SAP IMPLEMENTATION REPORT

ROTTNEST ISLAND ARMY JETTY DREDGING

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EXECUTIVE SUMMARY

The Rottnest Island Authority (RIA) proposes the Thomson Bay South Development Project, situated around the former Army Jetty on Rottnest Island ("the site"), approximately 30 km west of Perth, Western Australia (Figure A). The development project is to:

- facilitate increasing demand for commercial marine services arising from planned infrastructure works
- manage barge and logistical movement away from the settlement areas
- improve visitor experience and reduce safety risk

The project forms part of the 20-year master plan for Rottnest Island (RIA, 2014a). As part of the revised proposed works (April 2020), approximately 26,300 m^3 of material is required to be dredged, i.e. capital dredging, to a depth of -3.3 m Chart Datum (CD) (with an additional over dredge allowance of 0.3 m and volume of ~5,300 m^3) in the vicinity of the former army jetty. The dredged sediments are proposed to be reused onshore for fill requirements as part of the development or as potential capping to the old landfill on the island at Forbes Hill.

Given the historical use of the area and jetty, i.e. historical army operations, there remains the potential for contamination to be present in the sediments proposed to be dredged. The contamination may pose a risk to the surrounding marine environment during capital dredging and potentially pose a risk to human health and or the environment when reused as fill.

As such RIA has requested RPS Australia West Pty Ltd (RPS) to undertake a contamination assessment of the sediments to determine:

- the current contamination status of the sediment, and
- whether any contamination within the site will adversely affect the environment or pose a risk to human health during dredging, and
- the suitability of the material for reuse on the island as fill as part of the development works.

A Sampling and Analysis Plan (RPS, July 2019) was prepared to detail methodologies for proposed sampling and testing of sediments, from an environmental perspective only, proposed to be dredged at the former Army Jetty for the Thomson Bay South Development Project. The SAP was approved by the Department of Biodiversity, Conservation and Attractions (DBCA) and Department of Water and Environmental Regulation (DWER) in August 2019

This SAP Implementation Report (SAPIR) details the findings of the sampling and analysis undertaken on the sediments and has been prepared to support the Section 38 referral under the *Environmental Protection Act 1986* to the Western Australian Office of the Environmental Protection Agency (OEPA).

This SAP Implementation Report relates specifically to sediment quality results proposed to be dredged and reused onshore as part of the Thomson Bay South Development Project, situated around the former Army Jetty on Rottnest Island.

This Summary Report has been prepared in general accordance with the procedures outlined in the DWER (DWER 2014) Contaminated Sites Guidelines.

A total of seven sediment cores were aligned to the proposed dredging requirements to a maximum depth of 1.2 m. Sediments were analysed for the contaminants of concern identified, including metals and metalloids, ASS parameters, OC/OP pesticides, PAHs, nutrients, PFAS and TRH/BTEX with elutriates analysed for metals, nutrients and PFAS. Due to PFAS elutriates from November 2019 being contaminated within the laboratory during the analysis, the results were not considered usable, the sediment sampling exercise for PFAS was therefore completed again in March 2020. Surface water was also sampled within the marine environment and analysed for PFAS during the March 2020 exercise.

RPS notes that the whilst the revised proposed works (16 April 2020) has resulted in an increased dredging volume, which would require additional sampling locations under the *National Assessment Guidelines for Dredging* (Commonwealth of Australia, 2009), the sampling undertaken is considered sufficient to characterise the sediments in the area and thus remains valid, based upon the following:

- the main dredge area (~1.2 ha) remains relatively consistent with the previous area (~1.3 ha),
- the increase in the area relates to dredging (0.6 ha) beneath the proposed breakwater and is further offshore and therefore less likely to have been impacted by onshore activities
- whilst the depth of dredging has increased, contamination is more likely to be associated with the shallow sediments rather than at depth.

The assessment concluded that from contamination perspective the sediments are suitable for reuse onshore for reclamation, with all results below the following assessment criteria:

- Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) for areas of ecological significance and public open space (NEPM 2013)
- Health Investigation Levels for residential soil access (HIL-A) (NEPM 2013 and CRC CARE 2011).

All results were reported below relevant Default Guideline Value (DGV) and the sediments are not considered to pose a significant risk during dredging and are considered suitable for offshore disposal.

Only one sediment is classified Potential Acid Sulfate Soils (PASS), based upon the DWER guidelines, i.e. Acid Neutralising Capacity (ANC) is not included, with only inorganic acidity detected. Although there is inorganic acidity detected above the relevant guidelines, there is a significant amount of ANC in the sediments which has been shown to be kinetically available through undertaking a modified ANC method. As such additional lime treatment of the material is not required when the sediment is disturbed and used for reclamation activities. The ANC is sufficiently kinetically available to safeguard against acidification over the long term.

Whilst concentrations of metals within the elutriate for several metals were higher than those in Indian Ocean water (used in the elutriate analysis), the majority of the results were below the Marine Ecological Protection Guideline. Nutrient concentrations were also higher in the elutriate. Whilst a minor exceedance of the PFOS[1] guideline was observed in one elutriate sample, the concentration was below the highest concentration observed in surface water at the site and the mean and median concentrations of PFOS in the elutriates at the site were below the 99% protection level Marine Ecological Protection Guideline.

The copper concentrations identified in the sediments do not pose a potential risk to human health or the environment when considered for reuse onshore as all concentrations were below relevant criteria, however there is a potential risk to the marine environment during dredging. Copper was observed above relevant MEPG within the elutriates however the exceedance was minimal, and the concentrations are likely associated with sediments suspended in the elutriate.

The increase was not considered significant due to the following:

- Copper concentrations were significantly below the DGV. The natural movement of sediments within the ocean would also likely result in a release of metals similar to that observed in the elutriate.
- The majority of the metals present are likely bound to sediments, thus reducing bioavailability. Controlling the distribution of sediments, via silt curtains, and within dredge return water would further reduce any potential risk to marine ecology.

[1] PFOS: Perfluorooctane sulfonic acid

The nutrient concentrations identified in the sediments pose a low and acceptable risk to human health or the environment when considered for reuse onshore. Nutrient concentrations were observed to increase within the elutriate analysis. As per the metal results, the nutrients in the form of organic matter would be bound to sediments. Therefore, the potential risk from elevated nutrients in the dredge return can be removed by reducing the sediment loading in the return water. Additionally, similar concentrations would be anticipated to elute from sediments naturally disturbed in the marine environment.

PFOS concentrations were observed within one PFOS elutriate analysis however PFOS was also observed in the surface water at the site, indicating the presence of low level PFOS within the existing environment. In addition, only very low concentrations of PFOS were observed in sediments. Given the very low concentrations of PFOS observed in the elutriates, it is expected that the concentrations would be diluted quickly within the marine environment during the works. As such the concentrations would reduce to further below the concentrations observed within the marine waters of the surrounding environment and thereby not changing the risk profile currently presented by marine waters to the surrounding environment. Additionally, the detectable PFOS concentration was within the surface sediment, which has the potential to be mobilised and elute during ongoing natural marine processes onsite i.e. tidal movement or storm events.

Based upon the observed concentrations, there is a low and acceptable risk to human health or the environment from the sediments or surface water during dredging or upon development of the site using the sediments for reclamation. As such the sediments from contamination perspective are determined to be suitable for reuse onshore for reclamation. Additionally, the sediments do not require additional lime treatment once disturbed from an ASS perspective and used for reclamation activities, as the ANC is considered to be sufficiently kinetically available to safeguard against acidification over the long term. No surface water monitoring for PFAS is considered to be required.

Should offshore disposal be considered then as all results were reported below relevant DGV and the sediments do not pose a significant risk during dredging and or if were proposed for offshore disposal.

1 BACKGROUND

1.1 Introduction

The Rottnest Island Authority (RIA) proposes the Thomson Bay South Development Project, situated around the former Army Jetty on Rottnest Island ("the site"), approximately 30 km west of Perth, Western Australia (Figure A). The development project is to:

- facilitate increasing demand for commercial marine services arising from planned infrastructure works
- manage barge and logistical movement away from the settlement areas
- improve visitor experience and reduce safety risk

The project forms part of the 20-year master plan for Rottnest Island (RIA, 2014a). As part of the revised proposed works (April 2020), approximately 26,300 m^3 of material is required to be dredged, i.e. capital dredging, to a depth of -3.3 m Chart Datum (CD) (with an additional over dredge allowance of 0.3 m and volume of ~5,300 m^3) in the vicinity of the former army jetty. The dredged sediments are proposed to be reused onshore for fill requirements as part of the development or as potential capping to the old landfill on the island at Forbes Hill.

Given the historical use of the area and jetty, i.e. historical army operations, there remains the potential for contamination to be present in the sediments proposed to be dredged. The contamination may pose a risk to the surrounding marine environment during capital dredging and potentially pose a risk to human health and or the environment when reused as fill.

As such RIA has requested RPS Australia West Pty Ltd (RPS) to undertake a contamination assessment of the sediments to determine:

- the current contamination status of the sediment,
- whether any contamination within the site will adversely affect the environment or pose a risk to human health during dredging, and
- the suitability of the material for reuse on the island as fill as part of the development works.

A Sampling and Analysis Plan (RPS, July 2019) was prepared to detail methodologies for proposed sampling and testing of sediments, from an environmental perspective only, proposed to be dredged at the former Army Jetty for the Thomson Bay South Development Project. The SAP was approved by the Department of Biodiversity, Conservation and Attractions (DBCA) and Department of Water and Environmental Regulation (DWER) in August 2019.

This SAP Implementation Report (SAPIR) details the findings of the sampling and analysis undertaken on the sediments and has been prepared to support the Section 38 referral under the *Environmental Protection Act 1986* to the Western Australian Office of the Environmental Protection Agency (OEPA).

1.2 Purpose of the Report

A Sampling and Analysis Plan (SAP) (RPS, July 2019) was prepared to detail methodologies for the sampling and testing of sediments, (from an environmental / Contaminated Sites Act perspective only), within the proposed former Army Jetty dredge areas.

The dredged sediments are proposed to be reused onshore for fill requirements as part of the development or as potential capping to the old landfill on the island at Forbes Hill.

The SAP was prepared in general accordance with the *National Assessment Guidelines for Dredging* (NAGD) (Commonwealth of Australian, 2009) and Department of Water and Environmental Regulation (DWER, formerly the Department of Environment Regulation) Contaminated Sites Guidelines (DWER, 2014).

This SAP Implementation Report relates specifically to sediment quality results proposed to be dredged from around the former Rottnest Island Army Jetty and reused onshore as part of the development derived proposal.

This Summary Report has been prepared in general accordance with the procedures outlined in the DWER (DWER, 2014) Contaminated Sites Guidelines.

1.3 Objectives

The objectives of the investigation are to:

- Determine the quality of sediment proposed to be dredged from the development.
- Determine whether any contamination within the site will adversely affect the environment during dredging.
- Determine whether the sediments are suitable for reclamation reuse.

2 SITE DESCRIPTION AND HISTORY

2.1 Site Identification and Regional Setting

A detailed site summary is provided in Table 1. The site locality is provided in Figure A, while Figure B provides a site plan detailing the layout of various features of the site.

Table 1: Site Summary

Reference Name	Rottnest Island Army Jetty		
Address	Army Jetty Road, Rottnest Island		
Certificate of Title	**Lot on Plan Address – Volume/Folio**		
	P216860 10976[2]		
Local Government Authority	City of Cockburn / Rottnest Island Authority		
Current Zoning	Terrestrial: no zoning. Marine: A-class marine reserve		
Area, Elevation and Bathymetry	**Area**	**Land elevation**	**Bathymetry**
	2 ha	3 to 5 m AHD	0.0 to -4.0 m Chart Datum (m CD)
Site Location	Figure A		
Site Layout and References	Figure B		
General Coordinates of Site Area	**Reference Point**	**Easting**	**Northing**
	North-east	363.200	6,458,600
	North-west	362,950	6,458,600
	South-west	362,950	6,458,300
	South-east	363,200	6,458,300

1. Landgate (2020) indicates the entire island is located within Lot 10976 on Plan 216860

Thomson Bay, on Rottnest Island, is host to the following existing facilities, generally located between the main jetty and the Army Jetty:

- An anchorage area located east of the Army Jetty
- Over 200 private mooring locations
- 25 hire mooring locations
- 55 jetty boat pens (free, for hire, and not for public use)
- One local beach pen
- Wadjemup public walking trail running along the coast

[2] Landgate (2019) indicates the entire island is located within Lot 10976 on Plan 216860.

- Public toilets and an undercover seating area located adjacent the Army Jetty and beach area
- Snorkelling locations, in particular at the shipwreck of Uribes to the east.

2.2 Site and Surrounding Land uses

The existing marine and onshore land uses within and immediately adjacent to the project area include marine and terrestrial elements.

2.2.1 Marine Uses

- Recreational Use
- Marine sanctuary zone, located north (Prohibition on Fishing (Rottnest Island) Order 2007, *Fish Resources Management Act 1994*)
- Two wooden finger jetties
- Boat moorings
- Snorkelling areas
- Terrestrial Land Uses.

2.2.2 Terrestrial Land Uses

- Recreational use
- Kingstown Barracks, located southeast
- Solar farm, located southwest
- Rottnest Island airport, located southwest
- Tourist accommodations, located west

2.3 Proposed Development

A summary of the proposed development (based upon a revised concept in April 2020) is presented below and Figure B:

- Construction of a 10 m wide barge ramp immediately east of the existing army groyne.
- Development of the area (up to 10,000 m^2) immediately behind and either side of the barge ramp as a lay down hardstand area.
- Construction of an undercover storage area (200 m^2) on the lay down area.
- Fuelling facilities for small vessels including a fuel tank within lay down area.
- Repairs of the rock armour (breakwater) over the existing army groyne and a 100 m extension, with a 40 m concrete deck on steel piles (contingency ferry jetty).
- Construction of a ~80 m beach groyne on the eastern side of the lay down area.
- Area within the groynes is approximately 1.3 ha.
- Imported limestone rock material (approximately 14,300 m^3) for the construction of the groynes

- dredging requirements:
  - dredge area accounting for potential overdredge: ~1.8 ha (includes dredging under the proposed breakwaters).
  - dredge volume at design CD -3.3 m including batters (1:5): ~21,000 m^3
  - overdredge volume at nominal CD -3.6 m including batters (1:5): up to 5,300 m^3
- dredged material is proposed to be reused for:
  - laydown area and volume of dredge spoil used: about 17,700 m^3
  - remaining dredge spoil for disposal over designated location elsewhere on the Island: up to 3,300 m^3
  - overdredge spoil for disposal over designated location elsewhere on the Island: up to 5,300 m^3

An indicative concept design is presented in Figure 1 below:

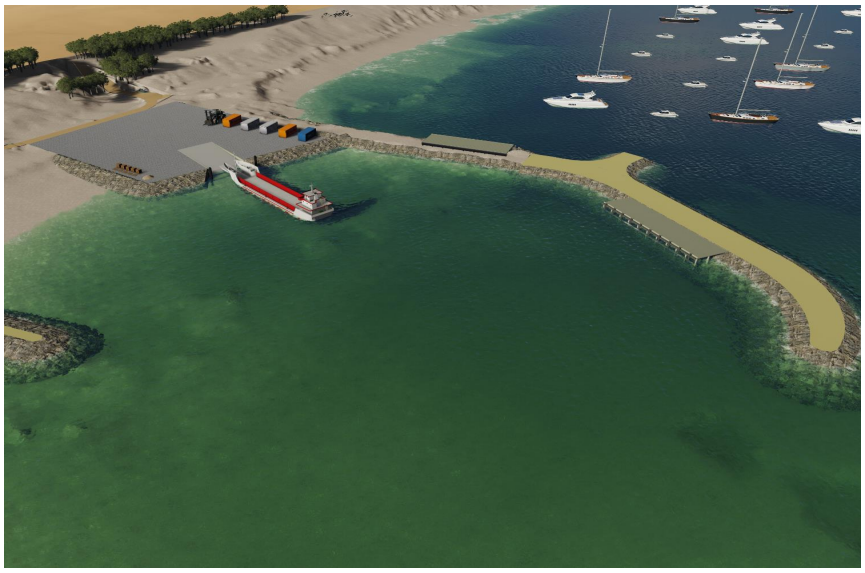

Figure 1 Indicative Concept Design

2.4 Dredging Requirements

At the time of sampling (November 2019 and March 2020) an estimated 11,000 m^3 of sediment was proposed to be dredged, to a depth of -3 m CD. There was the potential for overdredging to occur to a depth of -3.3 m CD which equated up to an additional 5,000 m^3.

