

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*
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

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: 6398849)									
ES2505157-002	0315_OTH052_250221	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.14	0.14	0.0	0% - 50%
		EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	<0.02	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: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	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
ES2505157-006	0315_OTH056_250221	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.08	<0.01	158	No Limit
		EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	<0.02	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: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	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: 6398849)									
ES2505157-002	0315_OTH052_250221	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

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: 6398849) - continued									
ES2505157-002	0315_OTH052_250221	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: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	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
ES2505157-006	0315_OTH056_250221	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: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	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: 6398849)									
ES2505157-002	0315_OTH052_250221	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
ES2505157-006	0315_OTH056_250221	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

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: 6398849) - continued									
ES2505157-006	0315_OTH056_250221	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: 6398849)									
ES2505157-002	0315_OTH052_250221	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
ES2505157-006	0315_OTH056_250221	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	0.10	70.3	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: 6398849)									
ES2505157-002	0315_OTH052_250221	EP231X: Sum of PFAS	----	0.01	µg/L	0.16	0.16	0.0	0% - 50%
ES2505157-006	0315_OTH056_250221	EP231X: Sum of PFAS	----	0.01	µg/L	0.08	0.10	22.2	0% - 50%

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 Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6398849)								
EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	0.25 µg/L	104	70.0	130
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	94.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	95.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	97.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	104	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	97.5	65.0	140
EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	0.25 µg/L	97.2	70.0	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	97.5	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6398849)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	98.9	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	99.1	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	96.8	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	104	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	112	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	99.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	99.8	71.0	132
EP231X: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.05	µg/L	<0.05	0.25 µg/L	109	62.9	136
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6398849)								
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	103	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	98.7	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.3	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	99.6	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	103	65.0	136

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6398849) - continued								
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	96.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6398849)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	97.9	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	95.8	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	91.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	81.6	71.4	144

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	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6398849)							
ES2505157-003	0315_OTH053_250221	EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.25 µg/L	96.1	70.0	130
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	92.8	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	94.6	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	91.3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	98.2	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	95.7	65.0	140
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.25 µg/L	92.8	70.0	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	89.6	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6398849)							
ES2505157-003	0315_OTH053_250221	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	103	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	95.6	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	102	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	86.4	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	107	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	88.6	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	90.2	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	116	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	94.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	117	71.0	132
		EP231X: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.25 µg/L	110	62.9	136
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6398849)							

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: 6398849) - continued							
ES2505157-003	0315_OTH053_250221	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	96.5	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	111	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	105	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	87.6	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	103	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	96.2	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	95.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6398849)							
ES2505157-003	0315_OTH053_250221	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	82.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	104	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	75.0	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	76.8	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2505157**	Page	: 1 of 5
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: SOPHIA BERLYN	Telephone	: +61-2-8784 8555
Project	: 0315_NSW_PFASMGMT_24	Date Samples Received	: 24-Feb-2025
Site	: 0315	Issue Date	: 27-Feb-2025
Sampler	: SOPHIA BERLYN	No. of samples received	: 18
Order number	: 540003363	No. of samples analysed	: 17

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, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

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) 0315_SW148_250220, 0315_SW140_250220, 0315_SW142_250220, 0315_SW143_250220, 0315_SW150_250220, 0315_SW149_250220, 0315_QC101_250220, 0315_SW226_250220, 0315_SW144_250220	**20-Feb-2025**	**25-Feb-2025**	19-Aug-2025	✓	**27-Feb-2025**	19-Aug-2025	✓
HDPE (no PTFE) (EP231X) 0315_OTH051_250221, 0315_OTH052_250221, 0315_OTH053_250221, 0315_OTH054_250221, 0315_OTH055_250221, 0315_OTH056_250221, 0315_QC102_250221, 0315_QC503_250221	**21-Feb-2025**	**25-Feb-2025**	20-Aug-2025	✓	**27-Feb-2025**	20-Aug-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0315_SW148_250220, 0315_SW140_250220, 0315_SW142_250220, 0315_SW143_250220, 0315_SW150_250220, 0315_SW149_250220, 0315_QC101_250220, 0315_SW226_250220, 0315_SW144_250220	**20-Feb-2025**	**25-Feb-2025**	19-Aug-2025	✓	**27-Feb-2025**	19-Aug-2025	✓
HDPE (no PTFE) (EP231X) 0315_OTH051_250221, 0315_OTH052_250221, 0315_OTH053_250221, 0315_OTH054_250221, 0315_OTH055_250221, 0315_OTH056_250221, 0315_QC102_250221, 0315_QC503_250221	**21-Feb-2025**	**25-Feb-2025**	20-Aug-2025	✓	**27-Feb-2025**	20-Aug-2025	✓

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)							
0315_SW148_250220, 0315_SW140_250220, 0315_SW142_250220, 0315_SW143_250220, 0315_SW150_250220, 0315_SW149_250220, 0315_SW226_250220, 0315_SW144_250220	**20-Feb-2025**	**25-Feb-2025**	19-Aug-2025	✓	**27-Feb-2025**	19-Aug-2025	✓
HDPE (no PTFE) (EP231X)							
0315_OTH051_250221, 0315_OTH052_250221, 0315_OTH053_250221, 0315_OTH054_250221, 0315_OTH055_250221, 0315_OTH056_250221	**21-Feb-2025**	**25-Feb-2025**	20-Aug-2025	✓	**27-Feb-2025**	20-Aug-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
0315_SW148_250220, 0315_SW140_250220, 0315_SW142_250220, 0315_SW143_250220, 0315_SW150_250220, 0315_SW149_250220, 0315_QC101_250220, 0315_SW226_250220, 0315_SW144_250220	**20-Feb-2025**	**25-Feb-2025**	19-Aug-2025	✓	**27-Feb-2025**	19-Aug-2025	✓
HDPE (no PTFE) (EP231X)							
0315_OTH051_250221, 0315_OTH052_250221, 0315_OTH053_250221, 0315_OTH054_250221, 0315_OTH055_250221, 0315_OTH056_250221, 0315_QC102_250221, 0315_QC503_250221	**21-Feb-2025**	**25-Feb-2025**	20-Aug-2025	✓	**27-Feb-2025**	20-Aug-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0315_SW148_250220, 0315_SW140_250220, 0315_SW142_250220, 0315_SW143_250220, 0315_SW150_250220, 0315_SW149_250220, 0315_QC101_250220, 0315_SW226_250220, 0315_SW144_250220	**20-Feb-2025**	**25-Feb-2025**	19-Aug-2025	✓	**27-Feb-2025**	19-Aug-2025	✓
HDPE (no PTFE) (EP231X)							
0315_OTH051_250221, 0315_OTH052_250221, 0315_OTH053_250221, 0315_OTH054_250221, 0315_OTH055_250221, 0315_OTH056_250221, 0315_QC102_250221, 0315_QC503_250221	**21-Feb-2025**	**25-Feb-2025**	20-Aug-2025	✓	**27-Feb-2025**	20-Aug-2025	✓

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		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	17	**11.76**	**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	1	17	**5.88**	**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
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 5.4, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
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.

Jacobs

Jacobs Group (Australia) Pty Ltd Ph: +612 4924 2000
PO Box 2147, Dangar, NSW, 2309 ABN: 37 001 024 095

CHAIN OF CUSTODY & ANALYSIS REQUEST

COC 1 of 1 (X pages)

LAB: AES Environment 38 - 277 Woodpark Rd Smithfield N
JACOBS PO#: 580005563
Quote #:

TURNAROUND: 5 + days no surcharge

Project ID (ESdat):	NSW_0315_PFASOMP_25
Site ID (ESdat):	0315
Project Manager:	Grant Moylan - 0421060246
Sample Collectors:	Sophia Berlyn - 0427 855 750 Jon Cooper
Jacobs Reference:	IS419100

ANALYSIS REQUIRED

RESULTS TO:
Email: grant.moylan@jacobs.com; ESRA.LabSampleAdmin@jacobs.com.au; Kyra.Mattocks@jacobs.com; Sophia.Berlyn@jacobs.com

INVOICE TO:
Email: ANZInvoices@jacobs.com; grant.moylan@jacobs.com

LAB #	SAMPLE ID	Depth	MATRIX: WATER	MATRIX: SOIL	MATRIX: AIR	MATRIX: OTHER	PRESERVATION METHOD: ICE	PRESERVATION METHOD: ACID	PRESERVATION METHOD: OTHER	PRESERVATION METHOD: NONE	SAMPLE DATE	NO. OF CONTAINERS	Low Level PFAS Standard Suite	Standard PFAS Standard Suite	PFAS Redfield Suite	Hold			COMMENTS
1	0315_SD614_250306			x			x				6/03/2025			x					
2	0315_QC102_250306			x			x				6/03/2025			x					
3	0315_MW024_39.0_250306		x				x				6/03/2025			x					
4	0315_MW601_33_250306		x				x				6/03/2025			x					
5	0315_QC101_250306		x				x				6/03/2025			x					
6	0315_SD677_250306			x			x				6/03/2025			x					

Receipt Detail (Lab Use)	Chill Method: ICE	Sample Temp at receipt: °C	°C	7/03/2025	Carrier Details: Courier Post	Client	Packaging (circle): Hard Esky	Foam Esky	Box bag other
Relinquished by:	Sophia Berlyn	Signature:	SOBerlyn	Date/Time: 7/03/2025	Received by:		Date/Time:		

Tam. 11/3/25 11:55

Subject to Forward Lab / Split WO
Lab - Analysis: Eurofins - 0315_QC202_250306
Organised By / Date: 0315_QC201_250306
Relinquished By / Date:
Courier / Overlay
WO No:
Attached to PO / Internal Sheet:

Environmental Division
Sydney
Work Order Reference
ES2506716

Telephone : +61-2-8784 8555

Jacobs

Jacobs Group (Australia) Pty Ltd
PO Box 2147, Dangar, NSW, 2

Ph: + 61 2 4924 2600
ABN: 37 001 024 095

CHAIN OF CUSTODY & ANALYSIS REQUEST

COC 1 of 1 (1 page)

LAB: Eurofins
JACOBS PO#: 540003360
Quote #

TURNAROUND: 5+ days (no surcharge)

Project ID (ESdat)	NSW_0315_PFASOMP_25
Site ID (ESdat)	0315
Project Manager	Grant Moylan 0421960246
Sample Collectors	Sophia Berlyn 0427 855 750
Jacobs Reference	IS419100

RESULTS TO:
Email: [redacted]

INVOICE TO:
Email: grant.moylan@jacobs.com

LAB #	SAMPLE ID	Depth	MATRIX: WATER	SOIL	AIR	OTHER	PRESERVATION METHOD: ICE	ACID	OTHER	NONE	SAMPLE DATE	NO. OF CONTAINERS	ANALYSIS REQUIRED: Low Level PFAS (Standard Suite)	Standard PFAS (Standard Suite)	PFAS (Reduced Suite)	Hold				COMMENTS
1	0315_QC202_250306	0.1		x										x						
2	0315_QC201_250306		x											x						

Receipt Detail (Lab Use ONLY)	Chill Method: e / Ice bricks / no	Sample Temp at receipt °C °C °C	Carrier Details : Courier/Post . Client	Packaging (circle): Hard Esky Foam Esky Box/bag/other
Relinquished by: Sophia Berlyn	Signature: SGBerlyn	Date/Time 7/03/2025	Received by:	Date/Time

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **ES2506716**		
Amendment	: **1**		
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR GRANT MOYLAN	Contact	: Sandy Phan
Address	: PO Box 2147 Dangar 2309	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: grant.moylan@jacobs.com	E-mail	: sandy.phan@alsglobal.com
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 9928 2272	Facsimile	: +61-2-8784 8500
Project	: NSW_0315_PFASOMP_25	Page	: 1 of 3
Order number	: 540003363	Quote number	: EM2023SINKNI0019 (JACOBS MSA)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: 0315		
Sampler	: JEN COOPER, SOPHIA BERLYN		

Dates

Date Samples Received	: 10-Mar-2025 11:40	Issue Date	: 09-May-2025
Client Requested Due Date	: 18-Mar-2025	Scheduled Reporting Date	: **18-Mar-2025**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 8.9, 13.3, 14.7°C - Ice present
Receipt Detail	: Ice melted	No. of samples received / analysed	: 6 / 6

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
- [09/05/2025] This is an updated SRN which indicates the updated sample IDs as per Grant Moylan.
- **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.**
- **Samples 0315_QC202_250306 and 0315_QC201_250306 have been forwarded to Eurofins.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- 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: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (30 analytes)
ES2506716-001	06-Mar-2025 00:00	0315_SD614_250306	✓	✓
ES2506716-002	06-Mar-2025 00:00	0315_QC102_250306	✓	✓
ES2506716-006	06-Mar-2025 00:00	0315_SD677_250306	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2506716-003	06-Mar-2025 00:00	0315_MW624_250306	✓
ES2506716-004	06-Mar-2025 00:00	0315_MW601_250306	✓
ES2506716-005	06-Mar-2025 00:00	0315_QC101_250306	✓

Proactive Holding Time Report

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

Requested Deliverables

DANIEL COFFEY

- *AU Certificate of Analysis - NATA (COA)	Email	daniel.coffey@jacobs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	daniel.coffey@jacobs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	daniel.coffey@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	daniel.coffey@jacobs.com
- Chain of Custody (CoC) (COC)	Email	daniel.coffey@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	daniel.coffey@jacobs.com

DERP REPORTS

- EDI Format - ESDAT (ESDAT)	Email	derp.labreports@esdat.com.au

ELLEN MARNOCK

- *AU Certificate of Analysis - NATA (COA)	Email	ellen.marnock@jacobs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	ellen.marnock@jacobs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	ellen.marnock@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	ellen.marnock@jacobs.com
- Chain of Custody (CoC) (COC)	Email	ellen.marnock@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	ellen.marnock@jacobs.com

GRANT MOYLAN

- *AU Certificate of Analysis - NATA (COA)	Email	grant.moylan@jacobs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	grant.moylan@jacobs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	grant.moylan@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	grant.moylan@jacobs.com
- A4 - AU Tax Invoice (INV)	Email	grant.moylan@jacobs.com
- Chain of Custody (CoC) (COC)	Email	grant.moylan@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	grant.moylan@jacobs.com

SOPHIA BERLYN

- *AU Certificate of Analysis - NATA (COA)	Email	sophia.berlyn@jacobs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	sophia.berlyn@jacobs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	sophia.berlyn@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	sophia.berlyn@jacobs.com
- Chain of Custody (CoC) (COC)	Email	sophia.berlyn@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	sophia.berlyn@jacobs.com

CERTIFICATE OF ANALYSIS

Work Order	: **ES2506716**	Page	: 1 of 9
Amendment	: **1**		
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR GRANT MOYLAN	Contact	: Sandy Phan
Address	: PO Box 2147 Dangar 2309	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: NSW_0315_PFASOMP_25	Date Samples Received	: 10-Mar-2025 11:40
Order number	: 540003363	Date Analysis Commenced	: 12-Mar-2025
C-O-C number	: ----	Issue Date	: 09-May-2025 14:03
Sampler	: JEN COOPER, SOPHIA BERLYN		
Site	: 0315		
Quote number	: JACOBS MSA		
No. of samples received	: 6		
No. of samples analysed	: 6		

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*
Franco Lentini	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

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 Contract 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 QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (09/05/2025): This report has been amended as a result of a request to change sample identification numbers (IDs) received from Grant Moylan on 08/05/2025, for samples 3-4. 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 or as per tables in USEPA 1633 where listed. 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 and also conform to QSM 5.4 (US DoD) requirements.
- 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 or as per USEPA 1633 limits where listed. 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 and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0315_SD614_250306	0315_QC102_250306	0315_SD677_250306	----	----
				Sampling date / time	06-Mar-2025 00:00	06-Mar-2025 00:00	06-Mar-2025 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2506716-001	ES2506716-002	ES2506716-006	--------	--------
					Result	Result	Result	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**24.9**	**21.6**	**1.3**	**----**	**----**
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	**----**	**----**
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0146**	**0.0150**	**0.0027**	**----**	**----**
Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.0002	mg/kg		**0.0002**	**0.0002**	<0.0002	**----**	**----**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	<0.001	**----**	**----**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0315_SD614_250306	0315_QC102_250306	0315_SD677_250306	----	----
				Sampling date / time	06-Mar-2025 00:00	06-Mar-2025 00:00	06-Mar-2025 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2506716-001	ES2506716-002	ES2506716-006	--------	--------
					Result	Result	Result	----	----
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0148**	**0.0152**	**0.0027**	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0146**	**0.0150**	**0.0027**	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0146**	**0.0150**	**0.0027**	----	----
EP231S: PFAS Surrogate									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0315_SD614_250306	0315_QC102_250306	0315_SD677_250306	----	----
				Sampling date / time	06-Mar-2025 00:00	06-Mar-2025 00:00	06-Mar-2025 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2506716-001	ES2506716-002	ES2506716-006	--------	--------
					Result	Result	Result	----	----
EP231S: PFAS Surrogate - Continued									
13C4-PFOS	----	0.0002	%		**113**	**117**	**94.2**	**----**	**----**
13C8-PFOA	----	0.0002	%		**98.4**	**96.0**	**96.6**	**----**	**----**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_MW624_250306	0315_MW601_250306	0315_QC101_250306	----	----
				Sampling date / time	06-Mar-2025 00:00	06-Mar-2025 00:00	06-Mar-2025 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2506716-003	ES2506716-004	ES2506716-005	--------	--------
					Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	**0.03**	**0.03**	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	**0.34**	**0.34**	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	**0.23**	**0.24**	----	----
Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<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	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	**0.03**	**0.03**	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_MW624_250306	0315_MW601_250306	0315_QC101_250306	----	----
				Sampling date / time	06-Mar-2025 00:00	06-Mar-2025 00:00	06-Mar-2025 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2506716-003	ES2506716-004	ES2506716-005	--------	--------
					Result	Result	Result	----	----
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.05	µg/L		<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	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<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	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<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	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<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	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	<0.05	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	**0.63**	**0.64**	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.57**	**0.58**	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.63**	**0.64**	----	----
EP231S: PFAS Surrogate									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_MW624_250306	0315_MW601_250306	0315_QC101_250306	----	----
				Sampling date / time	06-Mar-2025 00:00	06-Mar-2025 00:00	06-Mar-2025 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2506716-003	ES2506716-004	ES2506716-005	--------	--------
					Result	Result	Result	----	----
EP231S: PFAS Surrogate - Continued									
13C4-PFOS	----	0.02	%		**96.6**	**99.9**	**103**	**----**	**----**
13C8-PFOA	----	0.02	%		**98.2**	**102**	**99.5**	**----**	**----**