The revised proposed works (16 April 2020) estimates approximately 26,300 m^3 of material is required to be dredged, i.e. capital dredging, to a depth of -3.3 m Chart Datum (CD) (with an additional over dredge allowance of 0.3 m and volume of ~5,300 m^3).

2.5 Dredge History

No known dredging has occurred in Thomson Bay in the vicinity of the Army Jetty.

2.6 Site Description

Table 2 presents a summary of the bathymetry, geology, wetlands and marine flora and fauna of the area surrounding the subject site.

Table 2: Site Description

Element	Comments
Protected Areas	Rottnest Island is a Class A Reserve govern by the *Rottnest Island Authority Act 1987* (www.ria.wa.gov.au). The marine and terrestrial environments are protected for both recreation and conservation. All flora, fauna and landforms are protected for both purposes of conservation and recreation. The site is located within this protection zone which includes the entire Island which measures 11 km by 4.5 km at its widest point and about 1,900 hectares in area and the surrounding marine environment (www.rottnestisland.com).
Topography and Bathymetry	The topography of the foreshore adjacent to the Army Jetty is approximately 3 to 5 m AHD. The bathymetry of the marine footprint of the site ranges between approximately 0.0 to -4.0 m CD. Bathymetry contours are provided in Figure C.
Regional Geology	Regional geological mapping at 1:50,000 scale (Department of Mines, Industry Regulation and Safety, 2020) indicates that the site geology consists of S17 sand: white medium-grained, well-sorted, sub-angular quartz and shell debris, locally shelly and lithoclastic.
Acid Sulfate Soil Mapping	The site is not considered an ASS risk, however less than 500 m south of the site, Bickley Swamp was identified as an area of high to moderate risk of ASS occurring within three metres of natural soil surface. The lake formations to the east and northeast have also been identified as an ASS risk (www.nationalmap.gov.au).
Groundwater Quality	Salinity is found to fluctuate seasonally in response to groundwater abstraction and rainfall recharge, with values ranging between approximately 450 and 900 mg/L. Saltwater intrusion may result where over-pumping occurs. According to the RIA, Rottnest Island is experiencing an increasing salinity in some bores of the Wadjemup Aquifer (RIA, 2014b).
Wetlands	No wetlands are located within the site. Multiple wetlands were identified on the Directory of Important Wetlands of Australia (DIWA), referred to as "*Rottnest Island Lakes*", which incorporate 18 lakes and swamps in total, including Bickley Swamp (200 m south of site) and Government House Lake (<1 km west of site). The wetland is classed as a *Wetland of National Importance* and combines inland wetlands of permanent saline/brackish lakes, seasonal saline lakes, and seasonal saline marshes (DoEE, 2019a).
Regional Benthic Habitats	According to the Thomson Bay Habitat Survey (RPS, April 2019), Thomson Bay supports approximately 119 ha of seagrass meadows, *Posidonia* species most commonly found. Bare sand and sand with wrack habitat also occupies a substantial area. An area was also identified to be dominated by macroalgae.
Regional Fauna	Rottnest Island provides habitat to a range of fauna species, including several species listed as conservation significant under State and Commonwealth legislation. Two endemic mammals are found on Rottnest Island, the Quokka and the White-Striped Free-tail Bat. The island also provides habitat to numerous migratory and resident shorebird and bushbird species and has a listing of "*Important Bird Area*" (BirdLife International, 2019). Morphologically unique frogs and genetically distinct reptiles also habitat the island. Marine fauna consists of 135 tropical fish species, as well as dolphins, sea lions and migratory whales (Government of WA, 2018).
Threatened Ecological Communities	No Threaten Ecological Communities (TECs) are located within the site however *Melaleuca lanceolate* stands listed as a TEC is located approximately 150 m south of the site (NatureMap 2019).

2.7 Site History

The following site history has been sourced from *Maritime Archaeological Assessment of the Army Jetty Thompson Bay, Rottnest Island* (Department of Maritime Archaeology, Western Australian Museum, 2012).

The Thomson Bay South Development Project covers the former the Army Jetty, an integral part of the Island's military and recreational heritage. The original Army Jetty was built in 1906 and was used as a terminal for passengers arriving and departing the island, then referred to as the "excursionist jetty". The jetty was constructed to allow for horse-drawn trams to take passengers into Thomson Bay settlement and was the first public jetty on the island.

Plate 1 *Zephyr* ported at the 'excursionist jetty', 1924 (RIA 2012.239)

Plate 2 'Excursionist jetty', 1930 (RIA 2012.96)

From 1914 to 1915, during World War I (WWI), the Island was run by the military and all tourist activities ceased. The jetty, henceforth dubbed the "Army Jetty", was used to unload troops and supplies, however was predominantly used for prisoner transport to shore as the island was utilised as a Prisoner of War Camp. Following WWI the island was reopened to the public and the jetty returned to its original use.

The return of war, World War II (WWII), in the 1930's meant areas of the island were once again utilised for military activities. The island was developed as the primary defence for Fremantle and Perth by 1937, with works including the reinforcing and extension of the Army Jetty and a gantry being constructed just off the south end of the jetty. During 1924 and 1945 the island was only used as a military base, with all recreational use ceased. The Army Jetty provided troop and provision movements to and from the island. In 1942 the jetty was further extended to allow for larger vessel access.

Plate 3 Original timber jetty with gantry on the right, facing west (RIA 2012.265)

Plate 4 Original timber jetty facing west to shore (National Archives Australia (NAA))

The end of WWII in 1945 returned the jetty to its primary tourist use until 1961, when the main jetty was built closer to the settlement. In 1969 the Army inspected the jetty and observed the jetty to be in poor condition, with vehicle access being banned. In 1970, plans were in place to demolish the original structure and reconstruct the jetty with rock fill and compacted limestone base, inclusive of a barge hardstand ramp. In 1972 the demolition and reconstruction had occurred. In 1984 all Army land holdings and buildings were bought back by the State Government and the jetty remained for recreational uses such as snorkelling and fishing, however no boats were to dock along the jetty platform due to its fragility.

Plate 5 Reconstruction works, 1971 (NAA)

Plate 6 Reconstruction works, rockfill and barge hardstand (NAA)

It was observed in National Archives of Australia (NAA) and the State Library of Western Australia literature that much of the old materials were buried beneath the subsequent extensions of the rock fill. The structure was inspected by the Western Australia Maritime in 2012 and the jetty was measured at 120 m length and 1,700 m in area. In October 2018, the jetty underwent platform removal and conversion into a rock groyne as a result of a partial collapse.

2.7.1 Historical Photography

A review of online historic aerial photography held by Landgate was undertaken which yielded limited aerials of the site dating back to 2000. The historic development activities of the site and surrounds are summarised in Table 3.

Table 3: Historic Photography Summary

Year	Site and Surrounding Area
2000	Site: The site is already developed with the former Army Jetty. Minor infrastructure appears to be located immediately south of the jetty. Multiple tracks and trails are identified surrounding the site. Southeast: Kingstown Barracks. South: Bickley Swamp and Rottnest Island aerodrome. West: Rottnest Island Lakes and the main settlement and tourist hub.
2002	Site: Infrastructure has been constructed adjacent to the southwest of the jetty, identified as public toilets and an undercover seating area.
2004	Site: The minor infrastructure to the south has been removed.
2017	West: The presence of a solar farm is observed 400 m from the site.

2.8 Previous Investigations

2.8.1 Factual Report on Site Investigation 2012

An investigation was undertaken by Douglas Partners Pty Ltd (DP, 2012), located in the area off the northern end former Army Jetty. The investigation area was approximately 150 m from the island shoreline and was limited to approximately 200 m by 380 m in size. Works undertaken in this investigation were generally further off-shore (approximately -2 to -4 m CD) than the proposed dredging area for the site.

Field work undertaken included limited jet probing to determine the presence or absence of cemented material or rock, to a maximum depth of 8.0 m below seabed.

The seabed conditions encountered generally comprised light grey/off-white, fine to medium grained sand covered by week and in place, fragments of rock. No limestone outcrops, including pinnacles were observed. Refusal on rock, inferred to be limestone occurred at varying depths between 0.5 m and 6.1 m from the seabed.

2.8.2 Thomson Bay Habitat Survey 2019

The assessment was undertaken by RPS (RPS, April 2019) to establish a preliminary assessment of the environmental impacts associated with the proposed development. These are primarily associated with impacts of dredging and development footprints on benthic marine communities and habitats (BCH), in particular the seagrass meadows that dominate Thomson Bay and comprise approximately 30% of the total seagrass area around Rottnest Island.

The benthic habitat map developed identified the distribution of seagrass in the vicinity of the proposed development and more broadly across southern Thomson Bay and found that the relative cover of the different habitat types confirms the dominance of seagrass, in particular Posidonia spp. 'Bare' sand habitat also occupies a substantial part of the area, and the presence of mobile wrack over sand was observed by way of aerial imaging comparison. The habitat also indicates an area dominated by macroalgae in the southeast, and mixed seagrass and algae in a broad area to the north.

As a consequence of the proposed development activities, a total of 1.9 ha of irreversible loss of seagrass was estimated and represents a 0.35% cumulative loss of seagrass habitat.

General seagrass mapping is found on Figure C.

2.9 Contaminated Sites

A search of the DWER Contaminated Sites online database was completed, however the site was not classified as any of the following under the *Contaminated Sites Act 2003*:

- Remediated Restricted Use
- Contaminated Restricted Use
- Contaminated Remediation Required.

A search of the surrounding land indicated that there was one contaminated site, within the above classifications, within a 2 km radius of the site. The contaminated site is located approximately 1.25 km west of the site and classified as '*remediated for restricted use*', known as Subject A on Deposited Plan 72329 (BSR 39676. Classification is due to a diesel leak from an underground storage tank (UST), impacting the local groundwater. Subject A is managed in accordance with *Rottnest Island Management Plan* as required by the *Rottnest Island Authority Act 1987*. Subject A has been deemed suitable for public open space, however is not suited to construction of enclosed buildings. As Subject A is located at an appreciable distance from the site and the BSR 39676 has identified that Thomson Bay has not been impacted, as such the presence of this registered contaminated site is not considered to pose a potential risk to the subject site.

2.10 Unexploded Ordinance

Department of Defence (http://www.defence.gov.au/UXO/Where/MapAppInfo.asp) indicates Rottnest Island as having a "slight occurrence" of unexploded ordinances (UXO) (Figure 2) with the following description; *Rottnest Island was used as an impact, training and storage area for artillery shells, mortar bombs, underwater demolition exercises, unexploded depth charges and aerial bombing at sea*.

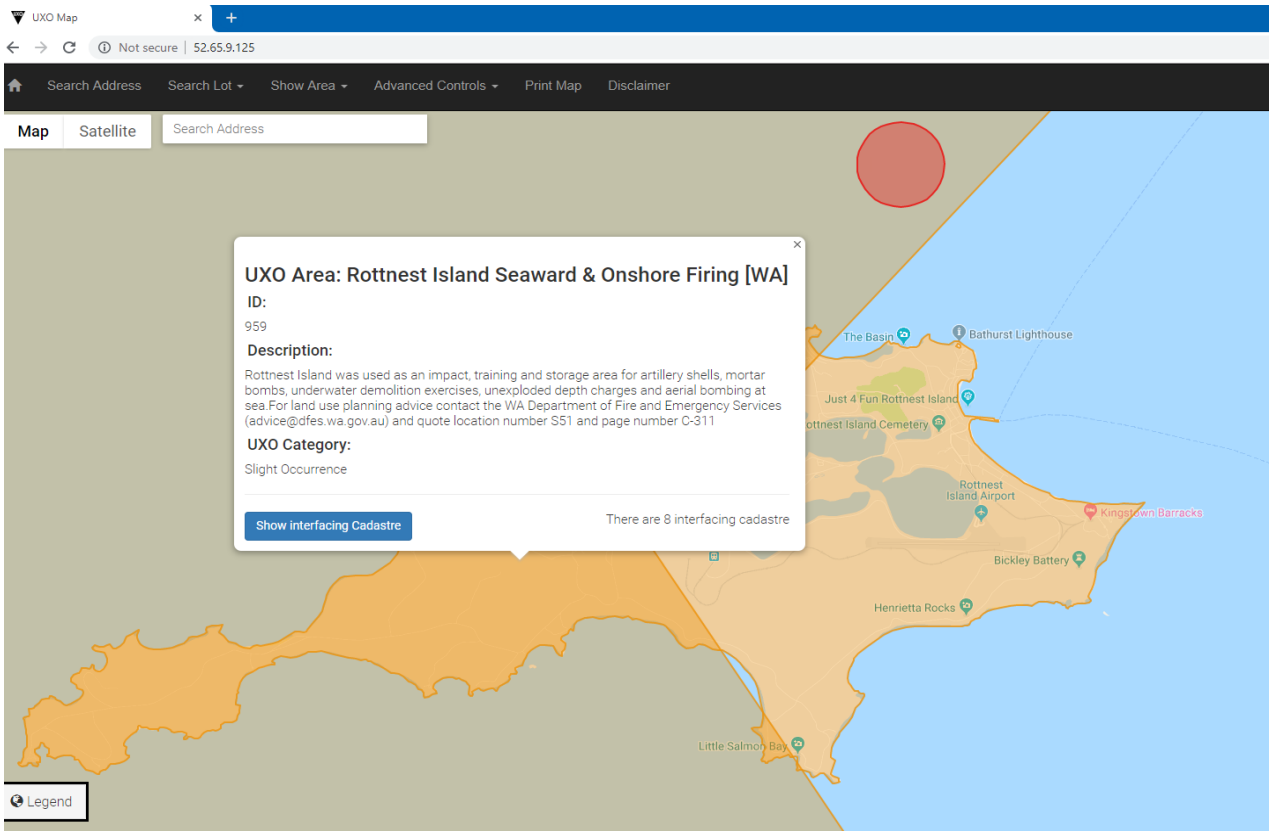

Figure 2 Unexploded Ordinance Mapping

2.11 Contaminants of Potential Concern

With reference to the activities identified within the DWER *Contaminated Sites Management Series, Assessment and Management of Contaminated Sites* (DWER, 2014) the following surrounding site activities were considered potential sources of contamination:

- port/wharf/dock activities
- Defence works and Defence establishments
- UXOs

Based upon the aforementioned surrounding site activities, the following potential contaminants of concern (PCoC) have been identified:

- metals (Ag, Cd, Se, Co, Sb, Cu, Pb, Zn, Cr, Ni, As, V, Mn and Hg)
- organochlorine and organophosphate (OC/OP) pesticides
- total recoverable hydrocarbons (TRH)
- benzene, toluene, ethyl benzene and xylenes (BTEX)
- polycyclic aromatic hydrocarbons (PAHs)
- asbestos fibres
- Tributyl Tin (TBT).

- Nutrients – Total nitrogen, ammonia, nitrate, nitrite, total phosphorus and reactive phosphorus.
- Per- and poly-fluoroalkyl substances (PFAS)
- Explosives.

Whilst PFAS is identified as PCoC, the potential for significant use at the Barracks is considered unlikely based upon the following:

- the island was essentially only used for training exercises post WWII,
- given the location of the site, i.e. off the mainland, it is considered unlikely that significant training operations with firefighting foams would have been undertaken on the island,
- firefighting training for Defence personal was undertaken at other facilities in Perth including Garden Island and RAAF Base Pearce, with army training likely undertaken at Campbell, Irwin and Leeuwin Barracks and or the Bindoon training area.
- the barracks were handed over to the state in 1984, essentially ending military operations on the island,
- vessels were not allowed to dock at the jetty,
- firefighting foams containing PFAS (PFOS and PFOA) entered use in the Department of Defence in the 1970s (Department of Defence, https://www.defence.gov.au/environment/pfas/).

3 PRELIMINARY CONCEPTUAL SITE MODEL

Consistent with *National Environment Protection (Assessment of Site Contamination) Measure* (NEPM, 2013), a preliminary overarching conceptual site model (CSM) has been developed for the site. The CSM has been developed based upon the proposed dredging and onshore disposal of the reclamation sediments.

RPS has adopted a risk-based approach to the assessment of the site. An important thread throughout the overall process of risk assessment is the need to formulate and develop a conceptual model, which supports the identification and assessment of pollutant linkages. A CSM represents the characteristics of the site in a diagrammatic or written form that shows the possible relationships between contaminants, pathways and receptors (pollutant linkages). In this context, the following definitions apply:

- A **contaminant source** – a substance that is in, on or under the land and has the potential to cause harm to human health or the environment, or cause pollution of controlled waters.
- A **pathway** – a route or means by which a receptor can be exposed to, or affected by, a contaminant.
- A **receptor** – in general terms, something that could be adversely affected by a contaminant, such as people, an ecological system, property, or a water body.

Each of these elements can exist independently, however they create a risk only in instances where a plausible linkage exists, such that a particular contaminant may affects a particular receptor through a particular pathway; referred as a pollutant linkage.

The preliminary CSM for the site is presented below in Table 4.

Table 4: Preliminary Conceptual Site Model Overview – Dredging and Onshore Reuse

Source	Potential Pathway	Receptor
Human Health		
Surface Water	Dermal contact of surface water	Future/current site users/workers
	Bioaccumulation and biomagnification in the food chain	Future recreational fishing
Sediments	Dermal contact of sediments (during dredging and following onshore reuse)	Future/current site users/workers
	Vapour inhalation (following onshore reuse)	Future site users
	Dust inhalation (following onshore reuse)	Future/current site users Site construction workers Off-site residents
	Leaching to groundwater/surface water (following onshore reuse)	Off-site groundwater users Site groundwater users On and Off-site surface water users Site construction workers
Ecological		
Sediment	Leaching (from sediment to surface water and or groundwater)	Aquatic flora and fauna Terrestrial flora and fauna
	Sediment ingestion/dermal contact	
	Bioaccumulation and biomagnification in the food chain	
Surface Water	Direct contact and ingestion after leaching from sediment to surface water	
	Bioaccumulation and biomagnification in the food chain	
	Direct contact and ingestion	

4 SAMPLING AND ANALYSIS PLAN

4.1 Sampling Objectives

The objectives of the sediment sampling program were to assess the presence and nature of potential sediment contamination identified in Section 2.10, identify if any management measures are required to protect relevant receptors during the proposed dredging works and whether the material suitable to be used in reclamation works.

4.2 Guidelines

Sampling and analysis were undertaken with reference to the following documents:

- *National Assessment Guidelines for Dredging* (NAGD). Commonwealth of Australian, 2009.
- *Handbook for Sediment Quality Assessment*. CSIRO, Bangor, NSW. (Simpson et al. 2005)
- *National Environment Protection (Assessment of Site Contamination) Measure.* National Environmental Protection Council. 1999, as amended 2013 (NEPM, 2013)
- *PFAS National Environmental Management Plan* (NEMP). January 2018 (HEPA, 2018[3]).
- *Assessment and Management of Contaminated Sites*. Department of Environment Regulation, 2014 (DWER, 2014).
- *Identification and Investigation of Acid Sulfate Soils and Acid Landscapes*. Department of Environment Regulation. June 2015a.
- *Treatment and Management of Soil and Water in Acid Sulfate Soil Landscapes*. Department of Environment Regulation. June 2015b.
- *National Acid Sulfate Soils Guidance – Guidelines for the dredging of acid sulfate soil sediments and associated dredge spoil management* (Water Quality Australia, 2018b)
- *Guidelines for Fresh & Marine Water Quality* (Water Quality Australia, 2018a).

4.3 Sediment Sampling Locations and Frequency

Based upon the volume of the proposed dredging operations at the time of sampling (November 2011 and March 2020), ~11,000 m^3, with up to an additional overdredge volume of 5,000 m^3 (up to 16,000 m^3) the *National Assessment Guidelines for Dredging* (Commonwealth of Australia, 2009), required a total of seven (7) sampling locations. NEPM (2013) and DER (DWER, 2014) guidelines do not explicitly state the number of samples required.

Sediments were sampled at seven (7) locations across the proposed dredge area, with the depth of sampling aligned to the proposed dredging requirements to a maximum depth of ~1.2 m or until refusal was reached. Sampling locations based upon the revised concept are presented on Figure D.

Sampling was proposed to be limited to a depth of ~1.2 m as this is the maximum anticipated depth of potential contamination. This depth was assumed as there has been no historical dredging in the area, especially close to shore where the deepest area of dredging is required, due to historical wooden jetty extending offshore.

[3] RPS notes the release of revised NEMP (HEPA, 2020) in early May 2020, however all site works were completed prior to release of the report. As such all data has been compared to guidelines within revision 1 of the NEMP (HEPA, 2018).

RPS notes that the whilst the revised proposed works (16 April 2020) has resulted in an increased dredging volume, which would require additional sampling locations under the *National Assessment Guidelines for Dredging* (Commonwealth of Australia, 2009), the sampling undertaken is considered sufficient to characterise the sediments in the area and thus remains valid, based upon the following:

- the main dredge area (~1.2 ha) remains relatively consistent with the previous area (~1.3 ha),
- the increase in the area relates to dredging (0.6 ha) beneath the proposed breakwater and is further offshore and therefore less likely to have been impacted by onshore activities
- whilst the depth of dredging has increased, contamination is more likely to be associated with the shallow sediments rather than at depth.

4.4 Sediment Sampling Methodology

4.4.1 UXO Survey

An underwater UXO survey was conducted prior to any seabed disturbance. The survey was undertaken by a suitability qualified by a third-party contractor to the dive contractor to determine the presence/absence of UXOs.

4.4.2 Overview

The geographic co-ordinates of each sampling location were recorded using a handheld GPS. Samples were collected by divers via push-cores with a PVC outer casing.

4.4.3 Sampling Intervals

The sampling intervals were generally as follows:

- 0 to 0.20 m
- 0.20 to 0.50 m
- 0.50 to 1.00 m.

Geological units typically conformed to the sampling intervals outlined above with one sample taken per lithological unit. Refusal occurred at several locations, due to hard sediment layers around 1 m below the sea bed. No additional samples were taken as no visual or olfactory evidence of contamination was identified. Sediment sampling logs are presented in Appendix A.

4.5 Assessment Levels

4.5.1 Reuse

With the proposed reuse of the dredged material for reclamation purposes and also the potential for reuse at the Rottnest Island landfill and or other areas on the island, sediment results will be compared with the following criteria:

- National Environment Protection (Assessment of Site Contamination) Measure. Schedule B1 Guideline on Investigation Levels for Soils and Groundwater (NEPM, 2013), specifically
  - Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) for areas of ecological significance (based upon the Class A reserve nature of the entire island)
  - Health Investigation Levels for:
    - Residential (HIL-A)

    - Residential with minimal soil access (HIL-B)
    - Public Open Space (HIL-C)
    - Health Investigation Levels for Commercial / Industrial (HIL-D)
  - Health Screening Levels for Vapour Intrusion for:
    - Residential (HSL-A) or Residential with minimal soil access (HSL-B)
    - Public Open Space (HSL-C)
    - Commercial / Industrial (HSL-D)
- PFAS National Environmental Management Plan. (HEPA, 2018).
  - Health Screening Levels for:
    - Residential with garden/accessible soil
    - Residential with minimal soil access
    - Public Open Space
    - Commercial / Industrial
  - Ecological Investigation Levels:
    - ecological direct exposure - public open space
    - indirect exposure - residential
- Health Screening Levels for Petroleum Hydrocarbons in Soils and Groundwater (CRC CARE, 2011), specifically
  - Soil Health Screening Levels for Direct Contact for:
    - Low density residential (HSL-A DC)
    - high density residential (HSL-B DC)
    - recreational/open space (HSL-C DC)
    - commercial/industrial (HSL-D DC)
    - intrusive maintenance workers (HSL-MW DC)
- DWER (2015a and b) Acid Sulfate Soils Guideline Series

Assessment criteria have been adopted in recognition that the proposed use of material for reclamation/filling beneath a future barge ramp and cargo handling facility, the proximity of the site to sensitive environmental receptors, i.e. Thomson Bay and the Indian Ocean and also the potential for material to be reused elsewhere on the island.

Where contaminants do not have assessment levels and or alternative assessment levels cannot be sourced, i.e. international guidance from Canada or the Netherlands (ANZECC 2000), contaminant levels within the site will be compared with results from the background sampling locations and or reported literature concentrations for the area.

Assessment criteria for ASS were adopted from the DWER guideline, *Identification and Investigation of Acid Sulfate Soils and Acidic Landscapes* (DWER, June 2015a) and *Treatment and Management of Soil and Water in Acid Sulfate Soils Landscapes* (DWER, June 2015b).

Table 5 below presents the texture-based ASS action criteria for management. For excavation volumes for <1,000 tonnes ASS with ≥0.03%S or ≥18.7 mol H+/tonne equivalent acidity requires a detailed management plan.

Table 5: DWER ASS Management Action Criteria

Type of Material		Action Criteria (<1,000 tonnes) Existing + Potential Acidity		Action Criteria (>1,000 tonnes) Existing + Potential Acidity	
Texture	Approx. Clay Content	Equivalent Sulfur	Equivalent Acidity	Equivalent Sulfur	Equivalent Acidity
	(%<0.002 mm)	(%S)	(H+/tonne)	(%S)	(H+/tonne)
Coarse Texture (sands to loamy sands)	≤5	0.03	18	0.03	18
Medium Texture (sandy loams to light clays)	5–40	0.06	36	0.03	18
Fine Texture (medium to heavy clays and silty clays)	≥40	0.10	62	0.03	18

4.5.2 Dredging and Disposal

Sediment analysis results will also be compared with the following criteria:

- WQA (2018a) Guidelines for Fresh and Marine Water Quality – Sediment Quality Guidelines
  - Default Guideline Values (DGVs)
  - Upper Guideline Values (GV-high).

4.5.3 Surface Water and Elutriate

Elutriate results will be compared against:

- Water Quality Australia (2018a)
  - Marine Water Guidelines (MWG) 95% species protection level
  - In-shore Waters (nutrients and pH only).
- PFAS National Environmental Management Plan. (HEPA, 2018).
  - Interim Marine Guidelines 99% species protection level[4]

Where contaminants did not have assessment levels and or alternative assessment levels could not be sourced, contaminant levels within the site were compared with results from the background sampling locations and or reported literature concentrations for the area.

[4] The 99% species protection value is considered to most appropriate as PFAS is known bioaccumulate in aquatic organisms.

MWG guidelines define assessment values for consideration of ecological risk in surface water bodies.

4.5.4 Australian Standard Leachate Procedure

In instances where elevated concentrations of contaminants were observed and it was considered necessary to assess the potential mobility of the contaminants as part of the HHRA and ERA, samples were submitted for analysis via the Australian Standard Leachate Procedure (ASLP). Soil leachate results were compared to criteria presented in Section 4.5.3, elutriate assessment levels and Australian Standard Leachate Procedure Limits (ASLPLs).

In additional due to the potential reuse of material on the island away from the Army Jetty the following guidelines were used (where required):

- Water Quality Australia (2018a)
  - Fresh water guidelines (FWG) – 95% species protection level
  - Marine Ecological Protection Guidelines (MEPG)
  - Long-term Irrigation Water Guidelines (LIWG)
- Drinking Water Guidelines (DWG) (NHMRC, 2018)
- Non-potable Drinking Water Guidelines (DNP) (DoH, 2014)
- PFAS National Environmental Management Plan. (HEPA, 2018).
  - Freshwater Guidelines 99% species protection level[5]
  - Drinking water
  - Recreational Water.

4.6 Variations to the Sampling and Analysis Plan

The following variations to the SAP were observed:

- Sampling of sediments during the November 2019 event was only undertaken to 1 m at C04 and C05 due to refusal. Sampling of sediment during the March 2020 event was only undertaken to 1.1 at C02 and C04 due to refusal. Multiple attempts were made however refusal was encountered each time.
- Due to PFAS elutriates from November 2019 being contaminated within the laboratory during the analysis, the results were not considered usable, the sediment sampling exercise was therefore completed again in March 2020. The following is noted from the additional sampling event:
  - Sediment sampling was undertaken from the same location and the same sampling intervals at each location as per the November 2019 event, analysed for PFAS including elutriate analysis.
  - Surface water samples were collected and analysed for PFAS
  - Additional quality assurance and quality control (QAQC) samples, i.e. duplicates, triplicates (sediment, surface water and elutriate), rinsates, blank and trip blanks, were collected and analysed for PFAS.

[5] The 99% species protection value is considered to most appropriate as PFAS is known bioaccumulate in aquatic organisms.

  - Additional PFAS analysis of the elutriate water, prior to undergoing the elutriate method, (matrix blank) was undertaken by the prior laboratory.

- Surface water sampling at three sediment locations (C01, C04 and C06) was undertaken with a grab or snap sampler containing no Teflon™, with the sample collected from the surface water body and collocated with the sediment sampling locations. A multi-parameter meter was employed that measured pH, electrical conductivity (EC), redox potential, dissolved oxygen (DO) and temperature. The results were recorded on the surface water sampling log. Surface water sampling was undertaken as per the relevant guidelines in Section 4.2, with the addition of the following:

  - *Standards Australia. 1998. Water Quality—Sampling. Part 9: Guidance on sampling from marine waters* (AS/NZS 5667.9:1998).

5 HEALTH AND SAFETY

A Job Hazard Analysis (JHA) was prepared for all the different aspects of site investigation works conducted at the site.

During the investigation continuous attention was given to safety issues that arose while on site, and any concerns were addressed as soon as the risk was identified. Toolbox meetings were scheduled every morning before commencement of investigation activities, to aid in ensuring that all personnel and subcontractors were aware of safety practices on a day to day basis.

6 RESULTS

6.1 Sediments

6.1.1 Profile Description

The sediment profile across the site was typically sediments, pale grey with shell fragments and some grass roots/detritus in the upper profile. Sediment sampling logs are presented in Appendix A.

6.1.2 Particle Distribution

The results of the particle size distribution analysis are presented in Table A with laboratory documentation presented in Appendix B. A summary of the results is presented below.

The soils are classified predominantly as sand being between 0.06 and 2 mm, with the mean median particle size being 0.242 mm (242 µm). Minimal sediment was identified as >2 mm.

6.1.3 Onshore Reuse Results

6.1.3.1 Overview

The results of the laboratory sediment analysis for onshore reuse are presented in Tables B to G, with locations based upon the revised concept presented on Figure D. Laboratory reporting is presented in Appendix B. Quality control and assurance results and assessment are presented in Appendix C.

6.1.3.2 Contamination

6.1.3.2.1 Metals, Organotin, and Organics

All results were below the relevant guidelines for onshore reuse and were relatively consistent across the investigation area.

All the organic compounds, i.e. TRH/BTEX/PAH, OC/OP, explosives, were reported as below relevant limits of report (LOR) with the exception of several higher TRH factions in a couple of samples. Concentrations were however only marginally above the LOR, and significantly below reuse criteria.

6.1.3.2.2 PFAS

With the exception of PFOS[6] in three samples during November 2019 and one sample in March 2020, no other PFAS was reported above the (LOR) within any of the samples during either sampling event. The concentrations of PFOS were however,

- only marginally above the LOR
- an order of magnitude below the lowest screening criteria, and
- were consistent during both sampling events.

6.1.3.2.3 Asbestos

No asbestos fibres were identified in any of the sediments analysed.

[6] PFOS: Perfluorooctane sulfonic acid

6.1.3.2.4 Nutrients

No guidelines for nutrients (phosphorus and or nitrogen) exist in Western Australia. Concentrations for nitrogen and phosphorus were relatively consistent through the sediment profile.

Phosphorus was predominantly in total forms (i.e. non-reactive forms) and as such was bound up with the sediment.

Nitrogen is also predominantly bound to sediments and in organic forms (i.e. kjeldahl nitrogen). Ammonia was the dominant inorganic form of nitrogen however inorganic concentrations were significantly lower than organic forms of nitrogen.