Surrogate Control Limits

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

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

QUALITY CONTROL REPORT

Work Order	: **ES2506716**	Page	: 1 of 10
Amendment	: **1**		
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR GRANT MOYLAN	Contact	: Sandy Phan
Address	: PO Box 2147 Dangar 2309	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: NSW_0315_PFASOMP_25	Date Samples Received	: 10-Mar-2025
Order number	: 540003363	Date Analysis Commenced	: 12-Mar-2025
C-O-C number	: ----	Issue Date	: 09-May-2025
Sampler	: JEN COOPER, SOPHIA BERLYN		
Site	: 0315		
Quote number	: JACOBS MSA		
No. of samples received	: 6		
No. of samples analysed	: 6		

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*
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Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

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: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6438998)									
ES2506648-017	Anonymous	EA055: Moisture Content	----	0.1	%	11.1	11.4	2.0	0% - 20%
ES2506889-001	Anonymous	EA055: Moisture Content	----	0.1	%	11.6	11.1	4.4	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6435099)									
EB2507652-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0019	0.0020	5.8	0% - 50%
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2506721-009	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6435099)									
EB2507652-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6435099) - continued									
EB2507652-001	Anonymous	EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0002	0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2506721-009	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6435099)									
EB2507652-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2506721-009	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6435099) - continued									
ES2506721-009	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6435099)									
EB2507652-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2506721-009	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6431865)									
ES2506749-005	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	<0.02	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: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	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: 6431865)									
ES2506749-005	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

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: 6431865) - continued									
ES2506749-005	Anonymous	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: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	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: 6431865)									
ES2506749-005	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: 6431865)									
ES2506749-005	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: 6431865)									
ES2506749-005	Anonymous	EP231X: Sum of PFAS	----	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: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6435099)								
EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.0005	mg/kg	<0.0005	0.00125 mg/kg	107	70.0	130
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.9	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.6	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.1	68.0	136
EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.9	70.0	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.7	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6435099)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	102	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.8	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.3	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	109	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.8	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	116	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6435099)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	109	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	101	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	102	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	102	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	106	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	107	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	61.0	139

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6435099)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	72.9	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	93.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	129	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	129	69.2	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6431865)								
EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	0.25 µg/L	86.9	70.0	130
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	83.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	80.1	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 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	97.1	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	84.8	65.0	140
EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	0.25 µg/L	87.2	70.0	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	80.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6431865)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	98.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	92.1	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	92.5	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	87.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	87.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	96.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	97.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.7	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	87.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	100	71.0	132
EP231X: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.05	µg/L	<0.05	0.25 µg/L	90.8	62.9	136
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6431865)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	89.9	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	100	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	101	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	88.8	66.0	145

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6431865) - continued								
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	98.9	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	91.1	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	99.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6431865)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	82.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	81.4	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	104	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	104	71.4	144

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: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6435099)							
EB2507652-001	Anonymous	EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.00125 mg/kg	118	70.0	130
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	94.4	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	117	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	102	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	96.8	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	102	68.0	136
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.00125 mg/kg	93.5	70.0	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	92.4	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6435099)							
EB2507652-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	105	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	99.4	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	111	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	105	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	107	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	110	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	110	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	114	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	118	69.0	135

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6435099) - continued							
EB2507652-001	Anonymous	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	103	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	126	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6435099)							
EB2507652-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	110	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	106	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	113	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	119	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	106	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	95.9	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	105	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6435099)							
EB2507652-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	86.2	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	83.4	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	117	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	93.0	69.2	143

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6431865)							
ES2506784-001	Anonymous	EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.25 µg/L	116	70.0	130
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	82.1	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	78.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	81.5	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	112	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	93.5	65.0	140
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.25 µg/L	101	70.0	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	96.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6431865)							
ES2506784-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	98.3	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	102	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	89.7	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	86.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	91.2	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: 6431865) - continued							
ES2506784-001	Anonymous	EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	91.9	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	92.7	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	89.4	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	108	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	79.3	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	85.1	71.0	132
		EP231X: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.25 µg/L	92.5	62.9	136
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6431865)							
ES2506784-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	88.7	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	93.4	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	106	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	96.2	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	98.8	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	89.8	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	104	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6431865)							
ES2506784-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	109	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	89.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	109	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	103	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2506716**	Page	: 1 of 5
Amendment	: **1**		
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR GRANT MOYLAN	Telephone	: +61-2-8784 8555
Project	: NSW_0315_PFASOMP_25	Date Samples Received	: 10-Mar-2025
Site	: 0315	Issue Date	: 09-May-2025
Sampler	: JEN COOPER, SOPHIA BERLYN	No. of samples received	: 6
Order number	: 540003363	No. of samples analysed	: 6

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, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

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: **SOIL**

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
EA055: Moisture Content (Dried @ 105-110°C)								
HDPE Soil Jar (EA055)								
0315_SD614_250306, 0315_SD677_250306	0315_QC102_250306,	**06-Mar-2025**	**----**	----	----	**14-Mar-2025**	20-Mar-2025	✓
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X)								
0315_SD614_250306, 0315_SD677_250306	0315_QC102_250306,	**06-Mar-2025**	**13-Mar-2025**	02-Sep-2025	✓	**17-Mar-2025**	22-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE Soil Jar (EP231X)								
0315_SD614_250306, 0315_SD677_250306	0315_QC102_250306,	**06-Mar-2025**	**13-Mar-2025**	02-Sep-2025	✓	**17-Mar-2025**	22-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE Soil Jar (EP231X)								
0315_SD614_250306, 0315_SD677_250306	0315_QC102_250306,	**06-Mar-2025**	**13-Mar-2025**	02-Sep-2025	✓	**17-Mar-2025**	22-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X)								
0315_SD614_250306, 0315_SD677_250306	0315_QC102_250306,	**06-Mar-2025**	**13-Mar-2025**	02-Sep-2025	✓	**17-Mar-2025**	22-Apr-2025	✓
EP231P: PFAS Sums								
HDPE Soil Jar (EP231X)								
0315_SD614_250306, 0315_SD677_250306	0315_QC102_250306,	**06-Mar-2025**	**13-Mar-2025**	02-Sep-2025	✓	**17-Mar-2025**	22-Apr-2025	✓

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)								
0315_MW624_250306, 0315_QC101_250306	0315_MW601_250306,	**06-Mar-2025**	**12-Mar-2025**	02-Sep-2025	✓	**14-Mar-2025**	02-Sep-2025	✓

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)								
0315_MW624_250306, 0315_QC101_250306	0315_MW601_250306,	**06-Mar-2025**	**12-Mar-2025**	02-Sep-2025	✓	**14-Mar-2025**	02-Sep-2025	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
0315_MW624_250306, 0315_QC101_250306	0315_MW601_250306,	**06-Mar-2025**	**12-Mar-2025**	02-Sep-2025	✓	**14-Mar-2025**	02-Sep-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0315_MW624_250306, 0315_QC101_250306	0315_MW601_250306,	**06-Mar-2025**	**12-Mar-2025**	02-Sep-2025	✓	**14-Mar-2025**	02-Sep-2025	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X)								
0315_MW624_250306, 0315_QC101_250306	0315_MW601_250306,	**06-Mar-2025**	**12-Mar-2025**	02-Sep-2025	✓	**14-Mar-2025**	02-Sep-2025	✓

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: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	10	**10.00**	**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
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by negative mode LC-ESI-MS/MS using MRM and isotope dilution or internal standard quantitation. A portion of homogenised sample is extracted along with isotope dilution standards (where commercially available) in a solution of ammonium acetate in acetonitrile/methanol. Where relevant, interferences from co-extracted organics are removed using dispersive clean-up media (dSPE). A portion of extract is combined with an equal volume of reagent water and filtered for instrumental analysis.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction (SPE) followed by negative mode LC-ESI-MS/MS using MRM and isotope dilution or internal standard quantitation. Isotope dilution standards (where commercially available) and surrogates are added to the sample container. The entire contents are transferred to a weak anion exchange (WAX) 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. Data quality objectives for internal standard recoveries are based on US EPA method 1633.

Preparation Methods	Method	Matrix	Method Descriptions
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
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.

Jacobs Jacobs Group (Australia) Pty Ltd Ph: +61 2 4924 2000
PO Box 2147, Dangar, NSW, 2309 ABN: 37 001 024 095

CHAIN OF CUSTODY & ANALYSIS REQUEST

COC 1 of 2 (X pages)

TURNAROUND: 5+ days (no surcharge)

LAB: ALS Environmental - 277-289 Woodpark Rd, Smithfield N
JACOBS PO#: 540003363
Quote #:

Project ID (ESdat)	NSW_0315_PFASOMP_25
Site ID (ESdat)	0315
Project Manager	Grant Moylan - 0421960246
Sample Collectors	Sophia Berlyn - 0427 855 750
	Jen Cooper
Jacobs Reference	IS419100

RESULTS TO
Email: grant.moylan@jacobs.com
DERP.LabReports@ecodue.com.au
Ellen.Marnocha@jacobs.com
Sophia.Berlyn@jacobs.com

INVOICE TO
Email: AQAPinvoices@jacobs.com
Grant.Moylan@jacobs.com

LAB #	SAMPLE ID	Depth	MATRIX: WATER	SOIL	S-B	OTHER	PRESERVATION METHOD: ICE	ACID	OTHER	NONE	SAMPLE DATE	NO OF CONTAINERS	ANALYSIS REQUIRED: Low Level PFAS Standard Suite)	Standard PFAS Standard Suite)	PFAS (Reduced Suite)	Hold				COMMENTS
1	0315_MW103_50.5_250304		x				x				4/03/2025			x						
2	0315_QC101_250304		x				x				4/03/2025			x						
3	0315_QC301_250304		x				x				4/03/2025			x						
4	0315_MW104_45_250304		x				x				4/03/2025			x						
5	0315_MW107_14_250304		x				x				4/03/2025			x						
6	0315_SD121_250304			x			x				4/03/2025			x						
7	0315_SW136_250304		x				x				4/03/2025			x						
8	0315_QC301_250306		x				x				6/03/2025			x						
9	0315_SW105_250306		x				x				6/03/2025			x						
10	0315_SD127_250306			x			x				6/03/2025			x						
11	0315_MW109_30_250306		x				x				6/03/2025			x						
12	0315_MW110_17.3_250306		x				x				6/03/2025			x						
13	0315_QC103_250306	QA02	x				x				6/03/2025			x						
14	0315_MW028_18_250306		x				x				6/03/2025			x						
15	0315_SW107_250306		x				x				6/03/2025			x						
16	0315_SD118_250306			x			x				6/03/2025			x						
17	0315_SW111_250307		x				x				7/03/2025			x						
18	0315_QC101_250307		x				x				7/03/2025			x						
19	0315_SW108_250307		x				x				7/03/2025			x						

Receipt Detail (Lab Use ONLY): Chill Method: Ice | Sample Temp at receipt: °C °C | 7/03/2025 | Carrier Details: Courier/Post Client | Packaging (circle): Hard Esky Foam Esky Box/bag/other

Relinquished by: Sophia Berlyn | Signature: SBerlyn | Date/Time: 7/03/2025 | Received by: | Date/Time

FAA 11/3/25 11:5m

Environmental Division
Sydney
Work Order Reference
ES2506877

elephone : +61-2-8784 6555

Subcon / Forward Lab / Split WO:
Lab / Analysis: Envirolab - 0315_QC201_250301
Organised By / Date: 0315_QC203_250306
Relinquished By / Date: 0315_QC201_250307
Connote / Courier:
WO No: QC203 received as QC202
Attached By PO / Internal Sheet:

Jacobs

Jacobs Group (Australia) Pty Ltd Ph: +61 2 4924 2000
PO Box 2147, Dangar, NSW, 2309 ABN: 37 001 024 095

CHAIN OF CUSTODY & ANALYSIS REQUEST

COC 2 of 2 (X pages)

TURNAROUND: 5 + days (no surcharge)

LAB: ALS Environmental - 277-289 Woodpark Rd, Smithfield
JACOBS PO#: 540003365
Quote #:

Project ID (ESdat)	NSW_0315_PFASOMP_25
Site ID (ESdat)	0315
Project Manager	Grant Moylan - 0421960246
Sample Collectors	Sophia Berlyn - 0427 855 750
	Jen Cooper
Jacobs Reference	15419100

RESULTS TO:
Email:

INVOICE TO:
Email: AccAP

LAB #	SAMPLE ID	Depth	MATRIX: WATER	SOIL	AIR	OTHER	PRESERVATION METHOD: ICE	ACID	OTHER	NONE	SAMPLE DATE	NO. OF CONTAINERS	LOW LEVEL PFAS (Standard Suite)	Standard PFAS (Standard Suite)	PFAS (Reduced Suite)	Hold				COMMENTS
20	0315_QC501_250307		x				x				7/03/2025				x					

Receipt Detail (Lab Use Only): Chill Method: Ice | Sample Temp at receipt: °C | °C | 7/03/2025 | Carrier Details: Courier-Post | Client | Packaging (circle): Hard Esky | Foam Esky | Box/bag/other

Relinquished by:	Sophia Berlyn	Signature:	SCBerlyn	Date/Time	7/03/2025	Received by:	Date/Time

Jacobs

Jacobs Group (Australia) Pty Ltd
PO Box 2147, Dangar, NSW, 2

Ph: + 61 2 4924 2600
ABN: 37 001 024 095

CHAIN OF CUSTODY & ANALYSIS REQUEST

COC 1 of 1 (1 page)

LAB: Eurofins
JACOBS PO#: 540003360
Quote #

TURNAROUND: 5 + days (no surcharge)

Project ID (ESdat)	NSW_0315_PFASOMP_25
Site ID (ESdat)	0315
Project Manager	Grant Moylan 0421960246
Sample Collectors	Sophia Berlyn 0427 855 750
Jacobs Reference	B419100

RESULTS TO:
Email: [redacted]

INVOICE TO:
Email: grant.moylan@JACOBS.COM

LAB #	SAMPLE ID	Depth	MATRIX: WATER	SOIL	AIR	OTHER	PRESERVATION METHOD: ICE	ACID	OTHER	NONE	SAMPLE DATE	NO. OF CONTAINERS	ANALYSIS REQUIRED: Low Level PFAS (Standard Suite)	Standard PFAS (Standard Suite)	PFAS (Reduced Suite)	Hold			COMMENTS
	0315_QC201_250304		x											x					
1	0315_QC203_250306	QC202	x											x					
2	0315_QC201_250307		x											x					

Receipt Detail (Lab Use ONLY)	Chill Method: e / Ice bricks / no	Sample Temp at receipt	°C °C °C	Carrier Details : Courier/Post , Client	Packaging (circle): Hard Esky Foam Esky Box/bag/other
Relinquished by: Sophia Berlyn	Signature: SOBerlyn	Date/Time 7/03/2025	Received by:	Date/Time	

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **ES2506877**		
Amendment	: **1**		
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR GRANT MOYLAN	Contact	: Sandy Phan
Address	: PO Box 2147 Dangar 2309	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: grant.moylan@jacobs.com	E-mail	: sandy.phan@alsglobal.com
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 9928 2272	Facsimile	: +61-2-8784 8500
Project	: NSW_0315_PFASOMP_25	Page	: 1 of 3
Order number	: 540003363	Quote number	: EM2023SINKNI0019 (JACOBS MSA)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: 0315		
Sampler	: JEN COOPER, SOPHIA BERLYN		

Dates

Date Samples Received	: 10-Mar-2025 11:30	Issue Date	: 09-May-2025
Client Requested Due Date	: 18-Mar-2025	Scheduled Reporting Date	: **18-Mar-2025**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 8.9, 13.3, 14.7°C - Ice present
Receipt Detail	: Ice melted	No. of samples received / analysed	: 20 / 20

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
- [09/05/2025] This is an updated SRN which indicates the updated sample IDs as per Grant Moylan.
- **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.**
- **Samples 0315_QC103_250306 and 0315_QC203_250306 were received as 0315_QC102_250306 and 0315_QC202_250306.**
- **Samples 0315_QC201_250304, 0315_QC203_250306 and 0315_QC201_250307 have been forwarded to Eurofins.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- 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: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (30 analytes)
ES2506877-006	04-Mar-2025 00:00	0315_SD121_250304	✓	✓
ES2506877-010	06-Mar-2025 00:00	0315_SD127_250306	✓	✓
ES2506877-016	06-Mar-2025 00:00	0315_SD118_250306	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2506877-001	04-Mar-2025 00:00	0315_MW103_250304	✓
ES2506877-002	04-Mar-2025 00:00	0315_QC101_250304	✓
ES2506877-003	04-Mar-2025 00:00	0315_QC301_250304	✓
ES2506877-004	04-Mar-2025 00:00	0315_MW104_250304	✓
ES2506877-005	04-Mar-2025 00:00	0315_MW107_250304	✓
ES2506877-007	04-Mar-2025 00:00	0315_SW136_250304	✓
ES2506877-008	06-Mar-2025 00:00	0315_QC301_250304	✓
ES2506877-009	06-Mar-2025 00:00	0315_SW103_250306	✓
ES2506877-011	06-Mar-2025 00:00	0315_MW109_250306	✓
ES2506877-012	06-Mar-2025 00:00	0315_MW110_250306	✓
ES2506877-013	06-Mar-2025 00:00	0315_QC103_250306	✓
ES2506877-014	06-Mar-2025 00:00	0315_MW628_250306	✓
ES2506877-015	06-Mar-2025 00:00	0315_SW107_250306	✓
ES2506877-017	07-Mar-2025 00:00	0315_SW111_250307	✓
ES2506877-018	07-Mar-2025 00:00	0315_QC101_250307	✓
ES2506877-019	07-Mar-2025 00:00	0315_SW108_250307	✓
ES2506877-020	07-Mar-2025 00:00	0315_QC501_250307	✓

Proactive Holding Time Report

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

Requested Deliverables

DANIEL COFFEY		
- *AU Certificate of Analysis - NATA (COA)	Email	daniel.coffey@jacobs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	daniel.coffey@jacobs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	daniel.coffey@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	daniel.coffey@jacobs.com
- Chain of Custody (CoC) (COC)	Email	daniel.coffey@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	daniel.coffey@jacobs.com
DERP REPORTS		
- EDI Format - ESDAT (ESDAT)	Email	derp.labreports@esdat.com.au
ELLEN MARNOCK		
- *AU Certificate of Analysis - NATA (COA)	Email	ellen.marnock@jacobs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	ellen.marnock@jacobs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	ellen.marnock@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	ellen.marnock@jacobs.com
- Chain of Custody (CoC) (COC)	Email	ellen.marnock@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	ellen.marnock@jacobs.com
GRANT MOYLAN		
- *AU Certificate of Analysis - NATA (COA)	Email	grant.moylan@jacobs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	grant.moylan@jacobs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	grant.moylan@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	grant.moylan@jacobs.com
- A4 - AU Tax Invoice (INV)	Email	grant.moylan@jacobs.com
- Chain of Custody (CoC) (COC)	Email	grant.moylan@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	grant.moylan@jacobs.com
JACOBS INVOICES		
- A4 - AU Tax Invoice (INV)	Email	auapinvoices@jacobs.com
SOPHIA BERLYN		
- *AU Certificate of Analysis - NATA (COA)	Email	sophia.berlyn@jacobs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	sophia.berlyn@jacobs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	sophia.berlyn@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	sophia.berlyn@jacobs.com
- Chain of Custody (CoC) (COC)	Email	sophia.berlyn@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	sophia.berlyn@jacobs.com

CERTIFICATE OF ANALYSIS

Work Order	: **ES2506877**	Page	: 1 of 18
Amendment	: **1**		
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR GRANT MOYLAN	Contact	: Sandy Phan
Address	: PO Box 2147 Dangar 2309	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: NSW_0315_PFASOMP_25	Date Samples Received	: 10-Mar-2025 11:30
Order number	: 540003363	Date Analysis Commenced	: 12-Mar-2025
C-O-C number	: ----	Issue Date	: 09-May-2025 14:06
Sampler	: JEN COOPER, SOPHIA BERLYN		
Site	: 0315		
Quote number	: JACOBS MSA		
No. of samples received	: 20		
No. of samples analysed	: 20		

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*
Franco Lentini	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

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 Contract 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 QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (09/05/2025): This report has been amended as a result of a request to change sample identification numbers (IDs) received from Grant Moylan on 08/05/2025, for samples 1, 4, 5, 11, 12 and 14. 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 or as per tables in USEPA 1633 where listed. 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 and also conform to QSM 5.4 (US DoD) requirements.
- 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 or as per USEPA 1633 limits where listed. 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 and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0315_SD121_250304	0315_SD127_250306	0315_SD118_250306	----	----
				Sampling date / time	04-Mar-2025 00:00	06-Mar-2025 00:00	06-Mar-2025 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2506877-006	ES2506877-010	ES2506877-016	--------	--------
					Result	Result	Result	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**25.6**	**2.3**	**3.2**	**----**	**----**
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	**----**	**----**
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		**0.0007**	<0.0002	<0.0002	**----**	**----**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0228**	**0.0004**	**0.0058**	**----**	**----**
Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.0002	mg/kg		**0.0004**	<0.0002	<0.0002	**----**	**----**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	<0.001	**----**	**----**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**----**	**----**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0315_SD121_250304	0315_SD127_250306	0315_SD118_250306	----	----
				Sampling date / time	04-Mar-2025 00:00	06-Mar-2025 00:00	06-Mar-2025 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2506877-006	ES2506877-010	ES2506877-016	--------	--------
					Result	Result	Result	----	----
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0239**	**0.0004**	**0.0058**	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0235**	**0.0004**	**0.0058**	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0235**	**0.0004**	**0.0058**	----	----
EP231S: PFAS Surrogate									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0315_SD121_250304	0315_SD127_250306	0315_SD118_250306	----	----
				Sampling date / time	04-Mar-2025 00:00	06-Mar-2025 00:00	06-Mar-2025 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2506877-006	ES2506877-010	ES2506877-016	--------	--------
					Result	Result	Result	----	----
EP231S: PFAS Surrogate - Continued									
13C4-PFOS	----	0.0002	%		**98.2**	**118**	**103**	**----**	**----**
13C8-PFOA	----	0.0002	%		**101**	**90.0**	**106**	**----**	**----**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_MW103_250304	0315_QC101_250304	0315_QC301_250304	0315_MW104_250304	0315_MW107_250304
				Sampling date / time	04-Mar-2025 00:00	04-Mar-2025 00:00	04-Mar-2025 00:00	04-Mar-2025 00:00	04-Mar-2025 00:00
Compound	CAS Number	LOR	Unit		ES2506877-001	ES2506877-002	ES2506877-003	ES2506877-004	ES2506877-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
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	0.01	µg/L		**0.04**	**0.09**	<0.01	<0.01	**0.11**
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**
Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_MW103_250304	0315_QC101_250304	0315_QC301_250304	0315_MW104_250304	0315_MW107_250304
				Sampling date / time	04-Mar-2025 00:00	04-Mar-2025 00:00	04-Mar-2025 00:00	04-Mar-2025 00:00	04-Mar-2025 00:00
Compound	CAS Number	LOR	Unit		ES2506877-001	ES2506877-002	ES2506877-003	ES2506877-004	ES2506877-005
					Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	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
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**	**0.15**	<0.01	<0.01	**0.16**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.04**	**0.10**	<0.01	<0.01	**0.13**
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.04**	**0.15**	<0.01	<0.01	**0.16**
EP231S: PFAS Surrogate									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_MW103_250304	0315_QC101_250304	0315_QC301_250304	0315_MW104_250304	0315_MW107_250304
				Sampling date / time	04-Mar-2025 00:00	04-Mar-2025 00:00	04-Mar-2025 00:00	04-Mar-2025 00:00	04-Mar-2025 00:00
Compound	CAS Number	LOR	Unit		ES2506877-001	ES2506877-002	ES2506877-003	ES2506877-004	ES2506877-005
					Result	Result	Result	Result	Result
EP231S: PFAS Surrogate - Continued									
13C4-PFOS	----	0.02	%		**105**	**100**	**104**	**105**	**102**
13C8-PFOA	----	0.02	%		**101**	**102**	**101**	**101**	**103**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_SW136_250304	0315_QC301_250304	0315_SW103_250306	0315_MW109_250306	0315_MW110_250306
				Sampling date / time	04-Mar-2025 00:00	06-Mar-2025 00:00	06-Mar-2025 00:00	06-Mar-2025 00:00	06-Mar-2025 00:00
Compound	CAS Number	LOR	Unit		ES2506877-007	ES2506877-008	ES2506877-009	ES2506877-011	ES2506877-012
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
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	0.01	µg/L		**0.05**	<0.01	**0.34**	<0.01	<0.01
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		**0.10**	<0.01	**0.88**	<0.01	<0.01
Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<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	**0.03**	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	**0.06**	<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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_SW136_250304	0315_QC301_250304	0315_SW103_250306	0315_MW109_250306	0315_MW110_250306
				Sampling date / time	04-Mar-2025 00:00	06-Mar-2025 00:00	06-Mar-2025 00:00	06-Mar-2025 00:00	06-Mar-2025 00:00
Compound	CAS Number	LOR	Unit		ES2506877-007	ES2506877-008	ES2506877-009	ES2506877-011	ES2506877-012
					Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	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
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		**0.15**	<0.01	**1.35**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.15**	<0.01	**1.22**	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.15**	<0.01	**1.33**	<0.01	<0.01
EP231S: PFAS Surrogate									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_SW136_250304	0315_QC301_250304	0315_SW103_250306	0315_MW109_250306	0315_MW110_250306
				Sampling date / time	04-Mar-2025 00:00	06-Mar-2025 00:00	06-Mar-2025 00:00	06-Mar-2025 00:00	06-Mar-2025 00:00
Compound	CAS Number	LOR	Unit		ES2506877-007	ES2506877-008	ES2506877-009	ES2506877-011	ES2506877-012
					Result	Result	Result	Result	Result
EP231S: PFAS Surrogate - Continued									
13C4-PFOS	----	0.02	%		**104**	**105**	**107**	**103**	**109**
13C8-PFOA	----	0.02	%		**100**	**98.9**	**102**	**105**	**105**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_QC103_250306	0315_MW628_250306	0315_SW107_250306	0315_SW111_250307	0315_QC101_250307
				Sampling date / time	06-Mar-2025 00:00	06-Mar-2025 00:00	06-Mar-2025 00:00	07-Mar-2025 00:00	07-Mar-2025 00:00
Compound	CAS Number	LOR	Unit		ES2506877-013	ES2506877-014	ES2506877-015	ES2506877-017	ES2506877-018
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
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	0.01	µg/L		<0.01	**0.10**	**0.12**	**0.06**	**0.06**
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	**0.03**	**0.31**	**0.03**	**0.03**
Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<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**	**0.02**	**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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_QC103_250306	0315_MW628_250306	0315_SW107_250306	0315_SW111_250307	0315_QC101_250307
				Sampling date / time	06-Mar-2025 00:00	06-Mar-2025 00:00	06-Mar-2025 00:00	07-Mar-2025 00:00	07-Mar-2025 00:00
Compound	CAS Number	LOR	Unit		ES2506877-013	ES2506877-014	ES2506877-015	ES2506877-017	ES2506877-018
					Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	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
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	**0.13**	**0.44**	**0.15**	**0.13**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.13**	**0.43**	**0.09**	**0.09**
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.13**	**0.44**	**0.15**	**0.13**
EP231S: PFAS Surrogate									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_QC103_250306	0315_MW628_250306	0315_SW107_250306	0315_SW111_250307	0315_QC101_250307
				Sampling date / time	06-Mar-2025 00:00	06-Mar-2025 00:00	06-Mar-2025 00:00	07-Mar-2025 00:00	07-Mar-2025 00:00
Compound	CAS Number	LOR	Unit		ES2506877-013	ES2506877-014	ES2506877-015	ES2506877-017	ES2506877-018
					Result	Result	Result	Result	Result
EP231S: PFAS Surrogate - Continued									
13C4-PFOS	----	0.02	%		**100**	**107**	**105**	**102**	**106**
13C8-PFOA	----	0.02	%		**105**	**104**	**104**	**95.9**	**98.8**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_SW108_250307	0315_QC501_250307	----	----	----
				Sampling date / time	07-Mar-2025 00:00	07-Mar-2025 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2506877-019	ES2506877-020	--------	--------	--------
					Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L		<0.02	<0.02	----	----	----
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	0.01	µg/L		**0.02**	<0.01	----	----	----
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	----	----	----
Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L		<0.02	<0.02	----	----	----
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	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_SW108_250307	0315_QC501_250307	----	----	----
				Sampling date / time	07-Mar-2025 00:00	07-Mar-2025 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2506877-019	ES2506877-020	--------	--------	--------
					Result	Result	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	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	----	----	----
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**	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.03**	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.03**	<0.01	----	----	----
EP231S: PFAS Surrogate									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_SW108_250307	0315_QC501_250307	----	----	----
				Sampling date / time	07-Mar-2025 00:00	07-Mar-2025 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2506877-019	ES2506877-020	--------	--------	--------
					Result	Result	----	----	----
EP231S: PFAS Surrogate - Continued									
13C4-PFOS	----	0.02	%		**103**	**106**	**----**	**----**	**----**
13C8-PFOA	----	0.02	%		**97.7**	**101**	**----**	**----**	**----**

Surrogate Control Limits

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

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

QUALITY CONTROL REPORT

Work Order	: **ES2506877**	Page	: 1 of 10
Amendment	: **1**		
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR GRANT MOYLAN	Contact	: Sandy Phan
Address	: PO Box 2147 Dangar 2309	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: NSW_0315_PFASOMP_25	Date Samples Received	: 10-Mar-2025
Order number	: 540003363	Date Analysis Commenced	: 12-Mar-2025
C-O-C number	: ----	Issue Date	: 09-May-2025
Sampler	: JEN COOPER, SOPHIA BERLYN		
Site	: 0315		
Quote number	: JACOBS MSA		
No. of samples received	: 20		
No. of samples analysed	: 20		

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*
Franco Lentini	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

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: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6433462)									
ES2506759-006	Anonymous	EA055: Moisture Content	----	0.1	%	19.2	15.9	18.7	0% - 20%
ES2506759-014	Anonymous	EA055: Moisture Content	----	0.1	%	7.8	8.4	7.9	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6435099)									
EB2507652-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0019	0.0020	5.8	0% - 50%
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2506721-009	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6435099)									
EB2507652-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

				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: 6435099) - continued									
EB2507652-001	Anonymous	EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0002	0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2506721-009	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6435099)									
EB2507652-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2506721-009	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6435099) - continued									
ES2506721-009	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6435099)									
EB2507652-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2506721-009	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6433765)									
ES2506877-005	0315_MW107_250304	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.11	0.08	26.6	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	<0.02	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: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	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: 6433765)									
ES2506877-005	0315_MW107_250304	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: 6433765) - continued									
ES2506877-005	0315_MW107_250304	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: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	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: 6433765)									
ES2506877-005	0315_MW107_250304	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: 6433765)									
ES2506877-005	0315_MW107_250304	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: 6433765)									
ES2506877-005	0315_MW107_250304	EP231X: Sum of PFAS	----	0.01	µg/L	0.16	0.10	46.2	0% - 50%

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: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6435099)								
EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.0005	mg/kg	<0.0005	0.00125 mg/kg	107	70.0	130
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.9	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.6	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.1	68.0	136
EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.9	70.0	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.7	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6435099)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	102	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.8	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.3	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	109	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.8	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	116	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6435099)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	109	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	101	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	102	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	102	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	106	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	107	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	61.0	139

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6435099)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	72.9	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	93.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	129	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	129	69.2	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6433765)								
EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	0.25 µg/L	128	70.0	130
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	90.5	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	90.9	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	98.7	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	107	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.3	65.0	140
EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	0.25 µg/L	96.9	70.0	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	97.9	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6433765)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	98.8	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	102	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	104	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	107	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	115	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	86.4	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	83.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	110	71.0	132
EP231X: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.05	µg/L	<0.05	0.25 µg/L	102	62.9	136
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6433765)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	110	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	99.3	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	92.7	66.0	145

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6433765) - continued								
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	102	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	106	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6433765)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 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	0.25 µg/L	113	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	111	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	73.0	71.4	144

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: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6435099)							
EB2507652-001	Anonymous	EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.00125 mg/kg	118	70.0	130
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	94.4	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	117	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	102	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	96.8	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	102	68.0	136
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.00125 mg/kg	93.5	70.0	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	92.4	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6435099)							
EB2507652-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	105	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	99.4	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	111	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	105	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	107	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	110	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	110	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	114	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	118	69.0	135