6.1.3.2.5 Summary

From a contamination perspective and based upon the observed concentrations, the sediments are determined to be suitable for reclamation and reuse onshore in any landuse.

6.1.3.3 Acid Sulfate Soils

Conclusions drawn from the ASS laboratory results (Table H) are:

- Eight of the nine samples tested were found to have net acidity values[7] below the DWER ASS management action criteria of 0.03%S.
- The highest net acidity value[5] recorded was 0.05%S (C01S01) and the highest potential acidity (CRS) value was 0.054%S (C01S01).
- All Titratable Potential Acidity (TPA) results were below the LOR and as such are lower than the concentrations of pyritic sulfur (measured as S_{CR}) indicating that the sediments contain shell grit and other acid-buffering material.
- All Titratable Actual Acidity (TAA) results were below the LOR and as such below the DWER management criteria (0.03%S). This is due to the Acid Neutralising Capacity (ANC) present in the samples and also potentially due to the saturated state of the sediment and the high alkalinity that would present in the pore water and Indian Ocean water.
- Only one of the seven sites had positive ASS test results; above the DWER action criterion of 0.03%S.
- The calculated mean net acidity across all samples is 0.02%S and the mean + standard deviation is equivalent to 0.03%S (excluding ANC).
- All samples were found to contain levels of ANC. The highest ANC value recorded was 28%S; the mean across the samples containing ANC was 26.9%S. In all cases the amount of ANC present buffered the inorganic sulfur acidity within the samples.
- Although significant amounts of ANC are present in all samples; these are potentially an over estimation of ANC due to the crushing of large shell grit and other carbonate material during analysis – increasing the reactive surface area.
- Of the two samples submitted for a modified ANC method[8], both samples contained significant concentrations of ANC-mod. The ANC-mod results were either marginally below the ANC, indicating that either the majority of ANC present in the samples is available to buffer any acidity present. The results also indicate that there is minimal variance in the size, nature and abundance of neutralising material within sediments across the site.

[7] Excluding acid neutralising capacity (ANC)

[8] The modified ANC method was completed on an uncrushed sample, screened to 0.6 mm.

Table 6 below provides a summary of the analytical data obtained.

Table 6: ASS results summary

Analyte	Unit	DWER management criteria (treatment)	Maximum result*	Average result
CRS	%S	>0.03	0.05	0.02
TAA	%S	>0.03	<0.02	<0.02
TPA	%S	>0.03	<0.02	<0.02
pH_{KCl}	pH Units	Not Defined	10.1	9.9
pH_{OX}	pH Units	Not Defined	7.9	8.0
ANC	%S	Not Defined	28	26.9
mod-ANC	%S	Not Defined	25.9	25.4

* The minimum pH result has been reported, representing most acidic (maximum) sample

The data supports a conclusion that although inorganic sulfur is present in the sediments there is significant ANC kinetically available to neutralise the oxidation products from the inorganic sulfur.

6.1.3.3.1 Summary

Only one sediment is classified PASS, based upon the DWER guidelines, i.e. ANC is not included, with only inorganic acidity detected. Although there is inorganic acidity detected above the relevant guidelines, there is a significant amount of ANC in the sediments which has been shown to be kinetically available through undertaking a modified ANC method. As such additional lime treatment of the material is not required when the sediment is disturbed and used for reclamation activities. The ANC is sufficiently kinetically available to safeguard against acidification over the long term.

6.1.4 Offshore Disposal

6.1.4.1 Overview

The results of the laboratory sediment analysis for offshore disposal are presented in Tables G to J, with locations based upon the revised concept presented on Figure D. Laboratory reporting is presented in Appendix B. Quality control and assurance results and assessment is presented in Appendix C.

As the vast majority of results were report less than the relevant limits of reporting; sediment results for PAHs, TRH/BTEX and OC/OP pesticides have not been normalised to 1% TOC. A mean TOC of 0.28% was observed across the samples. Normalising the results to 1% TOC will not change the outcomes of the assessment.

6.1.4.2 Metals

All metals were below relevant ISQG guidelines. Where sediments did not exceed DGV guidelines and or no guidelines exist concentrations were relatively consistent across the dredge area.

6.1.4.3 TBT

All samples were reported less than the LOR (0.5 µgSn/kg) thus complied with the DGV (5 µgSn/kg).

6.1.4.4 PAH, OC/OP Pesticides and Explosives

All PAH, OC/OP pesticides and explosives were reported as below relevant LORs and thus below relevant DGV.

6.1.4.5 TRH/TPH and BTEX

All BTEX and TRH/TPH results were below the relevant LORs in all samples with the exception of minor TPH detects in two samples.

Samples C06S01 and C07S03 complied with the DGV (280 mg/kg) for the sum C_{10}-C_{36}, with non-normalised concentrations of 5 and 7 mg/kg respectively.

6.1.4.6 PFAS

With the exception of PFOS in three samples during November 2019 and one sample in March 2020, no other PFAS was reported above the (LOR) within any of the samples during either sampling event. The concentrations of PFOS were however,

- only marginally above the LOR
- an order of magnitude below the lowest screening criteria, and
- were consistent during both sampling events.

6.1.4.7 Nutrients

No guidelines for nutrients (phosphorus or nitrogen) exist in Western Australia. Concentrations were predominately consistent across the sampling area.

Phosphorus was predominantly in total forms (i.e. non-reactive forms) and as such was bound up with the sediment.

Nitrogen is also predominantly bound to sediments and in organic forms (i.e. kjeldahl nitrogen). Ammonia was the dominant inorganic form of nitrogen however inorganic concentrations are significantly lower than organic forms of nitrogen.

6.1.4.8 Summary

All results were reported below relevant DGV and as such to do not pose a significant risk during dredging and or if were proposed for offshore disposal.

6.1.5 Elutriate Analysis

Tables O and P present the elutriate analysis results for the sediments. Note only the PFAS results from the March 2020 event are presented, as the original results were contaminated within the laboratory. A total of seven samples were submitted for elutriate analysis during each event.

Samples were leached using the United States Environmental Protection Agency (USEPA) standard elutriate procedure as outlined in the National Assessment Guidelines for Dredging (Australian Government 2009) with Indian Ocean water from the site collected over the sampling period and used as the elutriate solution.

6.1.5.1 Metals

All metals were below relevant MEPG criteria within the elutriate water, i.e. Indian Ocean water.

There are some increases from the Indian Ocean water for various metals and isolated exceedances of MEPG guidelines (Cu, V and Zn). The mean and median concentrations of metals were typically below relevant MEPG guidelines with the exception of copper.

The mean copper concentration (0.0017 mg/L) marginally exceeded the MEPG (0.0013 mg/L) though the increase over the Indian Ocean water (0.001 mg/L), i.e. background levels, is minimal. Only two of the elutriate samples exceeded the MEPG (0.0013 mg/L) with a maximum concentration of 0.005 mg/L.

All other mean and median concentrations for the metals were below the relevant guidelines.

Increases in elutriate water concentrations were observed for several metals (antimony, arsenic, manganese and) above Indian Ocean water concentrations i.e. background levels, however no guidelines are available for these metals.

6.1.5.2 Nutrient

Nutrient concentrations in elutriate water increased above the Indian Ocean water quality for all parameters. This was likely due to the suspension of fine particles into the elutriate which are then included in the analysis. Concentrations in elutriate water typically exceeded relevant MEPG guidelines no exceedances observed in the Indian Ocean water.

6.1.5.3 PFAS

All elutriate samples, including the elutriate water sampled prior to (matrix blank) and post elutriate process (EW), observed PFAS concentrations below the limits of reporting with the exception of PFOS in the triplicate of C02S01. A PFOS concentration of 0.0005 µg/L (C02S01) was reported which marginally exceeds the 99%MEPG (0.00023 µg/L). The concentration is however below the highest concentration observed in surface water at the site (C06-SW, 0.0006 µg/L), with the mean and median concentrations of PFOS in the elutriates at the site below the 99%MEPG (0.00023 µg/L).

Given only three minor detections of PFAS were observed in the sediments and all PFAS within the elutriates were below the PFAS concentrations from the Indian Ocean water samples, it is considered that the risk presented via leaching of PFAS into the water from the sediments is low and acceptable.

6.1.5.4 Summary

Whilst concentrations of several metals within the elutriate were higher than those in Indian Ocean water (used in the elutriate analysis), the majority of the results were below the MEPG. Nutrient concentrations were also higher in the elutriate likely as a result of the presence of fine particulate matter in the elutriate sample. Whilst a minor exceedance of the PFOS guideline was observed in one elutriate sample, the concentration was below the highest concentration observed in surface water at the site and the mean and median concentrations of PFOS in the elutriates at the site were below the 99%MEPG.

6.2 Surface Water

The results of the laboratory surface water analysis are presented in Table P, with locations based upon the revised concept presented on Figure D. Sampling logs are presented in Appendix A, laboratory reporting is presented in Appendix B and QAQC and assessment presented in Appendix C.

6.2.1 PFAS

With the exception of PFOS in two samples (C04-SW and C06-SW) no PFAS was reported above the (LOR) within any of the samples. All other PFAS compounds were below relevant LORs.

PFOS was observed in the duplicates for C04-SW and C06-SW with concentrations of 0.0003 and 0.0006 µg/L which are marginally above the 99%MEPG (0.00023 µg/L). A mean PFOS concentration of 0.0004 µg/L was observed across the three surface water samples.

7 RISK ASSESSMENT

The risk assessment has been undertaken based upon the preliminary CSM (Section 3.0) which was developed upon the proposed dredging and onshore reuse/disposal of the reclamation sediments. If the proposed enduse is changed then the following risk assessment is required to be reviewed and revised.

7.1 Contaminants Identified

The following types of environmental contamination were identified during the course of this investigation over portions of the site:

- sediment elutriate concentrations of copper, PFOS and nutrients above MEPGs.
- surface water concentrations of PFOS above MEPGs.

7.2 Revised Conceptual Site Model

Based upon the results of the investigation the preliminary CSM (Section 3) has been revised to reflect the pollutant linkages that remain following the sediment sampling program. The revised CSM is presented below in Table 7.

Table 7: Revised Conceptual Site Model

Source	Potential Pathway	Receptor
Ecological		
Surface Water contamination Copper, PFOS, nutrients	Direct contact and ingestion after leaching from sediment to surface water	Aquatic flora and fauna
	Bioaccumulation (copper and PFOS only) and biomagnification in the food chain (PFOS only)	

7.3 Human Health Risk Assessment

Based upon the observed concentrations, there is no risk to human health from the sediments or surface water during dredging or upon development of the site using the sediments for reclamation.

7.4 Environmental Risk Assessment

The assessment considers contaminants liberated from the sediments (by leaching).

7.4.1 Contaminant Leaching from Sediments

7.4.1.1 Metals

The copper concentrations identified in the sediments do not pose a potential risk to human health or the environment when considered for reuse onshore as all concentrations were below relevant criteria, however there is a potential risk to the marine environment during dredging.

Copper was observed above relevant MEPG within the elutriates however the exceedance was minimal, and the concentrations are likely associated with sediments suspended in the elutriate. The increase was not considered significant for the following reasons:

- Copper concentrations were significantly below the DGV. The natural movement of sediments within the ocean would also likely result in a release of metals similar to that observed in the elutriate.
- The majority of the metals present are likely bound to sediments, thus reducing bioavailability. Controlling the distribution of sediments, via silt curtains, and within dredge return water would further reduce any potential risk to marine ecology.

- The concentrations of mobilised contaminants would be diluted quickly within the marine environment.
- Copper can bioaccumulate in aquatic organisms but, as it is an essential element, it is commonly regulated by the organisms (Water Quality Australia, 2018a) and thus considered not to pose a significant risk.

Therefore, the risk presented by the release of copper during dredging if properly managed is considered low and acceptable.

7.4.1.2 Nutrients

The nutrient concentrations identified in the sediments do not pose a potential risk to the environment when considered for reuse onshore.

Nutrient concentrations were observed to increase within the elutriate analysis. As per the metal results, the nutrients in the form of organic matter would be bound to sediments. Therefore, the potential risk from elevated nutrients in the dredge return can be removed by reducing the sediment loading in the return water. Additionally, similar concentrations would be anticipated to elute from sediments naturally disturbed in the marine environment.

On this basis the risk from nutrients released from sediments during dredging if properly managed via the use of silt curtains and management of sediment load in the dredge return water, is considered low and acceptable.

7.4.1.3 PFOS

The PFOS concentrations identified in the sediments do not pose a potential risk to the environment when considered for reuse onshore.

PFOS concentrations were observed within one PFOS elutriate analysis however PFOS was also observed in the surface water at the site, indicating the presence of low level PFOS within the existing environment. In addition, only very low concentrations of PFOS were observed in sediments. Given the very low concentrations of PFOS observed in the elutriates, it is expected that the concentrations would be diluted quickly within the marine environment during the works. As such the concentrations would reduce to further below the concentrations observed within the marine waters of the surrounding environment and thereby not changing the risk profile currently presented by marine waters to the surrounding environment.

The risk to the environment from the proposed works is considered low and acceptable, with no monitoring for PFAS considered to be required during the works, based upon the following:

- the elutriate PFOS concentration in the one sample was below the surface water PFOS concentrations and the mean and median PFOS concentrations,
- no other PFAS compounds identified above relevant limits of reporting across all elutriates were below the relevant guidelines,
- concentrations would be diluted quickly within the marine environment during the works,
- the potential for higher concentrations of PFAS to be present at the site and not identified by the assessment is considered very low based upon the site history and extent of sampling conducted over the two events,
- only very low concentrations were observed in the sediments with no significant source identified in the vicinity of the site, and
- owing to the distance from the site, potential PFAS sources on the island, i.e. landfill and golf course, would not be expected to directly impact the site,
- the detectable PFOS concentration was within the surface sediment, which has the potential to be mobilised and elute during ongoing natural marine processes onsite.

8 CONCLUSIONS AND RECOMMENDATIONS

8.1 Summary of Findings

A contamination assessment was completed on sediments proposed to be dredged from the Thomson Bay South Development Project, situated around the former Army Jetty on Rottnest Island. The dredged sediments are proposed to be reused during reclamation works for the development.

A total of seven sediment cores were aligned to the proposed dredging requirements to a maximum depth of 1.2 m. Sediments were analysed for the contaminants of concern identified, including metals and metalloids, ASS parameters, OC/OP pesticides, PAHs, nutrients, PFAS and TRH/BTEX with elutriates analysed for metals, nutrients and PFAS. Due to PFAS elutriates from November 2019 being contaminated within the laboratory during the analysis, the results were not considered usable, the sediment sampling exercise for PFAS was therefore completed again in March 2020. Surface water was also sampled within the marine environment and analysed for PFAS during the March 2020 exercise.

RPS notes that the whilst the revised proposed works (16 April 2020) has resulted in an increased dredging volume, which would require additional sampling locations under the *National Assessment Guidelines for Dredging* (Commonwealth of Australia, 2009), the sampling undertaken is considered sufficient to characterise the sediments in the area and thus remains valid, based upon the following:

- the main dredge area (~1.2 ha) remains relatively consistent with the previous area (~1.3 ha),
- the increase in the area relates to dredging (0.6 ha) beneath the proposed breakwater and is further offshore and therefore less likely to have been impacted by onshore activities
- whilst the depth of dredging has increased, contamination is more likely to be associated with the shallow sediments rather than at depth.

The assessment concluded that from contamination perspective the sediments are suitable for reuse onshore for reclamation, with all results below the following assessment criteria:

- Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) for areas of ecological significance and public open space (NEPM 2013)
- Health Investigation Levels for residential soil access (HIL-A) (NEPM 2013 and CRC CARE 2011).

All results were reported below relevant DGV and the sediments are not considered to pose a significant risk during dredging and are considered suitable for offshore disposal.

Only one sediment is classified PASS, based upon the DWER guidelines, i.e. ANC is not included, with only inorganic acidity detected. Although there is inorganic acidity detected above the relevant guidelines, there is a significant amount of ANC in the sediments which has been shown to be kinetically available through undertaking a modified ANC method. As such additional lime treatment of the material is not required when the sediment is disturbed and used for reclamation activities. The ANC is sufficiently kinetically available to safeguard against acidification over the long term.