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6435099) - continued							
EB2507652-001	Anonymous	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	103	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	126	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6435099)							
EB2507652-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	110	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	106	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	113	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	119	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	106	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	95.9	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	105	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6435099)							
EB2507652-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	86.2	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	83.4	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	117	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	93.0	69.2	143

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6433765)							
ES2506877-011	0315_MW109_250306	EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.25 µg/L	126	70.0	130
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	89.8	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	74.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	98.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	111	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	105	65.0	140
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.25 µg/L	100	70.0	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	103	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6433765)							
ES2506877-011	0315_MW109_250306	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	99.6	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	98.5	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	94.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	93.9	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: 6433765) - continued							
ES2506877-011	0315_MW109_250306	EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	98.1	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	99.1	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	86.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	75.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	104	71.0	132
		EP231X: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.25 µg/L	98.9	62.9	136
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6433765)							
ES2506877-011	0315_MW109_250306	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	111	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	98.0	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	91.3	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	101	57.6	145
		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	97.2	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6433765)							
ES2506877-011	0315_MW109_250306	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	80.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	104	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	131	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	104	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2506877**	Page	: 1 of 6
Amendment	: **1**		
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR GRANT MOYLAN	Telephone	: +61-2-8784 8555
Project	: NSW_0315_PFASOMP_25	Date Samples Received	: 10-Mar-2025
Site	: 0315	Issue Date	: 09-May-2025
Sampler	: JEN COOPER, SOPHIA BERLYN	No. of samples received	: 20
Order number	: 540003363	No. of samples analysed	: 20

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, where applicable to the methodology, 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		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	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: **SOIL**

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
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055) 0315_SD121_250304	**04-Mar-2025**	**----**	----	----	**12-Mar-2025**	18-Mar-2025	✓
HDPE Soil Jar (EA055) 0315_SD127_250306, 0315_SD118_250306	**06-Mar-2025**	**----**	----	----	**12-Mar-2025**	20-Mar-2025	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X) 0315_SD121_250304	**04-Mar-2025**	**13-Mar-2025**	31-Aug-2025	✓	**17-Mar-2025**	22-Apr-2025	✓
HDPE Soil Jar (EP231X) 0315_SD127_250306, 0315_SD118_250306	**06-Mar-2025**	**13-Mar-2025**	02-Sep-2025	✓	**17-Mar-2025**	22-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X) 0315_SD121_250304	**04-Mar-2025**	**13-Mar-2025**	31-Aug-2025	✓	**17-Mar-2025**	22-Apr-2025	✓
HDPE Soil Jar (EP231X) 0315_SD127_250306, 0315_SD118_250306	**06-Mar-2025**	**13-Mar-2025**	02-Sep-2025	✓	**17-Mar-2025**	22-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X) 0315_SD121_250304	**04-Mar-2025**	**13-Mar-2025**	31-Aug-2025	✓	**17-Mar-2025**	22-Apr-2025	✓
HDPE Soil Jar (EP231X) 0315_SD127_250306, 0315_SD118_250306	**06-Mar-2025**	**13-Mar-2025**	02-Sep-2025	✓	**17-Mar-2025**	22-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X) 0315_SD121_250304	**04-Mar-2025**	**13-Mar-2025**	31-Aug-2025	✓	**17-Mar-2025**	22-Apr-2025	✓
HDPE Soil Jar (EP231X) 0315_SD127_250306, 0315_SD118_250306	**06-Mar-2025**	**13-Mar-2025**	02-Sep-2025	✓	**17-Mar-2025**	22-Apr-2025	✓

Matrix: **SOIL**

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 Soil Jar (EP231X) 0315_SD121_250304	**04-Mar-2025**	**13-Mar-2025**	31-Aug-2025	✓	**17-Mar-2025**	22-Apr-2025	✓
HDPE Soil Jar (EP231X) 0315_SD127_250306, 0315_SD118_250306	**06-Mar-2025**	**13-Mar-2025**	02-Sep-2025	✓	**17-Mar-2025**	22-Apr-2025	✓

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) 0315_MW103_250304, 0315_QC101_250304, 0315_QC301_250304, 0315_MW104_250304, 0315_MW107_250304, 0315_SW136_250304	**04-Mar-2025**	**12-Mar-2025**	31-Aug-2025	✓	**14-Mar-2025**	31-Aug-2025	✓
HDPE (no PTFE) (EP231X) 0315_QC301_250304, 0315_SW103_250306, 0315_MW109_250306, 0315_MW110_250306, 0315_QC103_250306, 0315_MW628_250306, 0315_SW107_250306	**06-Mar-2025**	**12-Mar-2025**	02-Sep-2025	✓	**14-Mar-2025**	02-Sep-2025	✓
HDPE (no PTFE) (EP231X) 0315_SW111_250307, 0315_QC101_250307, 0315_SW108_250307, 0315_QC501_250307	**07-Mar-2025**	**12-Mar-2025**	03-Sep-2025	✓	**14-Mar-2025**	03-Sep-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0315_MW103_250304, 0315_QC101_250304, 0315_QC301_250304, 0315_MW104_250304, 0315_MW107_250304, 0315_SW136_250304	**04-Mar-2025**	**12-Mar-2025**	31-Aug-2025	✓	**14-Mar-2025**	31-Aug-2025	✓
HDPE (no PTFE) (EP231X) 0315_QC301_250304, 0315_SW103_250306, 0315_MW109_250306, 0315_MW110_250306, 0315_QC103_250306, 0315_MW628_250306, 0315_SW107_250306	**06-Mar-2025**	**12-Mar-2025**	02-Sep-2025	✓	**14-Mar-2025**	02-Sep-2025	✓
HDPE (no PTFE) (EP231X) 0315_SW111_250307, 0315_QC101_250307, 0315_SW108_250307, 0315_QC501_250307	**07-Mar-2025**	**12-Mar-2025**	03-Sep-2025	✓	**14-Mar-2025**	03-Sep-2025	✓

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) 0315_MW103_250304, 0315_QC101_250304, 0315_QC301_250304, 0315_MW104_250304, 0315_MW107_250304, 0315_SW136_250304	**04-Mar-2025**	**12-Mar-2025**	31-Aug-2025	✓	**14-Mar-2025**	31-Aug-2025	✓
HDPE (no PTFE) (EP231X) 0315_QC301_250304, 0315_SW103_250306, 0315_MW109_250306, 0315_MW110_250306, 0315_QC103_250306, 0315_MW628_250306, 0315_SW107_250306	**06-Mar-2025**	**12-Mar-2025**	02-Sep-2025	✓	**14-Mar-2025**	02-Sep-2025	✓
HDPE (no PTFE) (EP231X) 0315_SW111_250307, 0315_QC101_250307, 0315_SW108_250307, 0315_QC501_250307	**07-Mar-2025**	**12-Mar-2025**	03-Sep-2025	✓	**14-Mar-2025**	03-Sep-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0315_MW103_250304, 0315_QC101_250304, 0315_QC301_250304, 0315_MW104_250304, 0315_MW107_250304, 0315_SW136_250304	**04-Mar-2025**	**12-Mar-2025**	31-Aug-2025	✓	**14-Mar-2025**	31-Aug-2025	✓
HDPE (no PTFE) (EP231X) 0315_QC301_250304, 0315_SW103_250306, 0315_MW109_250306, 0315_MW110_250306, 0315_QC103_250306, 0315_MW628_250306, 0315_SW107_250306	**06-Mar-2025**	**12-Mar-2025**	02-Sep-2025	✓	**14-Mar-2025**	02-Sep-2025	✓
HDPE (no PTFE) (EP231X) 0315_SW111_250307, 0315_QC101_250307, 0315_SW108_250307, 0315_QC501_250307	**07-Mar-2025**	**12-Mar-2025**	03-Sep-2025	✓	**14-Mar-2025**	03-Sep-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0315_MW103_250304, 0315_QC101_250304, 0315_QC301_250304, 0315_MW104_250304, 0315_MW107_250304, 0315_SW136_250304	**04-Mar-2025**	**12-Mar-2025**	31-Aug-2025	✓	**14-Mar-2025**	31-Aug-2025	✓
HDPE (no PTFE) (EP231X) 0315_QC301_250304, 0315_SW103_250306, 0315_MW109_250306, 0315_MW110_250306, 0315_QC103_250306, 0315_MW628_250306, 0315_SW107_250306	**06-Mar-2025**	**12-Mar-2025**	02-Sep-2025	✓	**14-Mar-2025**	02-Sep-2025	✓
HDPE (no PTFE) (EP231X) 0315_SW111_250307, 0315_QC101_250307, 0315_SW108_250307, 0315_QC501_250307	**07-Mar-2025**	**12-Mar-2025**	03-Sep-2025	✓	**14-Mar-2025**	03-Sep-2025	✓

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: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**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
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by negative mode LC-ESI-MS/MS using MRM and isotope dilution or internal standard quantitation. A portion of homogenised sample is extracted along with isotope dilution standards (where commercially available) in a solution of ammonium acetate in acetonitrile/methanol. Where relevant, interferences from co-extracted organics are removed using dispersive clean-up media (dSPE). A portion of extract is combined with an equal volume of reagent water and filtered for instrumental analysis.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction (SPE) followed by negative mode LC-ESI-MS/MS using MRM and isotope dilution or internal standard quantitation. Isotope dilution standards (where commercially available) and surrogates are added to the sample container. The entire contents are transferred to a weak anion exchange (WAX) 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. Data quality objectives for internal standard recoveries are based on US EPA method 1633.

Preparation Methods	Method	Matrix	Method Descriptions
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
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.

Jacobs

Jacobs Group (Australia) Pty Ltd Ph: +61 2 4324 3600
PO Box 2147, Dangar, NSW, 2309 ABN: 37 001 024 095

CHAIN OF CUSTODY & ANALYSIS REQUEST

COC 1 of 1 (X pages)

TURNAROUND: 5 + days (no surcharge)

Lab: ALS Environmental - 277 289 Woodpark Rd, Smithfield
Jacobs PO#: 5400055365
Quote #:

Project ID (ESdat)	NSW_0315_PFASOMP_25
Site ID (ESdat)	0315
Project Manager	Grant Boylan - 0421960246
Sample Collectors	Sophia Berlyn - 0427 855 750
	Jon Cooper
Jacobs Reference	IS419100

RESULTS TO
Email: grant.boylan@jacobs.com; DERR.EnvReports@esdat.com.au; Ellen.Morris@jacobs.com; Sophia.Berlyn@jacobs.com

INVOICE TO
Email: AUAPinvoices@jacobs.com; grant.boylan@jacobs.com

LAB's	SAMPLE ID	Depth	MATRIX: WATER	SOIL	AIR	OTHER	PRESERVATION METHOD: ICE	ACID	OTHER	NONE	SAMPLE DATE	NO. OF CONTAINERS	ANALYSIS REQUIRED: Low Level PFAS (Modified) Suite6	Standard PFAS (Modified) Suite5	PFAS (Reduced Suite)	Hold			COMMENTS
1	0315_SW680_250306		x				x				6/03/2025	4		x					

Receipt Detail (Lab Use)	Chill Method:	ICE	Sample Temp at receipt	°C	°C	7/03/2025	Carrier Details	Courier/Post	Client
Packaging (circle)	Hard Esky	Foam Esky	Box/bag/other						

Relinquished by:	Sophia Berlyn	Signature:	SCBerlyn	Date/Time	7/03/2025
Received by:				Date/Time	

Fax. 11/3/25 11:52

Environmental Division
Sydney
Work Order Reference
ES2506881

Telephone : +61-2-8784 8555

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **ES2506881**		
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR GRANT MOYLAN	Contact	: Sandy Phan
Address	: PO Box 2147 Dangar 2309	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: grant.moylan@jacobs.com	E-mail	: sandy.phan@alsglobal.com
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 9928 2272	Facsimile	: +61-2-8784 8500
Project	: NSW_0315_PFASOMP_25	Page	: 1 of 2
Order number	: 540003363	Quote number	: EM2023SINKNI0019 (JACOBS MSA)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: 0315		
Sampler	: JEN COOPER, SOPHIA BERLYN		

Dates

Date Samples Received	: 10-Mar-2025 11:40	Issue Date	: 11-Mar-2025
Client Requested Due Date	: 18-Mar-2025	Scheduled Reporting Date	: **18-Mar-2025**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 8.9, 13.3, 14.7°C - Ice present
Receipt Detail	: Ice melted	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 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 direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- 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 (31 analytes)
ES2506881-001	06-Mar-2025 00:00	0315_SW680_250306	✓

Proactive Holding Time Report

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

Requested Deliverables

DERP REPORTS		
- EDI Format - ESDAT (ESDAT)	Email	derp.labreports@esdat.com.au
ELLEN MARNOCK		
- *AU Certificate of Analysis - NATA (COA)	Email	ellen.marnock@jacobs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	ellen.marnock@jacobs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	ellen.marnock@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	ellen.marnock@jacobs.com
- Chain of Custody (CoC) (COC)	Email	ellen.marnock@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	ellen.marnock@jacobs.com
GRANT MOYLAN		
- *AU Certificate of Analysis - NATA (COA)	Email	grant.moylan@jacobs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	grant.moylan@jacobs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	grant.moylan@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	grant.moylan@jacobs.com
- A4 - AU Tax Invoice (INV)	Email	grant.moylan@jacobs.com
- Chain of Custody (CoC) (COC)	Email	grant.moylan@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	grant.moylan@jacobs.com
JACOBS INVOICES		
- A4 - AU Tax Invoice (INV)	Email	auapinvoices@jacobs.com
SOPHIA BERLYN		
- *AU Certificate of Analysis - NATA (COA)	Email	sophia.berlyn@jacobs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	sophia.berlyn@jacobs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	sophia.berlyn@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	sophia.berlyn@jacobs.com
- Chain of Custody (CoC) (COC)	Email	sophia.berlyn@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	sophia.berlyn@jacobs.com

CERTIFICATE OF ANALYSIS

Work Order	: **ES2506881**	Page	: 1 of 6
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR GRANT MOYLAN	Contact	: Sandy Phan
Address	: PO Box 2147 Dangar 2309	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: NSW_0315_PFASOMP_25	Date Samples Received	: 10-Mar-2025 11:40
Order number	: 540003363	Date Analysis Commenced	: 12-Mar-2025
C-O-C number	: ----	Issue Date	: 17-Mar-2025 13:46
Sampler	: JEN COOPER, SOPHIA BERLYN		
Site	: 0315		
Quote number	: JACOBS MSA		
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*
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

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 Contract 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 QSM5.4 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 or as per tables in USEPA 1633 where listed. 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 and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_SW680_250306	----	----	----	----
				Sampling date / time	06-Mar-2025 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2506881-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L		<0.02	----	----	----	----
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	0.01	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		**0.22**	----	----	----	----
Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L		<0.02	----	----	----	----
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	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_SW680_250306	----	----	----	----
				Sampling date / time	06-Mar-2025 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2506881-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	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	----	----	----	----
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		**0.30**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.30**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.30**	----	----	----	----
EP231S: PFAS Surrogate									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_SW680_250306	----	----	----	----
				Sampling date / time	06-Mar-2025 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2506881-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231S: PFAS Surrogate - Continued									
13C4-PFOS	----	0.02	%		**107**	**----**	**----**	**----**	**----**
13C8-PFOA	----	0.02	%		**100**	**----**	**----**	**----**	**----**

Surrogate Control Limits

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

QUALITY CONTROL REPORT

Work Order	: **ES2506881**	Page	: 1 of 6
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR GRANT MOYLAN	Contact	: Sandy Phan
Address	: PO Box 2147 Dangar 2309	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: NSW_0315_PFASOMP_25	Date Samples Received	: 10-Mar-2025
Order number	: 540003363	Date Analysis Commenced	: 12-Mar-2025
C-O-C number	: ----	Issue Date	: 17-Mar-2025
Sampler	: JEN COOPER, SOPHIA BERLYN		
Site	: 0315		
Quote number	: JACOBS MSA		
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*
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

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: 6433765)									
ES2506877-005	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.11	0.08	26.6	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	<0.02	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: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	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: 6433765)									
ES2506877-005	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: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	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: 6433765)									

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: 6433765) - continued									
ES2506877-005	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: 6433765)									
ES2506877-005	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: 6433765)									
ES2506877-005	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.16	0.10	46.2	0% - 50%

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 Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6433765)								
EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	0.25 µg/L	128	70.0	130
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	90.5	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	90.9	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	98.7	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	107	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.3	65.0	140
EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	0.25 µg/L	96.9	70.0	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	97.9	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6433765)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	98.8	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	102	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	104	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	107	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	115	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	86.4	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	83.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	110	71.0	132
EP231X: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.05	µg/L	<0.05	0.25 µg/L	102	62.9	136
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6433765)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	110	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	99.3	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	92.7	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	102	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	136

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6433765) - continued								
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	106	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6433765)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 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	0.25 µg/L	113	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	111	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	73.0	71.4	144

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	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6433765)							
ES2506877-011	Anonymous	EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.25 µg/L	126	70.0	130
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	89.8	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	74.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	98.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	111	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	105	65.0	140
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.25 µg/L	100	70.0	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	103	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6433765)							
ES2506877-011	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	99.6	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	98.5	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	94.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	93.9	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	98.1	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	99.1	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	86.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	75.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	104	71.0	132
		EP231X: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.25 µg/L	98.9	62.9	136
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6433765)							

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: 6433765) - continued							
ES2506877-011	Anonymous	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	111	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	98.0	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	91.3	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	101	57.6	145
		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	97.2	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6433765)							
ES2506877-011	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	80.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	104	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	131	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	104	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2506881**	Page	: 1 of 4
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR GRANT MOYLAN	Telephone	: +61-2-8784 8555
Project	: NSW_0315_PFASOMP_25	Date Samples Received	: 10-Mar-2025
Site	: 0315	Issue Date	: 17-Mar-2025
Sampler	: JEN COOPER, SOPHIA BERLYN	No. of samples received	: 1
Order number	: 540003363	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, where applicable to the methodology, 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		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	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 / 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) 0315_SW680_250306	**06-Mar-2025**	**12-Mar-2025**	02-Sep-2025	✓	**14-Mar-2025**	02-Sep-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0315_SW680_250306	**06-Mar-2025**	**12-Mar-2025**	02-Sep-2025	✓	**14-Mar-2025**	02-Sep-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0315_SW680_250306	**06-Mar-2025**	**12-Mar-2025**	02-Sep-2025	✓	**14-Mar-2025**	02-Sep-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0315_SW680_250306	**06-Mar-2025**	**12-Mar-2025**	02-Sep-2025	✓	**14-Mar-2025**	02-Sep-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0315_SW680_250306	**06-Mar-2025**	**12-Mar-2025**	02-Sep-2025	✓	**14-Mar-2025**	02-Sep-2025	✓

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		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**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
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 5.4, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
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.

Jacobs

Jacobs Group (Australia) Pty Ltd Ph: +61 2 4924 3600
PO Box 2147, Dangar, NSW, 2309 ABN: 37 001 024 095

CHAIN OF CUSTODY & ANALYSIS REQUEST

COC 1 of 1 (X pages)

LAB: ALS Environmental - 277-289 Woodpark Rd, Smithfield
JACOBS PO#: 5400205365
Quote #:
TURNAROUND: 5 + days (no surcharge)

Project ID (ESdat)	NSW_0315_PFASOMP_25
Site ID (ESdat)	0315
Project Manager	Grant Moylan - 0421960245
Sample Collectors	Sophia Berlyn - 0427 855 750 Jen Cooper
Jacobs Reference	IS419100

RESULTS TO:
Email: grant.moylan@jacobs.com; 0SEP.LabReports@esdat.com.au; Erica.Marnocha@jacobs.com; Sophia.Berlyn@jacobs.com

INVOICE TO:
Email: AUAPaccounts@jacobs.com; grant.moylan@jacobs.com

LAB #	SAMPLE ID	Depth	MATRIX: WATER	MATRIX: SOIL	MATRIX: AIR	MATRIX: OTHER	PRESERVATION METHOD: ICE	PRESERVATION METHOD: ACID	PRESERVATION METHOD: OTHER	PRESERVATION METHOD: NONE	SAMPLE DATE	NO. OF CONTAINERS	ANALYSIS REQUIRED: Low Level PFAS (Standard Suite)	ANALYSIS REQUIRED: Standard PFAS (Standard Suite)	ANALYSIS REQUIRED: PFAS Modified (Lab Suite)	ANALYSIS REQUIRED: Hold	ANALYSIS REQUIRED:	ANALYSIS REQUIRED:	COMMENTS
1	0315_MW025_18.5_250306		x				x				6/03/2025			x					

Receipt Detail (Lab Use Only)	Chill Method:	Ice	Sample Temp at receipt	°C	°C	7/03/2025	Carrier Details:	Courier/Post	Client	Packaging (circle):	Hard Esky / Foam Esky / Box bag/other

Relinquished by:	Sophia Berlyn	Signature:	SCBerlyn	Date/Time	7/03/2025	Received by:	Date/Time

Fam. 11/3/25 11:50

Environmental Division
Sydney
Work Order Reference
ES2506882

Telephone : +61-2-8784 8555

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **ES2506882**		
Amendment	: **1**		
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR GRANT MOYLAN	Contact	: Sandy Phan
Address	: PO Box 2147 Dangar 2309	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: grant.moylan@jacobs.com	E-mail	: sandy.phan@alsglobal.com
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 9928 2272	Facsimile	: +61-2-8784 8500
Project	: NSW_0315_PFASOMP_25	Page	: 1 of 3
Order number	: 540003363	Quote number	: EM2023SINKNI0019 (JACOBS MSA)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: 0315		
Sampler	: JEN COOPER, SOPHIA BERLYN		

Dates

Date Samples Received	: 10-Mar-2025 11:40	Issue Date	: 09-May-2025
Client Requested Due Date	: 18-Mar-2025	Scheduled Reporting Date	: **18-Mar-2025**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 8.9, 13.3, 14.7°C - Ice present
Receipt Detail	: Ice melted	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
- [09/05/2025] This is an updated SRN which indicates the updated sample ID as per Grant Moylan.
- **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 direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- 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 (31 analytes)
ES2506882-001	06-Mar-2025 00:00	0315_MW625_250306	✓

Proactive Holding Time Report

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

Requested Deliverables

DANIEL COFFEY		
- *AU Certificate of Analysis - NATA (COA)	Email	daniel.coffey@jacobs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	daniel.coffey@jacobs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	daniel.coffey@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	daniel.coffey@jacobs.com
- Chain of Custody (CoC) (COC)	Email	daniel.coffey@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	daniel.coffey@jacobs.com
DERP REPORTS		
- EDI Format - ESDAT (ESDAT)	Email	derp.labreports@esdat.com.au
ELLEN MARNOCK		
- *AU Certificate of Analysis - NATA (COA)	Email	ellen.marnock@jacobs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	ellen.marnock@jacobs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	ellen.marnock@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	ellen.marnock@jacobs.com
- Chain of Custody (CoC) (COC)	Email	ellen.marnock@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	ellen.marnock@jacobs.com
GRANT MOYLAN		
- *AU Certificate of Analysis - NATA (COA)	Email	grant.moylan@jacobs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	grant.moylan@jacobs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	grant.moylan@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	grant.moylan@jacobs.com
- A4 - AU Tax Invoice (INV)	Email	grant.moylan@jacobs.com
- Chain of Custody (CoC) (COC)	Email	grant.moylan@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	grant.moylan@jacobs.com
SOPHIA BERLYN		
- *AU Certificate of Analysis - NATA (COA)	Email	sophia.berlyn@jacobs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	sophia.berlyn@jacobs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	sophia.berlyn@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	sophia.berlyn@jacobs.com
- Chain of Custody (CoC) (COC)	Email	sophia.berlyn@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	sophia.berlyn@jacobs.com

CERTIFICATE OF ANALYSIS

Work Order	: **ES2506882**	Page	: 1 of 6
Amendment	: **1**		
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR GRANT MOYLAN	Contact	: Sandy Phan
Address	: PO Box 2147 Dangar 2309	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: NSW_0315_PFASOMP_25	Date Samples Received	: 10-Mar-2025 11:40
Order number	: 540003363	Date Analysis Commenced	: 12-Mar-2025
C-O-C number	: ----	Issue Date	: 09-May-2025 14:08
Sampler	: JEN COOPER, SOPHIA BERLYN		
Site	: 0315		
Quote number	: JACOBS MSA		
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*
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

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 Contract 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 QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (09/05/2025): This report has been amended as a result of a request to change sample identification number (IDs) received from Grant Moylan on 08/05/2025. 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 or as per tables in USEPA 1633 where listed. 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 and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_MW625_250306	----	----	----	----
				Sampling date / time	06-Mar-2025 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2506882-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L		<0.02	----	----	----	----
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	0.01	µg/L		<0.01	----	----	----	----
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	----	----	----	----
Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L		<0.02	----	----	----	----
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	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_MW625_250306	----	----	----	----
				Sampling date / time	06-Mar-2025 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2506882-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	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	----	----	----	----
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									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	0315_MW625_250306	----	----	----	----
				Sampling date / time	06-Mar-2025 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2506882-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231S: PFAS Surrogate - Continued									
13C4-PFOS	----	0.02	%		**106**	**----**	**----**	**----**	**----**
13C8-PFOA	----	0.02	%		**97.9**	**----**	**----**	**----**	**----**

Surrogate Control Limits

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

QUALITY CONTROL REPORT

Work Order	: **ES2506882**	Page	: 1 of 6
Amendment	: **1**		
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR GRANT MOYLAN	Contact	: Sandy Phan
Address	: PO Box 2147 Dangar 2309	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: NSW_0315_PFASOMP_25	Date Samples Received	: 10-Mar-2025
Order number	: 540003363	Date Analysis Commenced	: 12-Mar-2025
C-O-C number	: ----	Issue Date	: 09-May-2025
Sampler	: JEN COOPER, SOPHIA BERLYN		
Site	: 0315		
Quote number	: JACOBS MSA		
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*
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

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: 6433765)									
ES2506877-005	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.11	0.08	26.6	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	<0.02	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: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	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: 6433765)									
ES2506877-005	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: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	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: 6433765)									

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: 6433765) - continued									
ES2506877-005	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: 6433765)									
ES2506877-005	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: 6433765)									
ES2506877-005	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.16	0.10	46.2	0% - 50%

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 Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6433765)								
EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	0.25 µg/L	128	70.0	130
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	90.5	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	90.9	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	98.7	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	107	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.3	65.0	140
EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	0.25 µg/L	96.9	70.0	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	97.9	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6433765)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	98.8	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	102	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	104	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	107	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	115	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	86.4	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	83.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	110	71.0	132
EP231X: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.05	µg/L	<0.05	0.25 µg/L	102	62.9	136
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6433765)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	110	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	99.3	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	92.7	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	102	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	136

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6433765) - continued								
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	106	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6433765)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 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	0.25 µg/L	113	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	111	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	73.0	71.4	144

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	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6433765)							
ES2506877-011	Anonymous	EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.25 µg/L	126	70.0	130
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	89.8	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	74.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	98.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	111	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	105	65.0	140
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.25 µg/L	100	70.0	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	103	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6433765)							
ES2506877-011	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	99.6	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	98.5	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	94.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	93.9	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	98.1	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	99.1	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	86.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	75.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	104	71.0	132
		EP231X: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.25 µg/L	98.9	62.9	136
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6433765)							

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: 6433765) - continued							
ES2506877-011	Anonymous	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	111	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	98.0	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	91.3	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	101	57.6	145
		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	97.2	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6433765)							
ES2506877-011	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	80.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	104	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	131	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	104	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2506882**	Page	: 1 of 4
Amendment	: **1**		
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR GRANT MOYLAN	Telephone	: +61-2-8784 8555
Project	: NSW_0315_PFASOMP_25	Date Samples Received	: 10-Mar-2025
Site	: 0315	Issue Date	: 09-May-2025
Sampler	: JEN COOPER, SOPHIA BERLYN	No. of samples received	: 1
Order number	: 540003363	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, where applicable to the methodology, 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		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	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 / *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) 0315_MW625_250306	**06-Mar-2025**	**12-Mar-2025**	02-Sep-2025	✓	**14-Mar-2025**	02-Sep-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0315_MW625_250306	**06-Mar-2025**	**12-Mar-2025**	02-Sep-2025	✓	**14-Mar-2025**	02-Sep-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0315_MW625_250306	**06-Mar-2025**	**12-Mar-2025**	02-Sep-2025	✓	**14-Mar-2025**	02-Sep-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0315_MW625_250306	**06-Mar-2025**	**12-Mar-2025**	02-Sep-2025	✓	**14-Mar-2025**	02-Sep-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0315_MW625_250306	**06-Mar-2025**	**12-Mar-2025**	02-Sep-2025	✓	**14-Mar-2025**	02-Sep-2025	✓

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		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**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
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction (SPE) followed by negative mode LC-ESI-MS/MS using MRM and isotope dilution or internal standard quantitation. Isotope dilution standards (where commercially available) and surrogates are added to the sample container. The entire contents are transferred to a weak anion exchange (WAX) 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. Data quality objectives for internal standard recoveries are based on US EPA method 1633.

Preparation Methods	Method	Matrix	Method Descriptions
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.

Jacobs

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PO Box 2147, Dangar, NSW, 23(ABN: 37 001 024 095

CHAIN OF CUSTODY & ANALYSIS REQUEST

COC 1 of 2 (X pages)

TURNAROUND: 5+ days (no surcharge)

LAB: ALS Environmental - 277-289 Woodpark Rd, Smithfield
JACOBS PO#: 5400019864
Quote #:

Project ID (ESdat)	NSW_0315_PFASMGMT_25
Site ID (ESdat)	0315
Project Manager	Grant Moylan - 0421960246
Sample Collectors	Sophia Berlyn - 0427 855 750
Jacobs Reference	IS419100

RESULTS TO:
Email: grant.moylan@jacobs.com; DERP.LabReports@esdat.com.au; Ellen.Marnock@jacobs.com; Sophia.Berlyn@jacobs.com

INVOICE TO:
Email: AUAPInvoices@jacobs.com; grant.moylan@jacobs.com

LAB #	SAMPLE ID	Depth	MATRIX: WATER	SOIL	AIR	OTHER	PRESERVATION METHOD: ICE	ACID	OTHER	NONE	SAMPLE DATE	NO. OF CONTAINERS	ANALYSIS REQUIRED: Suite B (Ionic PFAS Suite)	Suite A (Additional PFAS Suite)	Hold	PFAS - Dissolved in Water
1	0315_OTH057_250305		x				x				5/03/2025		x			x
2	0315_OTH058_250305		x				x				5/03/2025		x			x
3	0315_OTH059_250305		x				x				5/03/2025		x			x
4	0315_OTH060_250305		x				x				5/03/2025		x			x
5	0315_OTH061_250305		x				x				5/03/2025		x			x
6	0315_OTH062_250305		x				x				5/03/2025		x			x
7	0315_OTH063_250305		x				x				5/03/2025		x			x
8	0315_OTH064_250305		x				x				5/03/2025		x			x
9	0315_OTH065_250305		x				x				5/03/2025		x			x
10	0315_OTH066_250305		x				x				5/03/2025		x			x
11	0315_OTH067_250305		x				x				5/03/2025		x			x
12	0315_OTH068_250305		x				x				5/03/2025		x			x
13	0315_OTH069_250306		x				x				6/03/2025		x			x
14	0315_OTH070_250306		x				x				6/03/2025		x			x
15	0315_OTH071_250306		x				x				6/03/2025		x			x
16	0315_OTH072_250306		x				x				6/03/2025		x			x
17	0315_OTH073_250306		x				x				6/03/2025		x			x
18	0315_OTH074_250306		x				x				6/03/2025		x			x

Receipt Detail (Lab Use Only): Chill Method: Ice bricks / ni; Sample Temp at receipt: °C °C °C; Carrier Details: Courier/Post Client; Packaging (circle): Hard Esky Foam Esky Box/bag/other

Relinquished by:	Signature:	Date/Time	Received by:	Date/Time
Brendan		12/3 12:05 10:1(		11/3/25 11:50

1197122

Subcon / Forward Lab / Split WO
Lab / Analysis: Eurofins - 0315-QC203
Organised By / Date: 0315-QC204
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

Environmental Division
Sydney
Work Order Reference
ES2506809

Telephone : + 61-2-8784 8555

Jacobs

Jacobs Group (Australia) Pty Lt Ph: + 61 2 4924 2600
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CHAIN OF CUSTODY & ANALYSIS REQUEST

COC 2 of 2 (X pages)

LAB: ALS Environmental - 277-289 Woodpark Rd. Smithfield
JACOBS PO#: 540001964
Quote #:

TURNAROUND: 5+ days (no surcharge)

Project ID (ESdat)	NSW_0315_PFASMGMT_25
Site ID (ESdat)	0315
Project Manager	Grant Moylan - 0421960246
Sample Collectors	Sophia Berlyn - 0427 855 750
Jacobs Reference	IS419100

RESULTS TO:
Email: grant.moylan@jacobs.com; DERP.LabReports@esdat.com.au; Ellen.Mornock@jacobs.com; Sophia.Berlyn@jacobs.com

INVOICE TO:
Email: UAPInvoices@jacobs.com; grant.moylan@jacobs.com

LAB #	SAMPLE ID	Depth	MATRIX: WATER	SOIL	AIR	OTHER	PRESERVATION METHOD: ICE	ACID	OTHER	NONE	SAMPLE DATE	No. OF CONTAINERS	ANALYSIS REQUIRED: Suite1	Suite2 (moisture content, grain size, pH, organic carbon and cation/exchange capacity)	Suite3 (Reflux)	Hold	PFAS - Dissolved in Water	COMMENTS
19	0315_OTH075_250305		x				x				5/03/2025		x				x	
20	0315_OTH076_250305		x				x				5/03/2025		x				x	
21	0315_OTH077_250305		x				x				5/03/2025		x				x	
22	0315_OTH078_250305		x				x				5/03/2025		x				x	
23	0315_OTH079_250305		x				x				5/03/2025		x				x	
24	0315_OTH080_250305		x				x				5/03/2025		x				x	
25	0315_QC103_250305		x				x				5/03/2025		x				x	
26	0315_OTH081_250305		x				x				5/03/2025					x		
27	0315_OTH082_250305		x				x				5/03/2025					x		
28	0315_OTH083_250306		x				x				6/03/2025					x		
29	0315_QC104_250306		x				x				6/03/2025		x				x	