Whilst concentrations of metals within the elutriate for several metals were higher than those in Indian Ocean water (used in the elutriate analysis), the majority of the results were below the MEPG. Nutrient concentrations were also higher in the elutriate. Whilst a minor exceedance of the PFOS guideline was observed in one elutriate sample, the concentration was below the highest concentration observed in surface water at the site and the mean and median concentrations of PFOS in the elutriates at the site were below the 99%MEPG.

The copper concentrations identified in the sediments do not pose a potential risk to human health or the environment when considered for reuse onshore as all concentrations were below relevant criteria, however there is a potential risk to the marine environment during dredging. Copper was observed above relevant MEPG within the elutriates however the exceedance was minimal, and the concentrations are likely associated with sediments suspended in the elutriate.

The increase was not considered significant due to the following:

- Copper concentrations were significantly below the DGV. The natural movement of sediments within the ocean would also likely result in a release of metals similar to that observed in the elutriate.
- The majority of the metals present are likely bound to sediments, thus reducing bioavailability. Controlling the distribution of sediments, via silt curtains, and within dredge return water would further reduce any potential risk to marine ecology.

The nutrient concentrations identified in the sediments do not pose a potential risk to human health or the environment when considered for reuse onshore. Nutrient concentrations were observed to increase within the elutriate analysis. As per the metal results, the nutrients in the form of organic matter would be bound to sediments. Therefore, the potential risk from elevated nutrients in the dredge return can be removed by reducing the sediment loading in the return water. Additionally, similar concentrations would be anticipated to elute from sediments naturally disturbed in the marine environment.

PFOS concentrations were observed within one PFOS elutriate analysis however PFOS was also observed in the surface water at the site, indicating the presence of low level PFOS within the existing environment. In addition, only very low concentrations of PFOS were observed in sediments. Given the very low concentrations of PFOS observed in the elutriates, it is expected that the concentrations would be diluted quickly within the marine environment during the works. As such the concentrations would reduce to further below the concentrations observed within the marine waters of the surrounding environment and thereby not changing the risk profile currently presented by marine waters to the surrounding environment. Additionally, the detectable PFOS concentration was within the surface sediment, which has the potential to be mobilised and elute during ongoing natural marine processes onsite i.e. tidal movement or storm events.

Based upon the observed concentrations, the risk to human health or the environment from the sediments or surface water during dredging or upon development of the site using the sediments for reclamation is considered low and acceptable.

8.2 Suitability for Use and Recommendations

Based upon the observed concentrations the sediments from contamination perspective are determined to be suitable for reuse onshore for reclamation. Additionally, the sediments do not require additional lime treatment once disturbed from an ASS perspective and used for reclamation activities, as the ANC is considered to be sufficiently kinetically available to safeguard against acidification over the long term. No surface water monitoring for PFAS is considered to be required.

Should offshore disposal be considered then, as all results were reported below relevant DGV and the sediments do not pose a significant risk during dredging, the sediments are likely suitable for offshore disposal however a suitable disposal ground would be required to be found and approved by relevant regulators.

8.3 Assumptions and Uncertainties

The conclusions made here have been developed on the assumption that the data collected accurately represents the conditions at the site.

Uncertainties pertaining to the data collected include the following:

- Temporal uncertainty: contaminants may not have been present in the tested medium at the time of sampling, however, may be present within the site at other times.
- Spatial uncertainty: no sampling program can provide complete certainty that no contamination exists anywhere on the site.

Assumptions pertaining to the data collected include the following:

- Sediment samples were taken at a density and to a depth, sufficient to allow an adequate spatial characterisation of the sediment at the site. This assumption is based on statistical methods which allow reasonable confidence levels to be determined.

Although uncertainties exist, the assumptions made are well founded and give confidence that the conclusions and recommendations reached regarding the site are sound.

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Tables

Table A: Sediment Analytical Results - Particle Size Distribution

Definitions:

LOR (Limits of Reporting)

Notes:

All values in %

deontes <LOR

Sample ID	Date Sampled	Top	Bottom	PSD	Soil Classification					Particle Sizing											
					Clay (<2 µm)	Silt (2-60 µm)	Sand (0.06-2.00 mm)	Gravel (>2 mm)	Cobbles (>6 cm)	Grain Size +75 µm	Grain Size +150 µm	Grain Size +300 µm	Grain Size +425 µm	Grain Size +600 µm	Grain Size +1180 µm	Grain Size +2.36 mm	Grain Size +4.75 mm	Grain Size +9.5 mm	Grain Size +19.0 mm	Grain Size +37.5 mm	Grain Size +75.0 mm
				LOR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C01S01	12/11/2019	0.00	0.25		4	1	95	1	1	96	73	13	6	3	1	1	1	1	1	1	1
C02S01	12/11/2019				3	1	96	1	1	96	82	15	6	3	1	1	1	1	1	1	1
C03S01	12/11/2019				2	2	95	1	1	95	60	9	5	3	2	1	1	1	1	1	1
C04S01	12/11/2019				3	1	96	1	1	96	67	10	5	3	1	1	1	1	1	1	1
C05S02	12/11/2019				3	1	96	1	1	96	62	15	10	6	2	1	1	1	1	1	1
C06S03	12/11/2019				2	1	95	3	1	97	82	48	30	12	4	2	2	1	1	1	1
C07S02	12/11/2019				2	1	97	1	1	97	84	68	48	17	1	1	1	1	1	1	1
				MEAN	3	1	96	1	1	96	73	25	16	7	2	1	1	1	1	1	1
				MEDIAN	3	1	96	1	1	96	73	15	6	3	1	1	1	1	1	1	1
				STDEV	1	0	1	1	0	1	10	23	17	6	1	0	0	0	0	0	0
				COUNT	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
				95%UCL	3	1	96	2	1	97	80	42	28	11	3	1	1	1	1	1	1

Table B: Sediment Analytical Results - Metals, Metalloids, Inorganics and Nutrients - Onshore Reuse

Definitions:

LOR (Limits of Reporting), NEPM (2013) - Health Investigation Levels for residential (HIL-A), high density residential (HIL-B), public open space(HIL-C), Commercial/industrial (HIL-D), Ecological Investigation/Screening Levels - Areas of Ecological Significance (EIL/ESL)

ND denotes not detected. NG denotes no guideline. --- denotes not tested

Notes:

All values in mg/kg except TOC which is in %, asbestos %w/w and Tributyl Tin in µg Sn/kg. Table uses colour coding for data interpretation. All guideline values from NEPM (2013) except Antimony, Silver and Vandium taken from Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health

denotes <LOR

TBT results have not been normalised based upoon the TOC of the samples

Sample ID	Date Sampled	Top	Bottom	Trigger	Total Metals														Tributyl Tin	Asbestos	TOC	Nutrients					
					Antimony	Arsenic	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Vanadium	Zinc			Total Organic Carbon	Total Phosphorus	Phosphorous Reactive	Total Nitrogen	Nitrogen Kjeldahl Total	Ammonia (as N)	NO_X
				HIL-A	20	100	20	100	100	6000	300	3800	40	400	200	20	130	7400	50000	0.001	NG	NG	NG	NG	NG	NG	NG
				HIL- B	20	300	900	3600	600	240000	1500	60000	730	6000	1400	20	130	40000	300000	0.001	NG	NG	NG	NG	NG	NG	NG
				HIL-C	20	300	90	300	300	17000	600	19000	80	1200	700	20	130	30000	50000	0.001	NG	NG	NG	NG	NG	NG	NG
				HIL-D	40	3000	900	3600	4000	240000	1500	60000	730	6000	10000	40	130	400000	300000	0.001	NG	NG	NG	NG	NG	NG	NG
				EIL/ESL	NG	40	NG	80	70	270	470	NG	470	5	NG	NG	NG	50	NG	NG	NG	210	NG	NG	NG	NG	NG
				LOR	0.5	1	0.1	1	0.5	1	1	10	0.01	1	0.1	0.1	2	1	0.5	0.001	0.02	2	0.1	20	20	20	0.1
C01S01	12/11/2019	0.00	0.25		1.47	2	0.3	11	1	1	1	10	0.01	2	0.3	0.2	11	2	0.5	0.001	0.46	303	0.1	330	330	4.1	0.1
C01S03	12/11/2019	0.50	1.20		0.5	1	0.2	10	1	1	1	10	0.01	1	0.1	0.1	11	1	0.5	0.001	0.32	232	0.1	310	310	0.2	0.1
C02S01	12/11/2019	0.00	0.20		0.5	1	0.1	11	1	1	1	10	0.01	1	0.3	0.2	6	2	0.5	0.001	0.48	280	0.6	230	230	0.7	0.1
C02S02	12/11/2019	0.20	0.50		0.85	1	0.2	10	1	1	1	10	0.01	1	0.2	0.1	13	1	----	----	----	----	----	----	----	----	----
C03S01	12/11/2019	0.00	0.20		0.5	1	0.1	10	1	1	1	10	0.01	1	0.2	0.1	4	4	0.5	0.001	0.34	269	0.3	260	260	0.2	0.1
C03S03	12/11/2019	0.50	1.20		0.77	1	0.1	10	1	1	1	10	0.01	1	0.2	0.1	12	4	----	----	----	----	----	----	----	----	----
C04S01	13/11/2019	0.00	0.20		0.61	1	0.2	10	1	1	1	10	0.01	1	0.2	0.1	11	2	0.5	0.001	0.72	254	0.8	330	330	20.6	0.1
C04S02	13/11/2019	0.20	0.50		0.5	1	0.2	11	1	1	1	10	0.01	1	0.2	0.1	12	1	----	----	----	----	----	----	----	----	----
C05S01	13/11/2019	0.00	0.25		0.5	1	0.1	9	1	1	1	10	0.01	1	0.1	0.1	2	2	0.5	0.001	0.23	274	0.2	250	250	0.2	0.1
C05S02	13/11/2019	0.25	0.50		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C05S03	13/11/2019	0.50	1.00		0.5	1	0.1	10	1	1	1	10	0.01	1	0	0.1	3	4	----	----	----	----	----	----	----	----	----
C06S01	12/11/2019	0.00	0.25		0.5	1	0.1	9	1	1	1	10	0.01	1	0	0.1	2	2	0.5	0.001	0.05	311	0.2	190	190	0.4	0.1
C06S02	12/11/2019	0.25	0.50		0.5	1	0.1	9	1	1	1	10	0.01	1	0	0.1	3	3	----	----	----	----	----	----	----	----	----
C06S03	12/11/2019	0.50	1.20		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C07S01	12/11/2019	0.00	0.20		0.5	1	0.1	9	1	1	1	10	0.01	1	0	0.1	2	2	0.5	0.001	0.04	327	0.3	210	210	1	0.1
C07S02	12/11/2019	0.20	0.70		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C07S03	12/11/2019	0.70	1.20		0.5	2	0.1	9	1	1	1	10	0.01	1	0	0.1	2	1	----	----	----	----	----	----	----	----	----
				MEAN	0.538	1	0.1	10	1	1	1	10	0.01	1	0	0.1	5	2	0.5	0.0	0.28	287	0	248	248	4	0.1
				MEDIAN	0.5	1	0.1	9	1	1	1	10	0.01	1	0	0.1	3	2	0.5	0.0	0.23	274	0	250	250	0	0.1
				STDEV	0.089	0	0.0	1	0	0	0	0	0.00	0	0	0.0	5	1	0.0	0.0	0.28	31	0	54	54	9	0.0
				COUNT	10	10	10	10	10	10	10	10	10	10	10	10	10	10	5	5	5	5	5	5	5	5	5
				95%UCL	0.588	1	0.1	10	1	1	1	10	0.01	1	0	0.1	8	3	0.5	0.0	0.50	311	1	291	291	12	0.1

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Table C: Sediment Analytical Results - PAHs - Onshore Reuse

Definitions:

Levels - Areas of Ecological Significance (EIL/ESL) , Health Screening Levels for vapour intrusion for residential (HSL-A), high density residential (HSL-B), public open space(HSL-C), Commercial/industrial (HSL-D), BaP - Benz(a)pyrene, TEQ - Toxic Equivalent Quotient

ND denotes not detected. NG denotes no guideline. --- denotes not tested

Notes:

All values in mg/kg. Table uses colour coding for data interpretation. All guideline values from NEPM (2013)

deontes <LOR

Concentrations have not been normalised to 1% based upon the Total Organic Carbon of the samples

Sample ID	Date Sampled	Top	Bottom	Trigger	PAHs																				
					2-methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benz(a)pyrene	Benz(b)fluoranthene	Benz(e)pyrene	Benz(ghi)perylene	Benz(k)fluoranthene	Chrysene	Coronene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Perylene	Phenanthrene	Pyrene	TEQ BaP	Total PAH
				HIL-A	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	3	300
				HSL-A	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	3	NG	NG	NG	NG	NG
				HIL- B	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	4	400
				HSL-B	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				HIL-C	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	3	300
				HSL-C	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				HIL-D	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	40	4000
				HSL-D	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				EIL/ESL	NG	NG	NG	NG	NG	NG	NG	0.7	NG	NG	NG	NG	NG	NG	NG	NG	10	NG	NG	NG	NG	NG
				LOR	0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004
C01S01	12/11/2019	0.00	0.25		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004
C01S03	12/11/2019	0.50	1.20		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004
C02S01	12/11/2019	0.00	0.20		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004
C02S02	12/11/2019	0.20	0.50		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004
C03S01	12/11/2019	0.00	0.20		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004
C03S03	12/11/2019	0.50	1.20		0.005	0.004	0.008	0.020	0.020	0.020	0.020	0.020	0.004	0.020	0.020	0.005	0.004	0.020	0.004	0.020	0.005	0.004	0.004	0.020	0.004	0.004
C04S01	13/11/2019	0.00	0.20		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004
C04S02	13/11/2019	0.20	0.50		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004
C05S01	13/11/2019	0.00	0.25		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004
C05S02	13/11/2019	0.25	0.50		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C05S03	13/11/2019	0.50	1.00		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004
C06S01	12/11/2019	0.00	0.25		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004
C06S02	12/11/2019	0.25	0.50		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004
C06S03	12/11/2019	0.50	1.20		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C07S01	12/11/2019	0.00	0.20		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004
C07S02	12/11/2019	0.20	0.70		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C07S03	12/11/2019	0.70	1.20		0.005	0.004	0.200	0.040	0.024	0.060	0.028	0.020	0.060	0.020	0.004	0.005	0.004	0.004	0.004	0.040	0.005	0.020	0.004	0.008	0.004	0.004

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Table D: Sediment Analytical Results - TRH and BTEX - Onshore Reuse

Definitions:

LOR (Limits of Reporting), NEPM (2013) - Health Investigation Levels for residential (HIL-A), high density residential (HIL-B), public open space(HIL-C), Commercial/industrial (HIL-D), Ecological Investigation/Screening Levels - Areas of Ecological Significance (EIL/ESL) , Health Screening Levels for vapour intrusion for residential (HSL-A), high density residential (HSL-B), public open space(HSL-C), Commercial/industrial (HSL-D), Health Screening Level for residential direct contact (HSL-A DC); Maintenance Worker (HSL-MW DC)
ND denotes not detected. NG denotes no guideline. --- denotes not tested

Notes:

All values in mg/kg. Table uses colour coding for data interpretation. All guideline values from NEPM (2013) or CRC Care (2011)
deontes <LOR
Concentrations have not been normalised to 1% based upon the Total Organic Carbon of the samples