Receipt Detail (Lab Use Only): Chill Method: Ice bricks / ice; Sample Temp at receipt: °C °C °C; Carrier Details: Courier/Post Client; Packaging (circle): Hard Esky Foam Esky Box/bag/other

Relinquished by:	Signature:	Date/Time	Received by:	Date/Time

Jacobs

Jacobs Group (Australia) Pty Ltd
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ABN: 37 001 024 095

CHAIN OF CUSTODY & ANALYSIS REQUEST

COC 1 of 1 (1 page)

LAB: Eurofins
JACOBS PO#: 540001936
Quote #

TURNAROUND: 5+ days (no surcharge)

Project ID (ESdat)	NSW_0315_PFASMGMT_25
Site ID (ESdat)	0315
Project Manager	Grant Moylan - 0421960246
Sample Collectors	Sophia Berlyn - 0427855 750
Jacobs Reference	IS419100

RESULTS TO:
Email

INVOICE TO:
Email

LAB #	SAMPLE ID	Depth	MATRIX: WATER	SOIL	AIR	OTHER	PRESERVATION METHOD: ICE	ACID	OTHER	NONE	SAMPLE DATE	NO. OF CONTAINERS	ANALYSIS REQUIRED: Low Level PFAS (Standard Suite)	Standard PFAS (Standard Suite)	PFAS (Reduced Suite)	Hold				COMMENTS
1	0315 QC203 250305	5/03/2025	x				x							X						
2	0315 QC204 250306	6/03/2025	x				x							X						

Receipt Detail (Lab Use ONLY)	Chill Method: e / ice bricks / no	Sample Temp at receipt	°C °C °C	Carrier Details : Courier/Post Client	Packaging (circle): Hard Esky Foam Esky Box/bag/other

Relinquished by:	Signature:	Date/Time	Received by:	Date/Time

eurofins | Environment Testing

www.eurofins.com.au EnviroSales@eurofinsanz.com

Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	+61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

Eurofins ARL Pty Ltd

ABN: 91 05 0159 898

Perth
46-48 Banksia Road
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NATA# 2377
Site# 2370 & 2554

Eurofins Environment Testing NZ Ltd

NZBN: 9429046024954

Auckland	Auckland (Focus)	Christchurch	Tauranga
35 O'Rorke Road	Unit C1/4 Pacific Rise	43 Detroit Drive	1277 Cameron Road
Penrose	Mount Wellington	Rolleston	Gate Pa
Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Sample Receipt Advice

Company name: Jacobs Group (Australia) P/L NSW
Contact name: Grant Moylan
Project name: NSW_0315_PFASMGMT_25
Project ID: 0315
Turnaround time: 5 Day
Date/Time received Mar 12, 2025 12:05 PM
Eurofins reference 1197122

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Andrew Black on phone : (+61) 2 9900 8490 or by email: Andrew.Black@eurofinsanz.com

Results will be delivered electronically via email to Grant Moylan - Grant.Moylan@jacobs.com.

Global Leader - Results you can trust

eurofins

web: www.eurofins.com.au
email: EnviroSales@eurofinsanz.com

Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	+61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

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NATA# 2377
Site# 2370 & 2554

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

Auckland	Auckland (Focus)	Christchurch	Tauranga
35 O'Rorke Road	Unit C1/4 Pacific Rise	43 Detroit Drive	1277 Cameron Road
Penrose	Mount Wellington	Rolleston	Gate Pa
Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Company Name: Jacobs Group (Australia) P/L NSW
Address: Level 7, 177 Pacific Highway
North Sydney
NSW 2065

Project Name: NSW_0315_PFASMGMT_25
Project ID: 0315

Order No.:
Report #: 1197122
Phone: 02 9928 2100
Fax: 02 9928 2504

Received: Mar 12, 2025 12:05 PM
Due: Mar 19, 2025
Priority: 5 Day
Contact Name: Grant Moylan

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Sydney Laboratory - NATA # 1261 Site # 18217						X
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0315 QC203 250305	Mar 05, 2025		Water	S25-Ma0026812	X
2	0315 QC204 250306	Mar 06, 2025		Water	S25-Ma0026813	X
Test Counts						2

Jacobs Group (Australia) P/L NSW
Level 7, 177 Pacific Highway
North Sydney
NSW 2065

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: **Grant Moylan**

Report **1197122-W**
Project name NSW_0315_PFASMGMT_25
Project ID 0315
Received Date Mar 12, 2025

Client Sample ID			**0315 QC203 250305**	**0315 QC204 250306**
Sample Matrix			**Water**	**Water**
Eurofins Sample No.			**S25-Ma0026812**	**S25-Ma0026813**
Date Sampled			**Mar 05, 2025**	**Mar 06, 2025**
Test/Reference	LOR	Unit		
Perfluoroalkyl carboxylic acids (PFCAs)				
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01	< 0.01
13C4-PFBA (surr.)	1	%	93	103
13C5-PFPeA (surr.)	1	%	119	115
13C5-PFHxA (surr.)	1	%	146	133
13C4-PFHpA (surr.)	1	%	140	131
13C8-PFOA (surr.)	1	%	125	126
13C5-PFNA (surr.)	1	%	125	120
13C6-PFDA (surr.)	1	%	110	118
13C2-PFUnDA (surr.)	1	%	94	93
13C2-PFDoDA (surr.)	1	%	82	90
13C2-PFTeDA (surr.)	1	%	66	55
Perfluoroalkyl sulfonamido substances				
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05
13C8-FOSA (surr.)	1	%	125	110
D3-N-MeFOSA (surr.)	1	%	85	84

Client Sample ID			0315 QC203 250305	0315 QC204 250306
Sample Matrix			**Water**	**Water**
Eurofins Sample No.			**S25-Ma0026812**	**S25-Ma0026813**
Date Sampled			**Mar 05, 2025**	**Mar 06, 2025**
Test/Reference	LOR	Unit		
Perfluoroalkyl sulfonamido substances				
D5-N-EtFOSA (surr.)	1	%	85	96
D7-N-MeFOSE (surr.)	1	%	88	90
D9-N-EtFOSE (surr.)	1	%	91	82
D5-N-EtFOSAA (surr.)	1	%	76	82
D3-N-MeFOSAA (surr.)	1	%	96	99
Perfluoroalkyl sulfonic acids (PFSAs)				
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	< 0.01	[N09]0.02
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01	< 0.01
13C3-PFBS (surr.)	1	%	132	135
18O2-PFHxS (surr.)	1	%	123	123
13C8-PFOS (surr.)	1	%	113	121
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	0.05	ug/L	< 0.05	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
13C2-4:2 FTSA (surr.)	1	%	158	INT
13C2-6:2 FTSA (surr.)	1	%	114	INT
13C2-8:2 FTSA (surr.)	1	%	184	INT
13C2-10:2 FTSA (surr.)	1	%	69	77
PFASs Summations				
Sum (PFHxS + PFOS)*	0.01	ug/L	< 0.01	0.02
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	< 0.01	0.02
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	< 0.01	0.02
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	< 0.05	< 0.05
Sum of PFASs (n=30)*	0.1	ug/L	< 0.1	< 0.1

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Sydney	Mar 17, 2025	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Sydney	Mar 17, 2025	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Sydney	Mar 17, 2025	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Sydney	Mar 17, 2025	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

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Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
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+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	+61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

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Company Name: Jacobs Group (Australia) P/L NSW
Address: Level 7, 177 Pacific Highway
North Sydney
NSW 2065

Project Name: NSW_0315_PFASMGMT_25
Project ID: 0315

Order No.:
Report #: 1197122
Phone: 02 9928 2100
Fax: 02 9928 2504

Received: Mar 12, 2025 12:05 PM
Due: Mar 19, 2025
Priority: 5 Day
Contact Name: Grant Moylan

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Sydney Laboratory - NATA # 1261 Site # 18217						X
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0315 QC203 250305	Mar 05, 2025		Water	S25-Ma0026812	X
2	0315 QC204 250306	Mar 06, 2025		Water	S25-Ma0026813	X
Test Counts						2

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
3. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with **blue** colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	**mg/L:** milligrams per litre	**ppm:** parts per million
µg/L: micrograms per litre	**ppb:** parts per billion	**%:** Percentage
org/100 mL: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units	**MPN/100 mL:** Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit	**Colour:** Pt-Co Units (CU)	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.05			0.05	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.01			0.01	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.01			0.01	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.01			0.01	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.01			0.01	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.05			0.05	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.05			0.05	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.05			0.05	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	ug/L	< 0.05			0.05	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	ug/L	< 0.05			0.05	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.05			0.05	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.05			0.05	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.01			0.01	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/L	< 0.01			0.01	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/L	< 0.01			0.01	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.01			0.01	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	ug/L	< 0.05			0.05	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	87			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	95			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	91			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	111			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	89			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	105			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	95			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	89			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	95			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	121			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	106			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	88			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	98			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	104			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	%	83			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	%	93			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	91			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	95			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	88			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	77			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	79			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	80			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	102			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	86			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	86			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	83			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	97			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	%	83			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	72			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	99			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	S25-Ma0026206	NCP	%	78			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	S25-Ma0026206	NCP	%	77			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	S25-Ma0026206	NCP	%	95			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	S25-Ma0026206	NCP	%	88			50-150	Pass	
Perfluorooctanoic acid (PFOA)	S25-Ma0026206	NCP	%	85			50-150	Pass	
Perfluorononanoic acid (PFNA)	S25-Ma0026206	NCP	%	87			50-150	Pass	
Perfluorodecanoic acid (PFDA)	S25-Ma0026206	NCP	%	76			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	S25-Ma0026206	NCP	%	80			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	S25-Ma0026206	NCP	%	84			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	S25-Ma0026206	NCP	%	101			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S25-Ma0026206	NCP	%	83			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	S25-Ma0026206	NCP	%	84			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S25-Ma0026206	NCP	%	81			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S25-Ma0026206	NCP	%	86			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	S25-Ma0026206	NCP	%	85			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	S25-Ma0026206	NCP	%	91			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S25-Ma0026206	NCP	%	78			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S25-Ma0026206	NCP	%	97			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	S25-Ma0026206	NCP	%	72			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	S25-Ma0026206	NCP	%	73			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	S25-Ma0026206	NCP	%	60			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S25-Ma0026206	NCP	%	72			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S25-Ma0026206	NCP	%	79			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S25-Ma0026206	NCP	%	87			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	S25-Ma0026206	NCP	%	77			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	S25-Ma0026206	NCP	%	79			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S25-Ma0026206	NCP	%	68			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	S25-Ma0026206	NCP	%	87			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S25-Ma0026206	NCP	%	83			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S25-Ma0026206	NCP	%	83			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised by:

Andrew Black	Analytical Services Manager
Roopesh Rangarajan	Senior Analyst-PFAS

Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Jacobs

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PO Box 2147, Dangar, NSW, 230 ABN: 37 001 024 095

CHAIN OF CUSTODY & ANALYSIS REQUEST

COC 1 of 2 (X pages)

LAB: ALS Environmental - 277-289 Woodpark Rd, Smithfield N
JACOBS PO#: 540005365
Quote #:

TURNAROUND: 5+ days (no surcharge)

Project ID (ESdat)	NSW_0315_PFASOMP_25
Site ID (ESdat)	0315
Project Manager	Grant Moylan - 0421960246
Sample Collectors	Sophia Berlyn - 0427 855 750
	Jen Cooper
Jacobs Reference	IS419100

RESULTS TO:
Email: grant.moylan@jacobs.com; DEEP.Lab@jacobs.com; Sam.Martinez@jacobs.com; Sophia.Berlyn@jacobs.com

INVOICE TO:
Email: AUAPinvoice@jacobs.com; grant.moylan@jacobs.com

LAB #	SAMPLE ID	Depth	MATRIX: WATER	SOIL	AIR	OTHER	PRESERVATION METHOD: ICE	ACID	OTHER	NONE	SAMPLE DATE	NO. OF CONTAINERS	ANALYSIS REQUIRED: Low Level PFAS Standard Suite	Standard PFAS Standard Suite	PFAS (Reduced Suite)	Hold	COMMENTS
1	0315_MW103_50.5_250304		x				x				4/03/2025			x			
2	0315_QC101_250304		x				x				4/03/2025			x			
3	0315_QC301_250304		x				x				4/03/2025			x			
4	0315_MW104_45_250304		x				x				4/03/2025			x			
5	0315_MW107_14_250304		x				x				4/03/2025			x			
6	0315_SD121_250304			x			x				4/03/2025			x			
7	0315_SW136_250304		x				x				4/03/2025			x			
8	0315_QC301_250306		x				x				6/03/2025			x			
9	0315_SW103_250306		x				x				6/03/2025			x			
10	0315_SD127_250306			x			x				6/03/2025			x			
11	0315_MW109_30_250306		x				x				6/03/2025			x			
12	0315_MW110_17.3_250306		x				x				6/03/2025			x			
13	0315_QC103_250306	QC102	x				x				6/03/2025			x			
14	0315_MW628_18_250306		x				x				6/03/2025			x			
15	0315_SW107_250306		x				x				6/03/2025			x			
16	0315_SD118_250306			x			x				6/03/2025			x			
17	0315_SW111_250307		x				x				7/03/2025			x			
18	0315_QC101_250307		x				x				7/03/2025			x			
19	0315_SW108_250307		x				x				7/03/2025			x			

Receipt Detail (Lab Use ONLY): Chill Method: Ice | Sample Temp at receipt °C °C | 7/03/2025 | Carrier Details: Courier/Post Client | Packaging (circle): Hard Esky Foam Esky Box/bag/other

Relinquished by: Sophia Berlyn | Signature: SCBerlyn | Date/Time 7/03/2025 | Received by: | Date/Time

Environmental Division
Sydney
Work Order Reference
ES2506877

elephone : + 61-2-8784 8555

Subcon / Forward Lab / Split WO:
Lab / Analysis: E-mail - 0315_QC201_250304
Organised By / Date: 0315_QC203_250306
Relinquished By / Date: 0315_QC201_250307
Connote / Courier:
WO No: QC203 received as QC202
Attached By PO / Internal Sheet:

Brendan 12:05 12/3 ~~10:11~~ 10:11

From 11/3/25 11:5

1197125

Jacobs

Jacobs Group (Australia) Pty Ltd Ph: + 61 2 4924 2600
PO Box 2147, Dangar, NSW, 2309 ABN: 37 001 024 095

CHAIN OF CUSTODY & ANALYSIS REQUEST

COC 2 of 2 (X pages)

LAB: ALS Environmental - 277-289 Woodpark Rd, Smithfield
JACOBS PO#: 540003363
Quote #:

TURNAROUND: 5 + days (no surcharge)

Project ID (ESdat)	NSW_0315_PFASOMP_25
Site ID (ESdat)	0315
Project Manager	Grant Moylan - 0421960246
Sample Collectors	Sophia Berlyn - 0427 855 750
	Jen Cooper
Jacobs Reference	IS419100

RESULTS TO:
Email: grant.moylan@jacobs.com
DERP.LabReports@esdat.com.au
Ellen.Marnock@jacobs.com
Sophia.Berlyn@jacobs.com

INVOICE TO:
Email:

LAB #	SAMPLE ID	Depth	MATRIX: WATER	SOIL	AIR	OTHER	PRESERVATION METHOD: ICE	ACID	OTHER	NONE	SAMPLE DATE	NO. OF CONTAINERS	ANALYSIS REQUIRED: Suite)	Suite)	PFAS (Perfluoroalkyl Suite)	Hold	COMMENTS
70	0315_QC501_250307		X				X				7/03/2025				x		

Receipt Detail (Lab Use)	Chill Method:	Ice	Sample Temp at receipt	°C	°C	7/03/2025	Carrier Details :	Courier/Post	Client	Packaging (circle): Hard Esky	Foam Esky	Box/bag/other

Relinquished by:	Sophia Berlyn	Signature:	SGBerlyn	Date/Time	7/03/2025
Received by:				Date/Time	

Jacobs

Jacobs Group (Australia) Pty Ltd
PO Box 2147, Dangar, NSW, 2
Ph: + 61 2 4924 2600
ABN: 37 001 024 095

CHAIN OF CUSTODY & ANALYSIS REQUEST

COC 1 of 1 (1 page)

LAB: Eurofins
JACOBS PO#: 540003360
Quote #

TURNAROUND: 5 + days (no surcharge)

Project ID (ESdat)	NSW_0315_PFASOMP_25
Site ID (ESdat)	0315
Project Manager	Grant Moylan [illegible]
Sample Collectors	Sophia Berlyn - 0427 855 750
Jacobs Reference	IS419100

RESULTS TO:
Email: [illegible]

INVOICE TO:
Email: [illegible]

LAB #	SAMPLE ID	Depth	MATRIX: WATER	SOIL	AIR	OTHER	PRESERVATION METHOD: ICE	ACID	OTHER	NONE	SAMPLE DATE	NO. OF CONTAINERS	ANALYSIS REQUIRED: Low Level PFAS (Standard Suite)	Standard PFAS (Standard Suite)	PFAS (Reduced Suite)	Hold			COMMENTS
	0315_QC201_250304		x											x					
2	0315_QC203_250306	QC202	x											x					
3	0315_QC201_250307		x											x					

Receipt Detail (Lab Use ONLY)	**Chill Method:** e / Ice bricks / no	**Sample Temp at receipt**	°C	°C	°C	**Carrier Details :** Courier/Post / Client	**Packaging (circle):** Hard Esky / Foam Esky / Box/bag/other
Relinquished by: Sophia Berlyn	**Signature:** SGBerlyn	**Date/Time**	7/03/2025	**Received by:**		**Date/Time**	

eurofins | Environment Testing

www.eurofins.com.au EnviroSales@eurofinsanz.com

Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	+61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

Eurofins ARL Pty Ltd

ABN: 91 05 0159 898

Perth
46-48 Banksia Road
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WA 6106
+61 8 6253 4444
NATA# 2377
Site# 2370 & 2554

Eurofins Environment Testing NZ Ltd

NZBN: 9429046024954

Auckland	Auckland (Focus)	Christchurch	Tauranga
35 O'Rorke Road	Unit C1/4 Pacific Rise	43 Detroit Drive	1277 Cameron Road
Penrose	Mount Wellington	Rolleston	Gate Pa
Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Sample Receipt Advice

Company name: Jacobs Group (Australia) P/L NSW
Contact name: Grant Moylan
Project name: NSW_0315_PFASOMP_25
Project ID: 0315
Turnaround time: 5 Day
Date/Time received Mar 12, 2025 12:05 PM
Eurofins reference 1197125

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Andrew Black on phone : (+61) 2 9900 8490 or by email: Andrew.Black@eurofinsanz.com

Results will be delivered electronically via email to Grant Moylan - Grant.Moylan@jacobs.com.

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eurofins

web: www.eurofins.com.au
email: EnviroSales@eurofinsanz.com

Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	+61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

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NATA# 2377
Site# 2370 & 2554

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

Auckland	Auckland (Focus)	Christchurch	Tauranga
35 O'Rorke Road	Unit C1/4 Pacific Rise	43 Detroit Drive	1277 Cameron Road
Penrose	Mount Wellington	Rolleston	Gate Pa
Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Company Name: Jacobs Group (Australia) P/L NSW
Address: Level 7, 177 Pacific Highway
North Sydney
NSW 2065

Project Name: NSW_0315_PFASOMP_25
Project ID: 0315

Order No.:
Report #: 1197125
Phone: 02 9928 2100
Fax: 02 9928 2504

Received: Mar 12, 2025 12:05 PM
Due: Mar 19, 2025
Priority: 5 Day
Contact Name: Grant Moylan

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Sydney Laboratory - NATA # 1261 Site # 18217						X
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	0315 QC201 250304	Mar 04, 2025		Water	S25-Ma0026829	X
2	0315 QC203 250306	Mar 06, 2025		Water	S25-Ma0026830	X
3	0315_QC201_ 250307	Mar 07, 2025		Water	S25-Ma0026831	X
Test Counts						3

Jacobs Group (Australia) P/L NSW
Level 7, 177 Pacific Highway
North Sydney
NSW 2065

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: **Grant Moylan**

Report **1197125-W**
Project name NSW_0315_PFASOMP_25
Project ID 0315
Received Date Mar 12, 2025

Client Sample ID			**0315 QC201 250304**	**0315 QC203 250306**	**0315_QC201_2 50307**
Sample Matrix			**Water**	**Water**	**Water**
Eurofins Sample No.			**S25-Ma0026829**	**S25-Ma0026830**	**S25-Ma0026831**
Date Sampled			**Mar 04, 2025**	**Mar 06, 2025**	**Mar 07, 2025**
Test/Reference	LOR	Unit			
Perfluoroalkyl carboxylic acids (PFCAs)					
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	0.01	< 0.01	0.03
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	0.04	< 0.01	< 0.01
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	[N09]0.01	< 0.01	[N09]0.02
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
13C4-PFBA (surr.)	1	%	94	97	106
13C5-PFPeA (surr.)	1	%	109	117	123
13C5-PFHxA (surr.)	1	%	111	108	128
13C4-PFHpA (surr.)	1	%	109	112	136
13C8-PFOA (surr.)	1	%	105	146	122
13C5-PFNA (surr.)	1	%	106	103	126
13C6-PFDA (surr.)	1	%	105	98	127
13C2-PFUnDA (surr.)	1	%	98	98	105
13C2-PFDoDA (surr.)	1	%	90	97	92
13C2-PFTeDA (surr.)	1	%	90	83	78
Perfluoroalkyl sulfonamido substances					
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
13C8-FOSA (surr.)	1	%	104	112	113
D3-N-MeFOSA (surr.)	1	%	91	95	90

Client Sample ID			0315 QC201 250304	0315 QC203 250306	0315_QC201_2 50307
Sample Matrix			Water	Water	Water
Eurofins Sample No.			S25-Ma0026829	S25-Ma0026830	S25-Ma0026831
Date Sampled			Mar 04, 2025	Mar 06, 2025	Mar 07, 2025
Test/Reference	LOR	Unit			
Perfluoroalkyl sulfonamido substances					
D5-N-EtFOSA (surr.)	1	%	90	98	98
D7-N-MeFOSE (surr.)	1	%	90	96	90
D9-N-EtFOSE (surr.)	1	%	92	101	91
D5-N-EtFOSAA (surr.)	1	%	85	89	89
D3-N-MeFOSAA (surr.)	1	%	107	98	100
Perfluoroalkyl sulfonic acids (PFSAs)					
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	0.02	< 0.01	0.03
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	[N09]0.09	< 0.01	[N09]0.05
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	< 0.01	< 0.01	[N09]0.03
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01	< 0.01	< 0.01
13C3-PFBS (surr.)	1	%	132	132	124
18O2-PFHxS (surr.)	1	%	115	140	132
13C8-PFOS (surr.)	1	%	127	112	116
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	0.05	ug/L	< 0.05	< 0.05	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01	< 0.01
13C2-4:2 FTSA (surr.)	1	%	112	104	INT
13C2-6:2 FTSA (surr.)	1	%	91	96	164
13C2-8:2 FTSA (surr.)	1	%	180	187	INT
13C2-10:2 FTSA (surr.)	1	%	78	68	82
PFASs Summations					
Sum (PFHxS + PFOS)*	0.01	ug/L	0.09	< 0.01	0.08
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	0.01	< 0.01	0.05
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	0.1	< 0.01	0.1
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	0.17	< 0.05	0.16
Sum of PFASs (n=30)*	0.1	ug/L	0.17	< 0.1	0.16

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Sydney	Mar 17, 2025	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Sydney	Mar 17, 2025	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Sydney	Mar 17, 2025	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Sydney	Mar 17, 2025	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

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Company Name: Jacobs Group (Australia) P/L NSW
Address: Level 7, 177 Pacific Highway
North Sydney
NSW 2065

Project Name: NSW_0315_PFASOMP_25
Project ID: 0315

Order No.:
Report #: 1197125
Phone: 02 9928 2100
Fax: 02 9928 2504

Received: Mar 12, 2025 12:05 PM
Due: Mar 19, 2025
Priority: 5 Day
Contact Name: Grant Moylan

Eurofins Analytical Services Manager : Andrew Black

Sample Detail	Per- and Polyfluoroalkyl Substances (PFASs)
Sydney Laboratory - NATA # 1261 Site # 18217	X
External Laboratory	

No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID	
1	0315 QC201 250304	Mar 04, 2025		Water	S25-Ma0026829	X
2	0315 QC203 250306	Mar 06, 2025		Water	S25-Ma0026830	X
3	0315_QC201_ 250307	Mar 07, 2025		Water	S25-Ma0026831	X
Test Counts						3

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
3. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with **blue** colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	**mg/L:** milligrams per litre	**ppm:** parts per million
µg/L: micrograms per litre	**ppb:** parts per billion	**%:** Percentage
org/100 mL: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units	**MPN/100 mL:** Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit	**Colour:** Pt-Co Units (CU)	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.05			0.05	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.01			0.01	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.01			0.01	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.01			0.01	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.01			0.01	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.05			0.05	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.05			0.05	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.05			0.05	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	ug/L	< 0.05			0.05	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	ug/L	< 0.05			0.05	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.05			0.05	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.05			0.05	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.01			0.01	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/L	< 0.01			0.01	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/L	< 0.01			0.01	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.01			0.01	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	ug/L	< 0.05			0.05	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	87			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	95			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	91			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	111			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	89			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	105			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	95			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	89			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	95			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	121			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	106			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	88			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	98			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	104			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	%	83			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	%	93			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	91			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	95			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	88			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	77			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	79			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	80			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	102			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	86			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	86			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	83			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	97			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	%	83			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	72			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	99			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	S25-Ma0026206	NCP	%	78			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	S25-Ma0026206	NCP	%	77			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	S25-Ma0026206	NCP	%	95			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	S25-Ma0026206	NCP	%	88			50-150	Pass	
Perfluorooctanoic acid (PFOA)	S25-Ma0026206	NCP	%	85			50-150	Pass	
Perfluorononanoic acid (PFNA)	S25-Ma0026206	NCP	%	87			50-150	Pass	
Perfluorodecanoic acid (PFDA)	S25-Ma0026206	NCP	%	76			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	S25-Ma0026206	NCP	%	80			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	S25-Ma0026206	NCP	%	84			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	S25-Ma0026206	NCP	%	101			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S25-Ma0026206	NCP	%	83			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	S25-Ma0026206	NCP	%	84			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S25-Ma0026206	NCP	%	81			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S25-Ma0026206	NCP	%	86			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	S25-Ma0026206	NCP	%	85			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	S25-Ma0026206	NCP	%	91			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S25-Ma0026206	NCP	%	78			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S25-Ma0026206	NCP	%	97			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	S25-Ma0026206	NCP	%	72			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	S25-Ma0026206	NCP	%	73			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	S25-Ma0026206	NCP	%	60			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S25-Ma0026206	NCP	%	72			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S25-Ma0026206	NCP	%	79			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S25-Ma0026206	NCP	%	87			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	S25-Ma0026206	NCP	%	77			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	S25-Ma0026206	NCP	%	79			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S25-Ma0026206	NCP	%	68			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	S25-Ma0026206	NCP	%	87			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S25-Ma0026206	NCP	%	83			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S25-Ma0026206	NCP	%	83			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised by:

Andrew Black	Analytical Services Manager
Roopesh Rangarajan	Senior Analyst-PFAS

Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

Jacobs

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PO Box 2147, Dangar, NSW, 2309 ABN: 37 001 024 095

CHAIN OF CUSTODY & ANALYSIS REQUEST

COC 1 of 1 (X pages)

LAB: ALS Environmental - 277-289 Woodpark Rd, Smithfield N
JACOBS PO#: 540003363
Quote #:
TURNAROUND: 5+ days (no surcharge)

Project ID (ESdat)	NSW_0315_PFASOMP_25
Site ID (ESdat)	0315
Project Manager	Grant Moylan - 0421960246
Sample Collectors	Sophia Berlyn - 0427 855 750 Jen Cooper
Jacobs Reference	IS419100

RESULTS TO:
Email: grant.moylan@jacobs.com
DERP.LabReports@esdat.com.au
Ellen.Murdock@jacobs.com
Sophia.Berlyn@jacobs.com

INVOICE TO:
Email: AU.APInvoices@jacobs.com
grant.moylan@jacobs.com

LAB #	SAMPLE ID	Depth	MATRIX: WATER	MATRIX: SOIL	MATRIX: AIR	MATRIX: OTHER	PRESERVATION METHOD: ICE	PRESERVATION METHOD: ACID	PRESERVATION METHOD: OTHER	PRESERVATION METHOD: NONE	SAMPLE DATE	NO. OF CONTAINERS	Suite1	Suite1	PFAS Reduced Suite	Hold	COMMENTS
1	0315_SD614_250306			x			x				6/03/2025			x			
2	0315_QC102_250306			x			x				6/03/2025			x			
3	0315_MW624_39.0_250306		x				x				6/03/2025			x			
4	0315_MW601_13_250306		x				x				6/03/2025			x			
5	0315_QC101_250306		x				x				6/03/2025			x			
6	0315_SD677_250306			x			x				6/03/2025			x			

Receipt Detail (Lab Use): Chill Method: Ice | Sample Temp at receipt: °C °C | 7/03/2025

Carrier Details: Courier/Post Client | Packaging (circle): Hard Esky Foam Esky Box/bag/other

Relinquished by: Sophia Berlyn | Signature: SGBerlyn | Date/Time: 7/03/2025

Received by: | Date/Time:

Brennan
12:13
12:05
~~10.1°C~~
10.1°C

FAN 11/3/25 11:55

Page 1 of 1

Subset: / Forward Lab / Split WO
Lab / Analysis: Eurofins - 0315_QC202_250306
Organised By / Date: 0315_QC201_250306
Relinquished By / Date:
Cdnote / Courier:
WO No:
Attached by PC Internal Sheet:

Environmental Division
Sydney
Work Order Reference
ES2506716

Telephone : + 61-2-8784 8555

1197133

Jacobs

Jacobs Group (Australia) Pty Ltd
PO Box 2147, Dangar, NSW, 2

Ph: + 61 2 4924 2600
ABN: 37 001 024 095

CHAIN OF CUSTODY & ANALYSIS REQUEST

COC 1 of 1 (1 page)

LAB:	Eurofins
JACOBS PO#:	540003360
Quote #	

TURNAROUND: 5+ days (no surcharge)

Project ID (ESdat)	NSW_0315_PFASOMP_25
Site ID (ESdat)	0315
Project Manager	Grant Moylan - 0421960246
Sample Collectors	Sophia Berlyn - 0427 855 750
Jacobs Reference	IS419100

RESULTS TO:
Email: [redacted]

INVOICE TO:
Email: [redacted] grant.moylan@jacobs.com

LAB #	SAMPLE ID	Depth	MATRIX: WATER	MATRIX: SOIL	MATRIX: AIR	MATRIX: OTHER	PRESERVATION METHOD: ICE	PRESERVATION METHOD: ACID	PRESERVATION METHOD: OTHER	PRESERVATION METHOD: NONE	SAMPLE DATE	No. OF CONTAINERS	ANALYSIS REQUIRED: Low Level PFAS (Standard Suite)	ANALYSIS REQUIRED: Standard PFAS (Standard Suite)	ANALYSIS REQUIRED: PFAS (Reduced Suite)	ANALYSIS REQUIRED: Hold	COMMENTS
1	0315_QC202_250306	0.1		x										x			
2	0315_QC201_250306		x											x			

Receipt Detail (Lab Use ONLY)	Chill Method: e / Ice bricks / no	Sample Temp at receipt	°C °C °C	Carrier Details :	Courier/Post , Client	Packaging (circle):	Hard Esky Foam Esky Box/bag/other
Relinquished by:	Sophia Berlyn	Signature:	SGBerlyn	Date/Time	7/03/2025	Received by:	Date/Time

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www.eurofins.com.au EnviroSales@eurofinsanz.com

Eurofins Environment Testing Australia Pty Ltd

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6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	+61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

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NATA# 2377
Site# 2370 & 2554

Eurofins Environment Testing NZ Ltd

NZBN: 9429046024954

Auckland	Auckland (Focus)	Christchurch	Tauranga
35 O'Rorke Road	Unit C1/4 Pacific Rise	43 Detroit Drive	1277 Cameron Road
Penrose	Mount Wellington	Rolleston	Gate Pa
Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Sample Receipt Advice

Company name: Jacobs Group (Australia) P/L NSW
Contact name: Grant Moylan
Project name: NSW_0315_PFASOMP_25
Project ID: 0315
Turnaround time: 5 Day
Date/Time received Mar 12, 2025 12:05 PM
Eurofins reference 1197133

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Andrew Black on phone : (+61) 2 9900 8490 or by email: Andrew.Black@eurofinsanz.com

Results will be delivered electronically via email to Grant Moylan - Grant.Moylan@jacobs.com.

eurofins

web: www.eurofins.com.au
email: EnviroSales@eurofinsanz.com

Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
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NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

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NATA# 2377
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NZBN: 9429046024954

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Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Company Name: Jacobs Group (Australia) P/L NSW
Address: Level 7, 177 Pacific Highway
North Sydney
NSW 2065

Project Name: NSW_0315_PFASOMP_25
Project ID: 0315

Order No.:
Report #: 1197133
Phone: 02 9928 2100
Fax: 02 9928 2504

Received: Mar 12, 2025 12:05 PM
Due: Mar 19, 2025
Priority: 5 Day
Contact Name: Grant Moylan