Sample ID	Date Sampled	Top	Bottom	Trigger	BTEX							TPH					TRH						
					Benzene	Ethyl Benzene	Toluene	ortho-Xylene	meta,para-Xylene	Xylene	Sum of BTEX	C6 - C9	C10 - C14	C15 - C28	C29 - C36	C10 - C36 (sum)	C6 - C10	C6 - C10 minus BTEX (F1)	>C10 - C16	>C10 - C16 minus Naphthalene (F2)	>C16 - C34	>C34 - C40	>C10 - C40 (sum)
				HIL-A	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				HSL-A	0.5	55	160	40			NG	NG	NG	NG	NG	NG	45	45	110	110	NG	NG	NG
				HIL- B	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				HSL-B	0.5	55	160	40			NG	NG	NG	NG	NG	NG	45	45	110	110	NG	NG	NG
				HIL-C	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				HSL-C	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				HIL-D	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				HSL-D	3	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				HSL-A DC	100	4500	14000	12000			NG	NG	NG	NG	NG	NG	4400	NG	3300	NG	4500	NG	6300
				HSL - MW DC	1100	85000	12000	130000			NG	NG	NG	NG	NG	NG	82000	NG	62000	NG	85000	120000	NG
				EIL/ESL	10	1.5	10	10			NG	0.7	NG	NG	NG	NG	125	125	25	25	NG	NG	NG
				LOR	0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C01S01	12/11/2019	0.00	0.25		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C01S03	12/11/2019	0.50	1.20		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C02S01	12/11/2019	0.00	0.20		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C02S02	12/11/2019	0.20	0.50		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C03S01	12/11/2019	0.00	0.20		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C03S03	12/11/2019	0.50	1.20		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C04S01	13/11/2019	0.00	0.20		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C04S02	13/11/2019	0.20	0.50		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C05S01	13/11/2019	0.00	0.25		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C05S02	13/11/2019	0.25	0.50		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C05S03	13/11/2019	0.50	1.00		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C06S01	12/11/2019	0.00	0.25		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	5	5	5	3	3	3	3	5	5	5
C06S02	12/11/2019	0.25	0.50		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C06S03	12/11/2019	0.50	1.20		----	----	----	----	----	----	----	----	----	----	----	----	----	3	----	----	----	----	----
C07S01	12/11/2019	0.00	0.20		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C07S02	12/11/2019	0.20	0.70		----	----	----	----	----	----	----	----	----	----	----	----	----	3	----	----	----	----	----
C07S03	12/11/2019	0.70	1.20		0.20	0.20	0.20	0.20	0.20	0.50	0.20	3	3	3	7	7	3	3	3	3	6	7	13

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Table E: Sediment Analytical Results - OC/OP Pesticides - Onshore Reuse

Definitions:

LOR (Limits of Reporting), OC - Organochlorine, OP - Organophosphate NEPM (2013) - Health Investigation Levels for residential (HIL-A), high density residential (HIL-B), public open space(HIL-C), Commercial/industrial (HIL-D), Ecological Investigation/Screening Levels - Areas of Ecological Significance (EIL/ESL)
ND denotes not detected. NG denotes no guideline. --- denotes not tested

Notes:

All values in mg/kg. Table uses colour coding for data interpretation. All guideline values from NEPM (2013)
deontes <LOR
Concentrations have not been normalised to 1% based upon the Total organic Carbon of the samples

Sample ID	Date Sampled	Top	Bottom	Trigger	OCs																						
					Aldrin	Aldrin+Dieldrin	Alpha-BHC	Beta-BHC	Chlordane	cis-Chlordane	DDD	DDE	DDT	Delta-BHC	Dieldrin	Endosulfan (sum)	alpha-Endosulfan	beta-Endosulfan	Endosulphan Sulfate	Endrin	Endrin Aldehyde	Endrin Ketone	gamma-BHC (Lindane)	HCB	Heptachlor	Heptachlor Epoxide	Methoxychlor	Oxychlordane	trans-Chlordane
				HIL-A	NG	6	NG	NG	50	50	240			NG	NG	270	270	270	270	10	NG	NG	NG	10	6	NG	300	NG	50
				HIL- B	NG	10	NG	NG	90	90	600			NG	NG	400	400	400	400	20	NG	NG	NG	15	10	NG	500	NG	90
				HIL-C	NG	10	NG	NG	70	70	400			NG	NG	340	340	340	340	20	NG	NG	NG	10	10	NG	400	NG	70
				HIL-D	NG	45	NG	NG	530	530	3600			NG	NG	2000	2000	2000	2000	100	NG	NG	NG	80	50	NG	2500	NG	530
				EIL/ESL	NG	NG	NG	NG	NG	NG	NG	NG	3	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				LOR	0.0005	0.0005	0.0005	0.0005	0.00025	0.00025	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005
C01S01	12/11/2019	0.00	0.25		0.0005	0.0005	0.0005	0.0005	0.0003	0.0003	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005
C01S03	12/11/2019	0.50	1.20		0.0005	0.0005	0.0005	0.0005	0.0003	0.0003	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005
C02S01	12/11/2019	0.00	0.20		0.0005	0.0005	0.0005	0.0005	0.0003	0.0003	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005
C02S02	12/11/2019	0.20	0.50		0.0005	0.0005	0.0005	0.0005	0.0003	0.0003	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005
C03S01	12/11/2019	0.00	0.20		0.0005	0.0005	0.0005	0.0005	0.0003	0.0003	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005
C03S03	12/11/2019	0.50	1.20		0.0005	0.0005	0.0005	0.0005	0.0003	0.0003	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005
C04S01	13/11/2019	0.00	0.20		0.0005	0.0005	0.0005	0.0005	0.0003	0.0003	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005
C04S02	13/11/2019	0.20	0.50		0.0005	0.0005	0.0005	0.0005	0.0003	0.0003	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005
C05S01	13/11/2019	0.00	0.25		0.0005	0.0005	0.0005	0.0005	0.0003	0.0003	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005
C05S02	13/11/2019	0.25	0.50		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C05S03	13/11/2019	0.50	1.00		0.0005	0.0005	0.0005	0.0005	0.0003	0.0003	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005
C06S01	12/11/2019	0.00	0.25		0.0005	0.0005	0.0005	0.0005	0.0003	0.0003	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005
C06S02	12/11/2019	0.25	0.50		0.0005	0.0005	0.0005	0.0005	0.0003	0.0003	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005
C06S03	12/11/2019	0.50	1.20		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C07S01	12/11/2019	0.00	0.20		0.0005	0.0005	0.0005	0.0005	0.0003	0.0003	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005
C07S02	12/11/2019	0.20	0.70		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C07S03	12/11/2019	0.70	1.20		0.0005	0.0005	0.0005	0.0005	0.0003	0.0003	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005

Sample ID	Date Sampled	Top	Bottom	Trigger	OPs																				
					Bromophos-ethyl	Carbophenothion	Chlorfenvinphos (E)	Chlorfenvinphos (Z)	Chlorpyrifos	Chlorpyrifos-methyl	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenamiphos	Fenthion	Malathion	Azinphos Methyl	Monocrotophos	Parathion	Parathion-methyl	Pirimphos-ethyl	Prothiofos
				HIL-A	NG	NG	NG	NG	160	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				HIL- B	NG	NG	NG	NG	340	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				HIL-C	NG	NG	NG	NG	250	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				HIL-D	NG	NG	NG	NG	2000	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				EIL/ESL	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				LOR	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C01S01	12/11/2019	0.00	0.25		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C01S03	12/11/2019	0.50	1.20		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C02S01	12/11/2019	0.00	0.20		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C02S02	12/11/2019	0.20	0.50		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C03S01	12/11/2019	0.00	0.20		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C03S03	12/11/2019	0.50	1.20		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C04S01	13/11/2019	0.00	0.20		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C04S02	13/11/2019	0.20	0.50		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C05S01	13/11/2019	0.00	0.25		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C05S02	13/11/2019	0.25	0.50		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C05S03	13/11/2019	0.50	1.00		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C06S01	12/11/2019	0.00	0.25		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C06S02	12/11/2019	0.25	0.50		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C06S03	12/11/2019	0.50	1.20		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C07S01	12/11/2019	0.00	0.20		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C07S02	12/11/2019	0.20	0.70		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C07S03	12/11/2019	0.70	1.20		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

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Table F: Sediment Analytical Results - PFAS - Onshore Reuse

Definitions:

LOR (Limits of Reporting), EIL (Ecological Investigation Level) - DE (Direct Exposure, Public Open Space) -IE R (Indirect Exposure Residential) IE I (Indirect Exposure Industrial) , HSL (Health Screening Level) -A (Residential with garden) -B (Residential minimal soil access) -C (Public Open Space) -D (Industrial / Commercial)
ND denotes not detected. NG denotes no guideline. --- denotes not tested

Notes:

All values in mg/kg unless indicated. Table uses colour coding for data interpretation. All guideline values from NEMP (2019)
deontes <LOR
** denotes triplicate result

Sample ID	Date Sampled	Top	Bottom	Trigger	PFAS																											
					Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOS)	Sum of PFHxS and PFOS	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-methyl perfluorooctane sulfonamide (MeFOSA)	N-ethyl perfluorooctane sulfonamide (EtFOSA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	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 sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Total PFAS
				HSL-A	NG	NG	NG	NG	NG	0.009	NG	NG	NG	NG	NG	0.1	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				HSL- B	NG	NG	NG	NG	NG	2	NG	NG	NG	NG	NG	20	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				HSL-C	NG	NG	NG	NG	NG	1	NG	NG	NG	NG	NG	10	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				HSL-D	NG	NG	NG	NG	NG	20	NG	NG	NG	NG	NG	50	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				EIL - DE	NG	NG	NG	NG	1	NG	NG	NG	NG	NG	NG	10	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				EIL - IE R	NG	NG	NG	NG	0.01	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				EIL- IE I	NG	NG	NG	NG	0.14	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				LOR	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	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
Secondary Assessment																																	
C01S01	23/03/2020	0.00	0.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C01S03	23/03/2020	0.40	1.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C02S01	23/03/2020	0.00	0.20		0.0002	0.0002	0.0002	0.0002	0.0005**	0.0005**	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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**
C02S02	23/03/2020	0.20	0.50		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C03S01	23/03/2020	0.00	0.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C03S03	23/03/2020	0.50	1.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C04S01	23/03/2020	0.00	0.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C04S02	23/03/2020	0.20	0.50		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C05S01	23/03/2020	0.00	0.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C05S03	23/03/2020	0.50	1.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C06S01	23/03/2020	0.00	0.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C06S02	23/03/2020	0.20	0.50		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C07S01	23/03/2020	0.00	0.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C07S03	23/03/2020	0.50	1.10		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
				MEAN	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
				MEDIAN	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
				STDEV	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001
				COUNT	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
				95%UCL	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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

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Table G: Sediment Analytical Results - Explosives - Onshore Reuse

Definitions:

LOR (Limits of Reporting), NEPM (2013) - Health Investigation Levels for residential (HIL-A), high density residential (HIL-B), public open space(HIL-C), Commercial/industrial (HIL-D), Ecological Investigation/Screening Levels - Areas of Ecological Significance (EIL/ESL)
ND denotes not detected. NG denotes no guideline. --- denotes not tested

Notes:

All values in mg/kg. Table uses colour coding for data interpretation. All guideline values from NEPM (2013)
deontes <LOR

Sample ID	Date Sampled	Top	Bottom	Trigger	Explosives																	
					HMX	RDX	1.3.5-Trinitrobenzene	1.3-Dinitrobenzene	Tetryl	2.4.6-TNT	4-Amino.2.6-DNT	2-Amino-4.6-DNT	4- & 2-Amino-DNT(Isomeric Mixture)	2.4-Dinitrotoluene	2.6-Dinitrotoluene	2.4- & 2.6-DNT(Isomeric Mixture)	Nitrobenzene	2-Nitrotoluene	3-Nitrotoluene	4-Nitrotoluene	Nitroglycerine	PETN
				HIL-A	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				HIL- B	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				HIL-C	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				HIL-D	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				EIL/ESL	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				LOR	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	1
C01S01	12/11/2019	0.00	0.25		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	1
C01S03	12/11/2019	0.50	1.20		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	1
C02S01	12/11/2019	0.00	0.20		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	1
C02S02	12/11/2019	0.20	0.50		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C03S01	12/11/2019	0.00	0.20		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	1
C03S03	12/11/2019	0.50	1.20		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C04S01	13/11/2019	0.00	0.20		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	1
C04S02	13/11/2019	0.20	0.50		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C05S01	13/11/2019	0.00	0.25		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	1
C05S02	13/11/2019	0.25	0.50		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C05S03	13/11/2019	0.50	1.00		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C06S01	12/11/2019	0.00	0.25		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	1
C06S02	12/11/2019	0.25	0.50		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C06S03	12/11/2019	0.50	1.20		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C07S01	12/11/2019	0.00	0.20		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	1
C07S02	12/11/2019	0.20	0.70		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C07S03	12/11/2019	0.70	1.20		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

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Table H: Sediment Analytical Results - Acid Sulfate Soil Results

Definitions:

- (No Guideline), --- not tested, LOR (Limit of Reporting),

Notes:

This table utilises colour coding to aid data interpretation, avoid black and white reproduction
Units are as shown

Denotes less than LOR

Denotes sample exceeds DWER Action Criteria of 0.03 (%S) or 18 mol H^+ / tonne, for excavations of >1,000 tonnes

Sample ID	Date	Interval (m)	Sample Descrption	Trigger	Acidity Trail						CRS		Net Acidity		ANC		
					pH KCl	pH OX	TAA	S_{TAA}	TPA	S_{TPA}	aSCR	SCR	SCR + STAA	SCR + STAA	ANC	ANC	ANC (seived to 0.6 mm)
				Units	pH	pH	mht	%S	mht	%S	mht	%S	mht	%S	mht	%S	%S
				ASS	<4.0	<4.0	18	0.03	18	0.03	18	0.03	18	0.03	-	-	-
				LOR	0.1	0.1	5	0.005	5	0.005	5	0.005	5	0.005	5	0.02	0.02
C01S01	12/11/2019	0.0-0.25	Sediment, Pale Grey, MFG, abundant sea grass, roots, rootlets, some shell fragments		9.7	7.9	<2	<0.02	<2	<0.02	34	0.054	34	0.050	16,700	26.8	25.9
C01S03	12/11/2019	0.25-1.20	Sediment, pale grey, some sea grass roots, rootlets + shell fragments		10.0	7.9	<2	<0.02	<2	<0.02	<10	0.007	<10	<0.02	17,500	28.0	---
C02S01	12/11/2019	0.0-0.20	Sediment, pale grey, MFG is abundant, sea grass roots/detritus, some shell fragments		9.6	8.0	<2	<0.02	<2	<0.02	<10	0.007	<10	<0.02	16,800	26.9	---
C03S01	12/11/2019	0.0-0.20	Sediment, Pale Grey, MFG, some sea grass, roots/detritus + shell fraction		9.9	7.9	<2	<0.02	<2	<0.02	<10	0.009	<10	<0.02	16,600	26.6	---
C04S01	13/11/2019	0.0-0.20	Sediment, Pale Grey, MFG is abundant, some sea grass, roots/detritus + shell fraction		9.7	8.0	<2	<0.02	<2	<0.02	<10	0.008	<10	<0.02	17,100	27.5	---
C05S01	13/11/2019	0.0-0.25	Sediment, Pale Grey/Grey, MFG, abundant sea grass, detritus and roots.		10.0	8.0	<2	<0.02	<2	<0.02	<10	0.005	<10	<0.02	17,100	27.4	---
C06S01	12/11/2019	0.0-0.25	Sediment, Pale Grey/Grey, MFG, brown/grey lens at 0.6mbgl, shell fraction + trace seagrass/weed/detritus, H2S odour from 0.50 mbgl, compact, trace gravels/ cobbles		10.1	8.1	<2	<0.02	<2	<0.02	<10	0.008	<10	<0.02	16,700	26.8	---
C06S03	12/11/2019	0.5-1.20			10.0	8.1	<2	<0.02	<2	<0.02	15	0.024	15	0.020	15,700	25.2	24.9
C07S01	12/11/2019	0.0-0.20	Sediment, Pale Grey compact, MFG, shell fraction		10.1	8.1	<2	<0.02	<2	<0.02	<10	0.007	<10	<0.02	17,000	27.3	---

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Table I: Sediment Analytical Results - Metals, Metalloids, Inorganics and Nutrients - Dredging/Offshore Disposal

Definitions:

LOR (Limits of Reporting), DGV (Default guideline value), GV-High (Guideline Value High)
ND denotes not detected. NG denotes no guideline. --- denotes not tested

Notes:

All values in mg/kg except TOC which is in %, asbestos %w/w and Tributyl Tin in µg Sn/kg. Table uses colour coding for data interpretation. All guideline values from WQA (2018)
denotes <LOR