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	0315_QC202_250306	Mar 06, 2025		Soil	S25-Ma0026922	X	X
2	0315_QC201_250306	Mar 06, 2025		Water	S25-Ma0026923		X
Test Counts						1	2

Jacobs Group (Australia) P/L NSW
Level 7, 177 Pacific Highway
North Sydney
NSW 2065

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: **Grant Moylan**

Report **1197133-W**
Project name NSW_0315_PFASOMP_25
Project ID 0315
Received Date Mar 12, 2025

Client Sample ID			**0315_QC201_250306**
Sample Matrix			**Water**
Eurofins Sample No.			**S25-Ma0026923**
Date Sampled			**Mar 06, 2025**
Test/Reference	LOR	Unit	
Perfluoroalkyl carboxylic acids (PFCAs)			
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	< 0.01
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	0.02
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	[N09]0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01
13C4-PFBA (surr.)	1	%	98
13C5-PFPeA (surr.)	1	%	116
13C5-PFHxA (surr.)	1	%	132
13C4-PFHpA (surr.)	1	%	128
13C8-PFOA (surr.)	1	%	117
13C5-PFNA (surr.)	1	%	103
13C6-PFDA (surr.)	1	%	121
13C2-PFUnDA (surr.)	1	%	91
13C2-PFDoDA (surr.)	1	%	100
13C2-PFTeDA (surr.)	1	%	87
Perfluoroalkyl sulfonamido substances			
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	0.05	ug/L	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	0.05	ug/L	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05
13C8-FOSA (surr.)	1	%	117
D3-N-MeFOSA (surr.)	1	%	100

Client Sample ID			0315_QC201_250306
Sample Matrix			Water
Eurofins Sample No.			S25-Ma0026923
Date Sampled			Mar 06, 2025
Test/Reference	LOR	Unit	
Perfluoroalkyl sulfonamido substances			
D5-N-EtFOSA (surr.)	1	%	92
D7-N-MeFOSE (surr.)	1	%	98
D9-N-EtFOSE (surr.)	1	%	104
D5-N-EtFOSAA (surr.)	1	%	85
D3-N-MeFOSAA (surr.)	1	%	94
Perfluoroalkyl sulfonic acids (PFSAs)			
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	0.03
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	0.03
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	[N09]0.42
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	0.02
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	[N09]0.25
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01
13C3-PFBS (surr.)	1	%	147
18O2-PFHxS (surr.)	1	%	126
13C8-PFOS (surr.)	1	%	121
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	0.05	ug/L	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01
13C2-4:2 FTSA (surr.)	1	%	104
13C2-6:2 FTSA (surr.)	1	%	96
13C2-8:2 FTSA (surr.)	1	%	181
13C2-10:2 FTSA (surr.)	1	%	71
PFASs Summations			
Sum (PFHxS + PFOS)*	0.01	ug/L	0.67
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	0.26
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	0.68
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	0.73
Sum of PFASs (n=30)*	0.1	ug/L	0.78

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Sydney	Mar 17, 2025	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Sydney	Mar 17, 2025	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Sydney	Mar 17, 2025	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Sydney	Mar 17, 2025	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

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6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
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NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

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NATA# 2377
Site# 2370 & 2554

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

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+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Company Name: Jacobs Group (Australia) P/L NSW
Address: Level 7, 177 Pacific Highway
North Sydney
NSW 2065

Project Name: NSW_0315_PFASOMP_25
Project ID: 0315

Order No.:
Report #: 1197133
Phone: 02 9928 2100
Fax: 02 9928 2504

Received: Mar 12, 2025 12:05 PM
Due: Mar 19, 2025
Priority: 5 Day
Contact Name: Grant Moylan

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	0315_QC202_250306	Mar 06, 2025		Soil	S25-Ma0026922	X	X
2	0315_QC201_250306	Mar 06, 2025		Water	S25-Ma0026923		X
Test Counts						1	2

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Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
3. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with **blue** colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	**mg/L:** milligrams per litre	**ppm:** parts per million
µg/L: micrograms per litre	**ppb:** parts per billion	**%:** Percentage
org/100 mL: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units	**MPN/100 mL:** Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit	**Colour:** Pt-Co Units (CU)	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.05			0.05	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.01			0.01	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.01			0.01	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.01			0.01	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.01			0.01	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.05			0.05	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.05			0.05	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.05			0.05	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	ug/L	< 0.05			0.05	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	ug/L	< 0.05			0.05	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.05			0.05	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.05			0.05	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.01			0.01	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/L	< 0.01			0.01	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/L	< 0.01			0.01	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.01			0.01	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	ug/L	< 0.05			0.05	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	85			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	118			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	121			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	89			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	92			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	92			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	91			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	100			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	94			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	97			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	87			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	116			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	116			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	91			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	%	83			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	%	91			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	95			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	92			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	87			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	75			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	72			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	66			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	85			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	79			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	82			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	81			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	82			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	%	91			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	95			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	105			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	S25-Ma0026206	NCP	%	78			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	S25-Ma0026206	NCP	%	77			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	S25-Ma0026206	NCP	%	95			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	S25-Ma0026206	NCP	%	88			50-150	Pass	
Perfluorooctanoic acid (PFOA)	S25-Ma0026206	NCP	%	85			50-150	Pass	
Perfluorononanoic acid (PFNA)	S25-Ma0026206	NCP	%	87			50-150	Pass	
Perfluorodecanoic acid (PFDA)	S25-Ma0026206	NCP	%	76			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	S25-Ma0026206	NCP	%	80			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	S25-Ma0026206	NCP	%	84			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	S25-Ma0026206	NCP	%	101			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S25-Ma0026206	NCP	%	83			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	S25-Ma0026206	NCP	%	84			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S25-Ma0026206	NCP	%	81			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S25-Ma0026206	NCP	%	86			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	S25-Ma0026206	NCP	%	85			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	S25-Ma0026206	NCP	%	91			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S25-Ma0026206	NCP	%	78			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S25-Ma0026206	NCP	%	97			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	S25-Ma0026206	NCP	%	72			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	S25-Ma0026206	NCP	%	73			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	S25-Ma0026206	NCP	%	60			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S25-Ma0026206	NCP	%	72			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S25-Ma0026206	NCP	%	79			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S25-Ma0026206	NCP	%	87			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	S25-Ma0026206	NCP	%	77			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	S25-Ma0026206	NCP	%	79			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S25-Ma0026206	NCP	%	68			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	S25-Ma0026206	NCP	%	87			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S25-Ma0026206	NCP	%	83			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S25-Ma0026206	NCP	%	83			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	S25-Ma0026202	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S25-Ma0026202	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised by:

Andrew Black	Analytical Services Manager
Roopesh Rangarajan	Senior Analyst-PFAS

Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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NSW 2065

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Attention: **Grant Moylan**

Report **1197133-S**
Project name NSW_0315_PFASOMP_25
Project ID 0315
Received Date Mar 12, 2025

Client Sample ID			**0315_QC202_250306**
Sample Matrix			**Soil**
Eurofins Sample No.			**S25-Ma0026922**
Date Sampled			**Mar 06, 2025**
Test/Reference	LOR	Unit	
Sample Properties			
% Moisture	1	%	23
Perfluoroalkyl carboxylic acids (PFCAs)			
Perfluorobutanoic acid (PFBA)[N11]	5	ug/kg	< 5
Perfluoropentanoic acid (PFPeA)[N11]	5	ug/kg	< 5
Perfluorohexanoic acid (PFHxA)[N11]	5	ug/kg	< 5
Perfluoroheptanoic acid (PFHpA)[N11]	5	ug/kg	< 5
Perfluorooctanoic acid (PFOA)[N11]	5	ug/kg	< 5
Perfluorononanoic acid (PFNA)[N11]	5	ug/kg	< 5
Perfluorodecanoic acid (PFDA)[N11]	5	ug/kg	< 5
Perfluoroundecanoic acid (PFUnDA)[N11]	5	ug/kg	< 5
Perfluorododecanoic acid (PFDoDA)[N11]	5	ug/kg	< 5
Perfluorotridecanoic acid (PFTrDA)[N15]	5	ug/kg	< 5
Perfluorotetradecanoic acid (PFTeDA)[N11]	5	ug/kg	< 5
13C4-PFBA (surr.)	1	%	114
13C5-PFPeA (surr.)	1	%	101
13C5-PFHxA (surr.)	1	%	117
13C4-PFHpA (surr.)	1	%	109
13C8-PFOA (surr.)	1	%	103
13C5-PFNA (surr.)	1	%	100
13C6-PFDA (surr.)	1	%	113
13C2-PFUnDA (surr.)	1	%	108
13C2-PFDoDA (surr.)	1	%	108
13C2-PFTeDA (surr.)	1	%	45
Perfluoroalkyl sulfonamido substances			
Perfluorooctane sulfonamide (FOSA)[N11]	5	ug/kg	< 5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	5	ug/kg	< 5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	5	ug/kg	< 5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	5	ug/kg	< 5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	5	ug/kg	< 5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	10	ug/kg	< 10
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	10	ug/kg	< 10

Client Sample ID			0315_QC202_250306
Sample Matrix			Soil
Eurofins Sample No.			S25-Ma0026922
Date Sampled			Mar 06, 2025
Test/Reference	LOR	Unit	
Perfluoroalkyl sulfonamido substances			
13C8-FOSA (surr.)	1	%	102
D3-N-MeFOSA (surr.)	1	%	91
D5-N-EtFOSA (surr.)	1	%	69
D7-N-MeFOSE (surr.)	1	%	90
D9-N-EtFOSE (surr.)	1	%	75
D5-N-EtFOSAA (surr.)	1	%	118
D3-N-MeFOSAA (surr.)	1	%	79
Perfluoroalkyl sulfonic acids (PFSAs)			
Perfluorobutanesulfonic acid (PFBS)[N11]	5	ug/kg	< 5
Perfluorononanesulfonic acid (PFNS)[N15]	5	ug/kg	< 5
Perfluoropropanesulfonic acid (PFPrS)[N15]	5	ug/kg	< 5
Perfluoropentanesulfonic acid (PFPeS)[N15]	5	ug/kg	< 5
Perfluorohexanesulfonic acid (PFHxS)[N11]	5	ug/kg	< 5
Perfluoroheptanesulfonic acid (PFHpS)[N15]	5	ug/kg	< 5
Perfluorooctanesulfonic acid (PFOS)[N11]	5	ug/kg	13
Perfluorodecanesulfonic acid (PFDS)[N15]	5	ug/kg	< 5
13C3-PFBS (surr.)	1	%	121
18O2-PFHxS (surr.)	1	%	130
13C8-PFOS (surr.)	1	%	109
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	5	ug/kg	< 5
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	10	ug/kg	< 10
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	5	ug/kg	< 5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	5	ug/kg	< 5
13C2-4:2 FTSA (surr.)	1	%	91
13C2-6:2 FTSA (surr.)	1	%	82
13C2-8:2 FTSA (surr.)	1	%	84
13C2-10:2 FTSA (surr.)	1	%	160
PFASs Summations			
Sum (PFHxS + PFOS)*	5	ug/kg	13
Sum of US EPA PFAS (PFOS + PFOA)*	5	ug/kg	13
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	5	ug/kg	13
Sum of WA DWER PFAS (n=10)*	10	ug/kg	13
Sum of PFASs (n=30)*	50	ug/kg	< 50

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
% Moisture	Sydney	Mar 12, 2025	14 Days
- Method: LTM-GEN-7080 Moisture			
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Sydney	Mar 18, 2025	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Sydney	Mar 18, 2025	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Sydney	Mar 18, 2025	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Sydney	Mar 18, 2025	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	+61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

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Company Name: Jacobs Group (Australia) P/L NSW
Address: Level 7, 177 Pacific Highway
North Sydney
NSW 2065

Project Name: NSW_0315_PFASOMP_25
Project ID: 0315

Order No.:
Report #: 1197133
Phone: 02 9928 2100
Fax: 02 9928 2504

Received: Mar 12, 2025 12:05 PM
Due: Mar 19, 2025
Priority: 5 Day
Contact Name: Grant Moylan

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	0315_QC202_250306	Mar 06, 2025		Soil	S25-Ma0026922	X	X
2	0315_QC201_250306	Mar 06, 2025		Water	S25-Ma0026923		X
Test Counts						1	2

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Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
3. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with **blue** colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	**mg/L:** milligrams per litre	**ppm:** parts per million
µg/L: micrograms per litre	**ppb:** parts per billion	**%:** Percentage
org/100 mL: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units	**MPN/100 mL:** Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit	**Colour:** Pt-Co Units (CU)	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/kg	< 5			5	Pass	
Perfluoropentanoic acid (PFPeA)	ug/kg	< 5			5	Pass	
Perfluorohexanoic acid (PFHxA)	ug/kg	< 5			5	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/kg	< 5			5	Pass	
Perfluorooctanoic acid (PFOA)	ug/kg	< 5			5	Pass	
Perfluorononanoic acid (PFNA)	ug/kg	< 5			5	Pass	
Perfluorodecanoic acid (PFDA)	ug/kg	< 5			5	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/kg	< 5			5	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/kg	< 5			5	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/kg	< 5			5	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/kg	< 5			5	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/kg	< 5			5	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/kg	< 5			5	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/kg	< 5			5	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	ug/kg	< 5			5	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	ug/kg	< 5			5	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/kg	< 10			10	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/kg	< 10			10	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/kg	< 5			5	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/kg	< 5			5	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/kg	< 5			5	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/kg	< 5			5	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	< 5			5	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	< 5			5	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/kg	< 5			5	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/kg	< 5			5	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/kg	< 5			5	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	ug/kg	< 10			10	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/kg	< 5			5	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/kg	< 5			5	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	73			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	94			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	83			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	82			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	87			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	87			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	76			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	93			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	105			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	147			50-150	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	83			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	76			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	123			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	%	101			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	%	113			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	116			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	89			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	93			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	120			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	66			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	72			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	113			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	100			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	118			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	108			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	94			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	%	99			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	132			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	63			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	R25-Ma0035600	NCP	%	82			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	R25-Ma0035600	NCP	%	80			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	R25-Ma0035600	NCP	%	82			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	R25-Ma0035600	NCP	%	74			50-150	Pass	
Perfluorooctanoic acid (PFOA)	R25-Ma0035600	NCP	%	76			50-150	Pass	
Perfluorononanoic acid (PFNA)	R25-Ma0035600	NCP	%	76			50-150	Pass	
Perfluorodecanoic acid (PFDA)	R25-Ma0035600	NCP	%	66			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	R25-Ma0035600	NCP	%	80			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	R25-Ma0035600	NCP	%	94			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	S25-Ma0034988	NCP	%	112			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S25-Ma0030870	NCP	%	110			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	S25-Ma0034988	NCP	%	66			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	R25-Ma0035600	NCP	%	83			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	R25-Ma0035600	NCP	%	143			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	R25-Ma0035600	NCP	%	78			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	R25-Ma0035600	NCP	%	85			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	R25-Ma0035600	NCP	%	85			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	R25-Ma0035600	NCP	%	110			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	R25-Ma0035600	NCP	%	95			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	S25-Ma0034988	NCP	%	102			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	R25-Ma0035600	NCP	%	72			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	R25-Ma0035600	NCP	%	69			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	R25-Ma0035600	NCP	%	70			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	R25-Ma0035600	NCP	%	117			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	S25-Ma0034988	NCP	%	101			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	S25-Ma0034988	NCP	%	81			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	R25-Ma0035600	NCP	%	146			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	R25-Ma0035600	NCP	%	97			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	R25-Ma0035600	NCP	%	95			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	R25-Ma0035600	NCP	%	66			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	S25-Ma0027738	NCP	%	18	20	11	30%	Pass	
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	R25-Ma0035599	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	R25-Ma0035599	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	R25-Ma0035599	NCP	ug/kg	8.4	8.4	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	R25-Ma0035599	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	R25-Ma0035599	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	R25-Ma0035599	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	R25-Ma0035599	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	R25-Ma0035599	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	R25-Ma0035599	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	R25-Ma0035599	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	R25-Ma0035599	NCP	ug/kg	< 5	< 5	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	R25-Ma0035599	NCP	ug/kg	25	30	15	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	R25-Ma0035599	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	R25-Ma0035599	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	R25-Ma0035599	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	R25-Ma0035599	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	R25-Ma0035599	NCP	ug/kg	< 10	< 10	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	R25-Ma0035599	NCP	ug/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	R25-Ma0035599	NCP	ug/kg	6.8	7.1	5.0	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	S25-Ma0025061	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	R25-Ma0035599	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	R25-Ma0035599	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S25-Ma0025061	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	R25-Ma0035599	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	R25-Ma0035599	NCP	ug/kg	930	1000	11	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	R25-Ma0035599	NCP	ug/kg	30	37	20	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	R25-Ma0035599	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	R25-Ma0035599	NCP	ug/kg	< 10	< 10	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	R25-Ma0035599	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	R25-Ma0035599	NCP	ug/kg	< 5	< 5	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised by:

Andrew Black	Analytical Services Manager
Roopesh Rangarajan	Senior Analyst-PFAS
Ryan Phillips	Senior Analyst-Sample Properties

Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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