Sample ID	Date Sampled	Top	Bottom	Trigger	Total Metals														Tributyl Tin	Asbestos	TOC	Nutrients					
					Antimony	Arsenic	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Vanadium	Zinc			Total Organic Carbon	Total Phosphorus	Phosphorous Reactive	Total Nitrogen	Nitrogen Kjeldahl Total	Ammonia (as N)	NO_X
				GV-High	25	70	10	370	270	270	220	NG	1	52	NG	4	NG	410	70	NG	NG	NG	NG	NG	NG	NG	NG
				DGV	2	20	1.5	80	65	65	50	NG	0.15	21	NG	1	NG	200	9	NG	NG	NG	NG	NG	NG	NG	NG
				LOR	0.5	1	0.1	1	1	0.5	1	10	0.01	1	0.1	0.1	2	1	0.5	0.001	0.02	2	0.1	20	20	0.2	0.1
C01S01	12/11/2019	0.00	0.25		1.47	2	0.3	11	1	1	1	10	0.01	2	0.3	0.2	11	2	0.5	0.001	0.46	303	0.1	330	330	4.1	0.1
C01S03	12/11/2019	0.50	1.20		0.5	1	0.2	10	1	1	1	10	0.01	1	0.1	0.1	11	1	0.5	0.001	0.32	232	0.1	310	310	0.2	0.1
C02S01	12/11/2019	0.00	0.20		0.5	1	0.1	11	1	1	1	10	0.01	1	0.3	0.2	6	2	0.5	0.001	0.48	280	0.6	230	230	0.7	0.1
C02S02	12/11/2019	0.20	0.50		0.85	1	0.2	10	1	1	1	10	0.01	1	0.2	0.1	13	1	----	----	----	----	----	----	----	----	----
C03S01	12/11/2019	0.00	0.20		0.5	1	0.1	10	1	1	1	10	0.01	1	0.2	0.1	4	4	0.5	0.001	0.34	269	0.3	260	260	0.2	0.1
C03S03	12/11/2019	0.50	1.20		0.77	1	0.1	10	1	1	1	10	0.01	1	0.2	0.1	12	4	----	----	----	----	----	----	----	----	----
C04S01	13/11/2019	0.00	0.20		0.61	1	0.2	10	1	1	1	10	0.01	1	0.2	0.1	11	2	0.5	0.001	0.72	254	0.8	330	330	20.6	0.1
C04S02	13/11/2019	0.20	0.50		0.5	1	0.2	11	1	1	1	10	0.01	1	0.2	0.1	12	1	----	----	----	----	----	----	----	----	----
C05S01	13/11/2019	0.00	0.25		0.5	1	0.1	9	1	1	1	10	0.01	1	0.1	0.1	2	2	0.5	0.001	0.23	274	0.2	250	250	0.2	0.1
C05S02	13/11/2019	0.25	0.50		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C05S03	13/11/2019	0.50	1.00		0.5	1	0.1	10	1	1	1	10	0.01	1	0	0.1	3	4	----	----	----	----	----	----	----	----	----
C06S01	12/11/2019	0.00	0.25		0.5	1	0.1	9	1	1	1	10	0.01	1	0	0.1	2	2	0.5	0.001	0.05	311	0.2	190	190	0.4	0.1
C06S02	12/11/2019	0.25	0.50		0.5	1	0.1	9	1	1	1	10	0.01	1	0	0.1	3	3	----	----	----	----	----	----	----	----	----
C06S03	12/11/2019	0.50	1.20		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C07S01	12/11/2019	0.00	0.20		0.5	1	0.1	9	1	1	1	10	0.01	1	0	0.1	2	2	0.5	0.001	0.04	327	0.3	210	210	1	0.1
C07S02	12/11/2019	0.20	0.70		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C07S03	12/11/2019	0.70	1.20		0.5	2	0.1	9	1	1	1	10	0.01	1	0	0.1	2	1	----	----	----	----	----	----	----	----	----
				MEAN	0.5	1.2	0.1	9.5	1.0	0.5	1.0	10	0.01	1	0.1	0.1	5	2	0.5	0.001	0.28	287	0.4	248	248	4.5	0.1
				MEDIAN	0.5	1.2	0.1	9.5	1.0	0.5	1.0	10	0.01	1	0.1	0.1	3	2	0.5	0.001	0.23	274	0.3	250	250	0.4	0.1
				STDEV	0.1	0.3	0.0	0.7	0.0	0.0	0.0	0.0	0.00	0	0.1	0.0	5	1	0.0	0.0	0.28	31	0.3	54	54	9.0	0.0
				COUNT	10	10	10	10	10	10	10	10	10	10	10	10	10	10	5	5	5	5	5	5	5	5	5
				95%UCL	0.6	1	0.1	10	1	1	1	10	0.01	1	0.2	0.1	8	3	0.5	0.001	0.50	311	0.6	291	291	11.6	0.1

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Table J: Sediment Analytical Results - PAHs - Dredging/Offshore Disposal

Definitions:

LOR (Limits of Reporting), DGV (Default guideline value), GV-High (Guideline Value High), PAH - Polycyclic Aromatic Hydrocarbons, LMW: Low Molecular Weight, HMW: High Molecular Weight
ND denotes not detected. NG denotes no guideline. --- denotes not tested

Notes:

All values in mg/kg unless indicated. Table uses colour coding for data interpretation. All guideline values from WQA (2018)
deontes <LOR
Concentrations have been normalised to 1% based upon the Total Organic Carbon of the samples

Sample ID	Date Sampled	Top	Bottom	Trigger	PAHs																						
					2-methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benz(a)pyrene	Benz(b)fluoranthene	Benz(e)pyrene	Benz(ghi)perylene	Benz(k)fluoranthene	Chrysene	Coronene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Perylene	Phenanthrene	Pyrene	LMW PAHs	HMW PAHs	Total PAH
				GV-High	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	50
				DGV	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	0.20	10
				LOR	0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004	0.004
C01S01	12/11/2019	0.00	0.25		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004	0.004
C01S03	12/11/2019	0.50	1.20		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004	0.004
C02S01	12/11/2019	0.00	0.20		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004	0.004
C02S02	12/11/2019	0.20	0.50		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004	0.004
C03S01	12/11/2019	0.00	0.20		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004	0.004
C03S03	12/11/2019	0.50	1.20		0.005	0.004	0.008	0.020	0.020	0.020	0.020	0.020	0.004	0.020	0.020	0.005	0.004	0.020	0.004	0.020	0.005	0.004	0.004	0.020	0.004	0.004	0.004
C04S01	13/11/2019	0.00	0.20		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004	0.004
C04S02	13/11/2019	0.20	0.50		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004	0.004
C05S01	13/11/2019	0.00	0.25		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004	0.004
C05S02	13/11/2019	0.25	0.50		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C05S03	13/11/2019	0.50	1.00		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004	0.004
C06S01	12/11/2019	0.00	0.25		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004	0.004
C06S02	12/11/2019	0.25	0.50		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004	0.004
C06S03	12/11/2019	0.50	1.20		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C07S01	12/11/2019	0.00	0.20		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004	0.004
C07S02	12/11/2019	0.20	0.70		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C07S03	12/11/2019	0.70	1.20		0.005	0.004	0.200	0.040	0.024	0.060	0.028	0.020	0.060	0.020	0.004	0.005	0.004	0.004	0.004	0.040	0.005	0.020	0.004	0.008	0.004	0.004	0.004

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Table K: Sediment Analytical Results - TRH and BTEX - Dredging/Offshore Disposal

Definitions:

LOR (Limits of Reporting), DGV (Default guideline value), GV-High (Guideline Value High)
ND denotes not detected. NG denotes no guideline. --- denotes not tested

Notes:

All values in mg/kg unless indicated. Table uses colour coding for data interpretation. All guideline values from WQA (2018)
deontes <LOR
Concentrations have been normalised to 1% based upon the Total Organic Carbon of the samples

Sample ID	Date Sampled	Top	Bottom	Trigger	BTEX							TPH					TRH						
					Benzene	Ethyl Benzene	Toluene	ortho-Xylene	meta,para-Xylene	Xylene	Sum of BTEX	C6 - C9	C10 - C14	C15 - C28	C29 - C36	C10 - C36 (sum)	C6 - C10	C6 - C10 minus BTEX (F1)	>C10 - C16	>C10 - C16 minus Naphthalene (F2)	>C16 - C34	>C34 - C40	>C10 - C40 (sum)
				GV-High	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	550	NG	NG	NG	NG	NG	NG	NG
				DGV	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	280	NG	NG	NG	NG	NG	NG	NG
				LOR	0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C01S01	12/11/2019	0.00	0.25		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C01S03	12/11/2019	0.50	1.20		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C02S01	12/11/2019	0.00	0.20		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C02S02	12/11/2019	0.20	0.50		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C03S01	12/11/2019	0.00	0.20		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C03S03	12/11/2019	0.50	1.20		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C04S01	13/11/2019	0.00	0.20		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C04S02	13/11/2019	0.20	0.50		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C05S01	13/11/2019	0.00	0.25		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C05S02	13/11/2019	0.25	0.50		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C05S03	13/11/2019	0.50	1.00		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C06S01	12/11/2019	0.00	0.25		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	5	5	5	3	3	3	3	5	5	5
C06S02	12/11/2019	0.25	0.50		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C06S03	12/11/2019	0.50	1.20		----	----	----	----	----	----	----	----	----	----	----	----	----	3	----	----	----	----	----
C07S01	12/11/2019	0.00	0.20		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
C07S02	12/11/2019	0.20	0.70		----	----	----	----	----	----	----	----	----	----	----	----	----	3	----	----	----	----	----
C07S03	12/11/2019	0.70	1.20		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	7	7	3	3	3	3	6	7	13

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Table L: Sediment Analytical Results - OC/OP Pesticides - Dredging/Offshore Disposal

Definitions:

LOR (Limits of Reporting), DGV (Default guideline value), GV-High (Guideline Value High)
ND denotes not detected. NG denotes no guideline. --- denotes not tested

Notes:

All values in mg/kg unless indicated. Table uses colour coding for data interpretation. All guideline values from WQA (2018)
deontes <LOR
Concentrations have been normalised to 1% based upon the Total organic Carbon of the samples

Sample ID	Date Sampled	Top	Bottom	Trigger	OCs																						
					Aldrin	Aldrin+Dieldrin	Alpha-BHC	Beta-BHC	Chlordane	cis-Chlordane	DDD	DDE	DDT	Delta-BHC	Dieldrin	Endosulfan (sum)	alpha-Endosulfan	beta-Endosulfan	Endosulphan Sulfate	Endrin	Endrin Aldehyde	Endrin Ketone	gamma-BHC (Lindane)	HCB	Heptachlor	Heptachlor Epoxide	Methoxychlor	Oxychlordane	trans-Chlordane
				GV-High	NG	NG	NG	NG	0.009	0.006	0.009	0.007	0.005	NG	0.007	NG	NG	NG	NG	0.06	NG	NG	0.0014	NG	NG	NG	NG	NG	0.006
				DGV	NG	NG	NG	NG	0.0045	0.0005	0.0035	0.0014	0.0012	NG	0.0028	NG	NG	NG	NG	0.0027	NG	NG	0.0009	NG	NG	0.2	NG	NG	0.0005
				LOR	0.0005	0.0005	0.0005	0.0005	0.00025	0.00025	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005
C01S01	12/11/2019	0.00	0.25		0.0005	0.0005	0.0005	0.0005	0.00025	0.00025	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005
C01S03	12/11/2019	0.50	1.20		0.0005	0.0005	0.0005	0.0005	0.00025	0.00025	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005
C02S01	12/11/2019	0.00	0.20		0.0005	0.0005	0.0005	0.0005	0.00025	0.00025	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005
C02S02	12/11/2019	0.20	0.50		0.0005	0.0005	0.0005	0.0005	0.00025	0.00025	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005
C03S01	12/11/2019	0.00	0.20		0.0005	0.0005	0.0005	0.0005	0.00025	0.00025	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005
C03S03	12/11/2019	0.50	1.20		0.0005	0.0005	0.0005	0.0005	0.00025	0.00025	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005
C04S01	13/11/2019	0.00	0.20		0.0005	0.0005	0.0005	0.0005	0.00025	0.00025	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005
C04S02	13/11/2019	0.20	0.50		0.0005	0.0005	0.0005	0.0005	0.00025	0.00025	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005
C05S01	13/11/2019	0.00	0.25		0.0005	0.0005	0.0005	0.0005	0.00025	0.00025	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005
C05S02	13/11/2019	0.25	0.50		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C05S03	13/11/2019	0.50	1.00		0.0005	0.0005	0.00050	0.00050	0.00025	0.00025	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005
C06S01	12/11/2019	0.00	0.25		0.0005	0.0005	0.00050	0.00050	0.00025	0.00025	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005
C06S02	12/11/2019	0.25	0.50		0.0005	0.0005	0.00050	0.00050	0.00025	0.00025	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005
C06S03	12/11/2019	0.50	1.20		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C07S01	12/11/2019	0.00	0.20		0.0005	0.0005	0.0005	0.0005	0.00025	0.00025	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005
C07S02	12/11/2019	0.20	0.70		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C07S03	12/11/2019	0.70	1.20		0.0005	0.0005	0.0005	0.0005	0.0003	0.0003	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005

Sample ID	Date Sampled	Top	Bottom	Trigger	OPs																			
					Bromophos-ethyl	Carbophenothion	Chlorfenvinphos (E)	Chlorfenvinphos (Z)	Chlorpyrifos	Chlorpyrifos-methyl	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenamiphos	Fenthion	Malathion	Azinphos Methyl	Monocrotophos	Parathion	Parathion-methyl	Pirimphos-ethyl	Prothiofos
				GV-High	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				DGV	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				LOR	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C01S01	12/11/2019	0.00	0.25		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C01S03	12/11/2019	0.50	1.20		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C02S01	12/11/2019	0.00	0.20		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C02S02	12/11/2019	0.20	0.50		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C03S01	12/11/2019	0.00	0.20		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C03S03	12/11/2019	0.50	1.20		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C04S01	13/11/2019	0.00	0.20		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C04S02	13/11/2019	0.20	0.50		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C05S01	13/11/2019	0.00	0.25		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C05S02	13/11/2019	0.25	0.50		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C05S03	13/11/2019	0.50	1.00		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C06S01	12/11/2019	0.00	0.25		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C06S02	12/11/2019	0.25	0.50		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C06S03	12/11/2019	0.50	1.20		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C07S01	12/11/2019	0.00	0.20		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C07S02	12/11/2019	0.20	0.70		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C07S03	12/11/2019	0.70	1.20		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

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Table M: Sediment Analytical Results - PFAS - Dredging/Offshore Disposal

Definitions:

LOR (Limits of Reporting), DGV (Default guideline value), GV-High (Guideline Value High)
ND denotes not detected. NG denotes no guideline. --- denotes not tested

Notes:

All values in mg/kg unless indicated. Table uses colour coding for data interpretation. All guideline values from WQA (2018)
deontes <LOR
** denotes triplicate result

Sample ID	Date Sampled	Top	Bottom	Trigger	PFAS																												
					Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOS)	Sum of PFHxS and PFOS	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-methyl perfluorooctane sulfonamide (MeFOSA) N-Methyl	perfluorooctane sulfonamide (EtFOSA) N-methyl	perfluorooctane sulfonamidoethanol (MeFOSE) 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 sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Total PFAS
				GV-High	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				DGV	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				LOR	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	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
Secondary Assessment																																		
C01S01	23/03/2020	0.00	0.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C01S03	23/03/2020	0.40	1.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C02S01	23/03/2020	0.00	0.20		0.0002	0.0002	0.0002	0.0002	0.0005**	0.0005**	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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**
C02S02	23/03/2020	0.20	0.50		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C03S01	23/03/2020	0.00	0.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C03S03	23/03/2020	0.50	1.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C04S01	23/03/2020	0.00	0.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C04S02	23/03/2020	0.20	0.50		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C05S01	23/03/2020	0.00	0.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C05S03	23/03/2020	0.50	1.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C06S01	23/03/2020	0.00	0.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C06S02	23/03/2020	0.20	0.50		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C07S01	23/03/2020	0.00	0.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C07S03	23/03/2020	0.50	1.10		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
				MEAN	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
				MEDIAN	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
				STDEV	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
				COUNT	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13
				95%UCL	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
Original Assessment																																		
C01S01	12/11/2019	0.00	0.25		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C01S03	12/11/2019	0.50	1.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C02S01	12/11/2019	0.00	0.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C02S02	12/11/2019	0.20	0.50		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C03S01	12/11/2019	0.00	0.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C03S03	12/11/2019	0.50	1.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C04S01	13/11/2019	0.00	0.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C04S02	13/11/2019	0.20	0.50		0.0002	0.0002	0.0002	0.0002	0.0004	0.0004	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C05S01	13/11/2019	0.00	0.25		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C05S02	13/11/2019	0.25	0.50		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C05S03	13/11/2019	0.50	1.00		0.0002	0.0002	0.0002	0.0002	0.0006	0.0006	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C06S01	12/11/2019	0.00	0.25		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C06S02	12/11/2019	0.25	0.50		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C06S03	12/11/2019	0.50	1.20		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C07S01	12/11/2019	0.00	0.20		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
C07S02	12/11/2019	0.20	0.70		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C07S03	12/11/2019	0.70	1.20		0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
				MEAN	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
				MEDIAN	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
				STDEV	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001
				COUNT	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
				95%UCL	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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

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Table N: Sediment Analytical Results - Explosives - Dredging/Offshore Disposal

Definitions:

LOR (Limits of Reporting), DGV (Default guideline value), GV-High (Guideline Value High)
ND denotes not detected. NG denotes no guideline. --- denotes not tested

Notes:

All values in mg/kg unless indicated. Table uses colour coding for data interpretation. All guideline values from WQA (2018)
denotes <LOR
Concentrations have been normalised to 1% based upon the Total Organic Carbon of the samples

Sample ID	Date Sampled	Top	Bottom	Trigger	Explosives																	
					HMX	RDX	1.3.5-Trinitrobenzene	1.3-Dinitrobenzene	Tetryl	2.4.6-TNT	4-Amino.2.6-DNT	2-Amino-4.6-DNT	4- & 2-Amino-DNT(Isomeric Mixture)	2.4-Dinitrotoluene	2.6-Dinitrotoluene	2.4- & 2.6-DNT(Isomeric Mixture)	Nitrobenzene	2-Nitrotoluene	3-Nitrotoluene	4-Nitrotoluene	Nitroglycerine	PETN
				GV-High	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				DGV	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
				LOR	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	1
C01S01	12/11/2019	0.00	0.25		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	1
C01S03	12/11/2019	0.50	1.20		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	1
C02S01	12/11/2019	0.00	0.20		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	1
C02S02	12/11/2019	0.20	0.50		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C03S01	12/11/2019	0.00	0.20		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	1
C03S03	12/11/2019	0.50	1.20		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C04S01	13/11/2019	0.00	0.20		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	1
C04S02	13/11/2019	0.20	0.50		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C05S01	13/11/2019	0.00	0.25		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	1
C05S02	13/11/2019	0.25	0.50		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C05S03	13/11/2019	0.50	1.00		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C06S01	12/11/2019	0.00	0.25		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	1
C06S02	12/11/2019	0.25	0.50		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C06S03	12/11/2019	0.50	1.20		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C07S01	12/11/2019	0.00	0.20		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	1
C07S02	12/11/2019	0.20	0.70		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
C07S03	12/11/2019	0.70	1.20		----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

MAKING COMPLEX EASY

Table O: Elutriate Analytical Results - Metals, Metalloids and Nutrients

Definitions:

LOR (Limits of Reporting), MEPG (Marine Ecological Protection Guideline)
ND denotes not detected. NG denotes no guideline. --- denotes not tested

Notes:

All elutriate values in mg/L, with total results (bottom) in mg/kg. Table uses colour coding for data interpretation. All guideline values from ANZECC 2000 or WQA 2018
denotes <LOR

Sample ID	Date Sampled	Trigger	Total Metals													Nutrients					
			Antimony	Arsenic	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Vanadium	Zinc	Total Phosphorus	Phosphorous Reactive	Total Nitrogen	Nitrogen Kjeldahl Total	Ammonia (as N)	NO_X
		MEPG	NG	NG	0.0007	0.0044	0.001	0.0013	0.0044	NG	0.0001	0.007	NG	0.0014	0.1	0.015	0.02 [c]	0.005	0.23	NG	0.005	0.005
		LOR	0.0002	0.0002	0.00005	0.0002	0.0001	0.0005	0.0001	0.0005	0.00004	0.0005	0.0002	0.0001	0.0002	0.001	0.005	0.001	0.05	0.05	0.005	0.002
EW	13/11/2019		0.0005	0.0013	0.0002	0.0005	0.0002	0.0010	0.0002	0.0005	0.00004	0.0005	0.002	0.0001	0.0005	0.007	0.005	0.001	0.1	0.09	0.005	0.003
C01S01	12/11/2019		0.0049	0.0097	0.0003	0.0005	0.0002	0.0050	0.0003	0.0028	0.00004	0.0008	0.002	0.0001	0.0459	0.028	0.054	0.047	1.0	0.97	0.472	0.004
C02S01	12/11/2019		0.0032	0.024	0.0002	0.0005	0.0002	0.0020	0.0002	0.0005	0.00004	0.0005	0.002	0.0001	0.0453	0.010	0.102	0.086	0.9	0.90	0.327	0.006
C03S03	12/11/2019		0.0052	0.0088	0.0002	0.0005	0.0002	0.0010	0.0002	0.0005	0.00004	0.0005	0.002	0.0001	0.1360	0.005	0.010	0.004	0.3	0.26	0.005	0.002
C04S02	13/11/2019		0.0016	0.0078	0.0002	0.0005	0.0002	0.0010	0.0002	0.0005	0.00004	0.0005	0.002	0.0001	0.1020	0.005	0.019	0.001	0.5	0.50	0.005	0.002
C05S03	13/11/2019		0.0096	0.0148	0.0002	0.0005	0.0002	0.0010	0.0002	0.0005	0.00004	0.0005	0.002	0.0001	0.1750	0.006	0.017	0.015	0.4	0.36	0.056	0.004
C06S02	12/11/2019		0.0005	0.0039	0.0002	0.0005	0.0002	0.0010	0.0002	0.0005	0.00004	0.0005	0.002	0.0001	0.0162	0.005	0.050	0.053	0.3	0.28	0.11	0.005
C07S01	12/11/2019		0.0005	0.003	0.0002	0.0005	0.0002	0.0010	0.0002	0.0007	0.00	0.0005	0.002	0.0001	0.0005	0.014	0.005	0.004	0.2	0.17	0.005	0.009
		MEAN	0.0036	0.0103	0.00021	0.0005	0.0002	0.0017	0.0002	0.0009	0.00004	0.0005	0.002	0.0001	0.0744	0.010	0.037	0.030	0.5	0.5	0.14	0.005
		MEDIAN	0.0032	0.0088	0.00020	0.0005	0.0002	0.0010	0.0002	0.0005	0.00004	0.0005	0.002	0.0001	0.0459	0.006	0.019	0.015	0.4	0.4	0.06	0.004
Sample ID	**Date Sampled**	GV-High	25	70	10	370	270	270	220	NG	1	52	NG	4	NG	410	NG	NG	NG	NG	NG	NG
		DGV	2	20	1.5	80	65	65	50	NG	0.15	21	NG	1	NG	200	NG	NG	NG	NG	NG	NG
		LOR	0.5	1	0.1	1	1	0.5	1	10	0.01	1	0.1	0.1	2	1	2	0.1	20	20	20	0.1
C01S01	12/11/2019		1.47	2	0.3	11	1	1	1	10	0.01	2	0.3	0.2	11	2	303	0.1	330	330	4.1	0.1
C02S01	12/11/2019		0.5	1	0.1	11	1	1	1	10	0.01	1	0.3	0.2	6	2	280	0.6	230	230	0.7	0.1
C03S03	12/11/2019		0.77	1	0.1	10	1	1	1	10	0.01	1	0.2	0.1	12	4	----	----	----	----	----	----
C04S02	13/11/2019		0.5	1	0.2	11	1	1	1	10	0.01	1	0.2	0.1	12	1	----	----	----	----	----	----
C05S03	13/11/2019		0.5	1	0.1	10	1	1	1	10	0.01	1	0	0.1	3	4	----	----	----	----	----	----
C06S02	12/11/2019		0.5	1	0.1	9	1	1	1	10	0.01	1	0	0.1	3	3	----	----	----	----	----	----
C07S01	12/11/2019		0.5	1	0.1	9	1	1	1	10	0.01	1	0	0.1	2	2	327	0.3	210	210	1	0.1

Table P: Elutriate Analytical Results - PFAS

Definitions:

LOR (Limits of Reporting), MEPG (Marine Ecological Protection Guideline)
ND denotes not detected. NG denotes no guideline. N asbestos not identified. --- denotes not tested

Notes:

All values in µg/L. Table uses colour coding for data interpretation. All guideline values from HEPA (2018)
deontes <LOR
* denotes duplicate result, ** denotes triplicate result

Sample ID	Date Sampled	Trigger	PFAS																													
			Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOS)	Sum of PFHxS and PFOS	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	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 sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Total PFAS
		MEPG	NG	NG	NG	NG	0.00023	NG	NG	NG	NG	NG	NG	19	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
		LOR	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002
Secondary Assessment																																
C01-SW	23/03/2020		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002
C04-SW	23/03/2020		0.0005	0.0005	0.0005	0.0005	0.0003*	0.0003	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0003
C06-SW	23/03/2020		0.0005	0.0005	0.0005	0.0005	0.0006*	0.0006	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0006
EW	23/03/2020		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002
Matrix Blank	23/03/2020		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002
C01S01	23/03/2020		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002
C02S01	23/03/2020		0.0005	0.0005	0.0005	0.0005	0.0005**	0.0005**	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0005**
C03S03	23/03/2020		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002
C04S02	23/03/2020		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.000
C05S03	23/03/2020		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.000
C06S02	23/03/2020		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.000
C07S01	23/03/2020		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.000
		MEAN	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0020	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0010	0.0010	0.0010	0.0010	0.0005	0.0005	0.0010	0.0010	0.0010	0.0010	0.0002
		MEDIAN	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0020	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0010	0.0010	0.0010	0.0010	0.0005	0.0005	0.0010	0.0010	0.0010	0.0010	0.0002
		GV-High	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	550	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Sample ID	**Date Sampled**	DGV	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	280	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
		LOR	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	0.0002	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002
C01S01	23/03/2020		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002
C02S01	23/03/2020		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002
C03S03	23/03/2020		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002
C04S02	23/03/2020		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0004
C05S03	23/03/2020		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0006
C06S02	23/03/2020		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002
C07S01	23/03/2020		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002

Figures

Figure A

Site location

GDA 1994 MGA Zone 50

0 250 500 1,000 m

Job Number: C19032-011 (N)
Doc Number: 001
Date: 11.05.20
Scale: 1:30,000 @ A3
Created by: MA
Source: Orthophoto - Landgate, 2017 Proposed development - RIA Dec 2019

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Document Path: G:\Jobs\N Jobs\N19032 - DBCA Rottnest\Figures C19032-011 Jetty Sed Assess\C19032-011_G_001_FigA_Site Location_200511.mxd

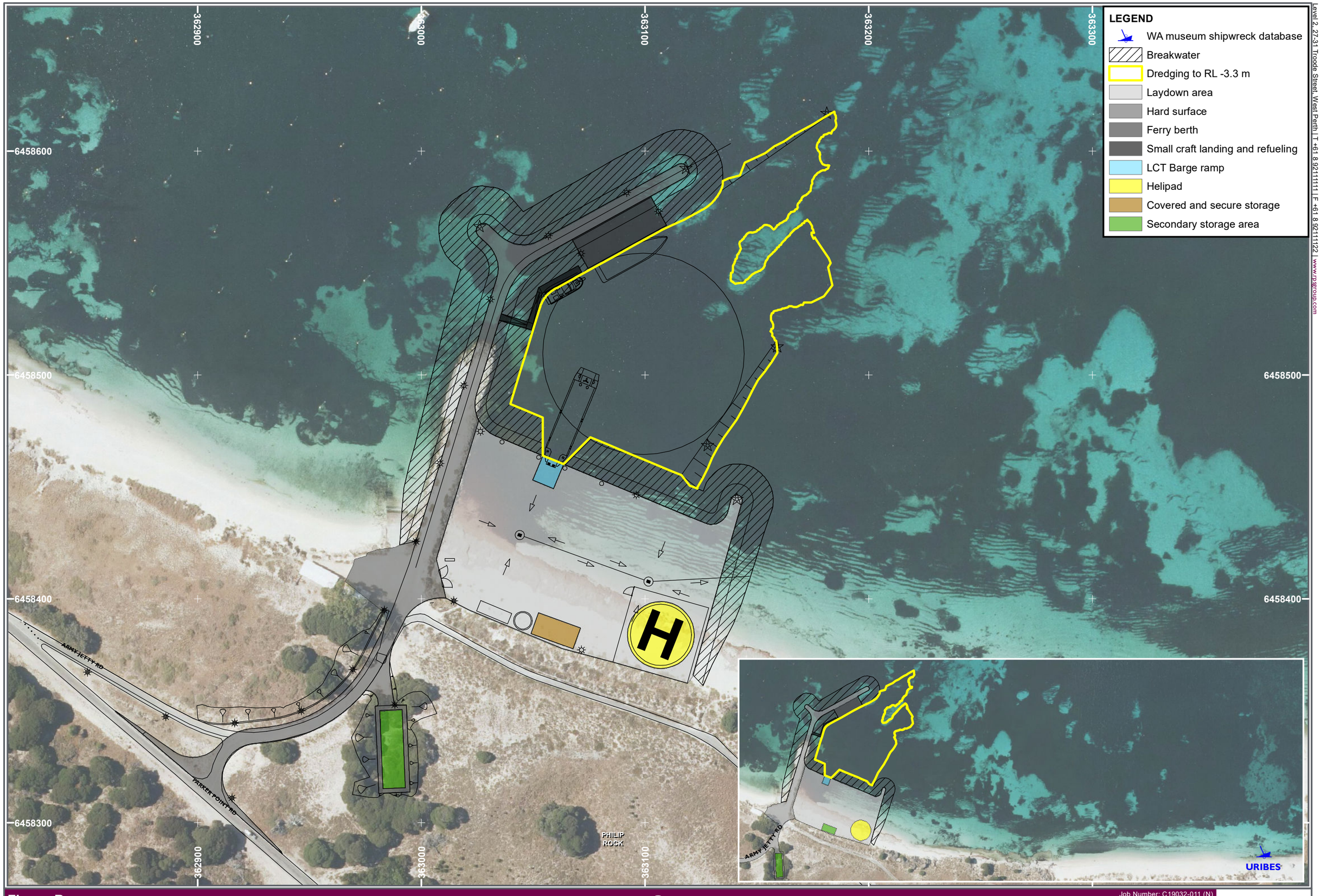

Figure B

Development area - Proposed barge ramp and cargo handling facilities

GDA 1994 MGA Zone 50

0 10 20 40 m

Source: Orthophoto - Landgate, 2017

Proposed development - RIA Dec 2019

Job Number: C19032-011 (N)
Doc Number: 002
Date: 11.05.20
Scale: 1:4,872 @ A3
Created by: MA

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LEGEND

- Bathymetry (depth in metres) (Derived from Thomson bay multibeam hydro survey 2017)
- Breakwater
- Dredging to RL -3.3 m
- Laydown area
- Hard surface
- Ferry berth
- Small craft landing and refueling
- Helipad
- Covered storage
- LCT Barge ramp

Thomson bay habitat mapping (RPS, April 2019)

- Mixed seagrass

Figure C

Seagrass mapping and bathymetry

0 5 10 20 m

Horizontal: GDA 1994 MGA Zone 50
Vertical: Chart Datum (0.72 m below AHD)

Source: Orthophoto - Landgate, 2017

Proposed development - RIA Dec 2019 (RIA 1716-02-01 vF)

Job Number: C19032-011 (N)
Doc Number: 003
Date: 11.05.20
Scale: 1:1,000 @ A3
Created by: MA

Document Path: G:\Jobs\N Jobs\N19032 - DBCA Rottnest\Figures C19032-011 Jetty Sed Assess\C19032-011_G_003_FigC_Seagrass mapping and seabed_200511.mxd

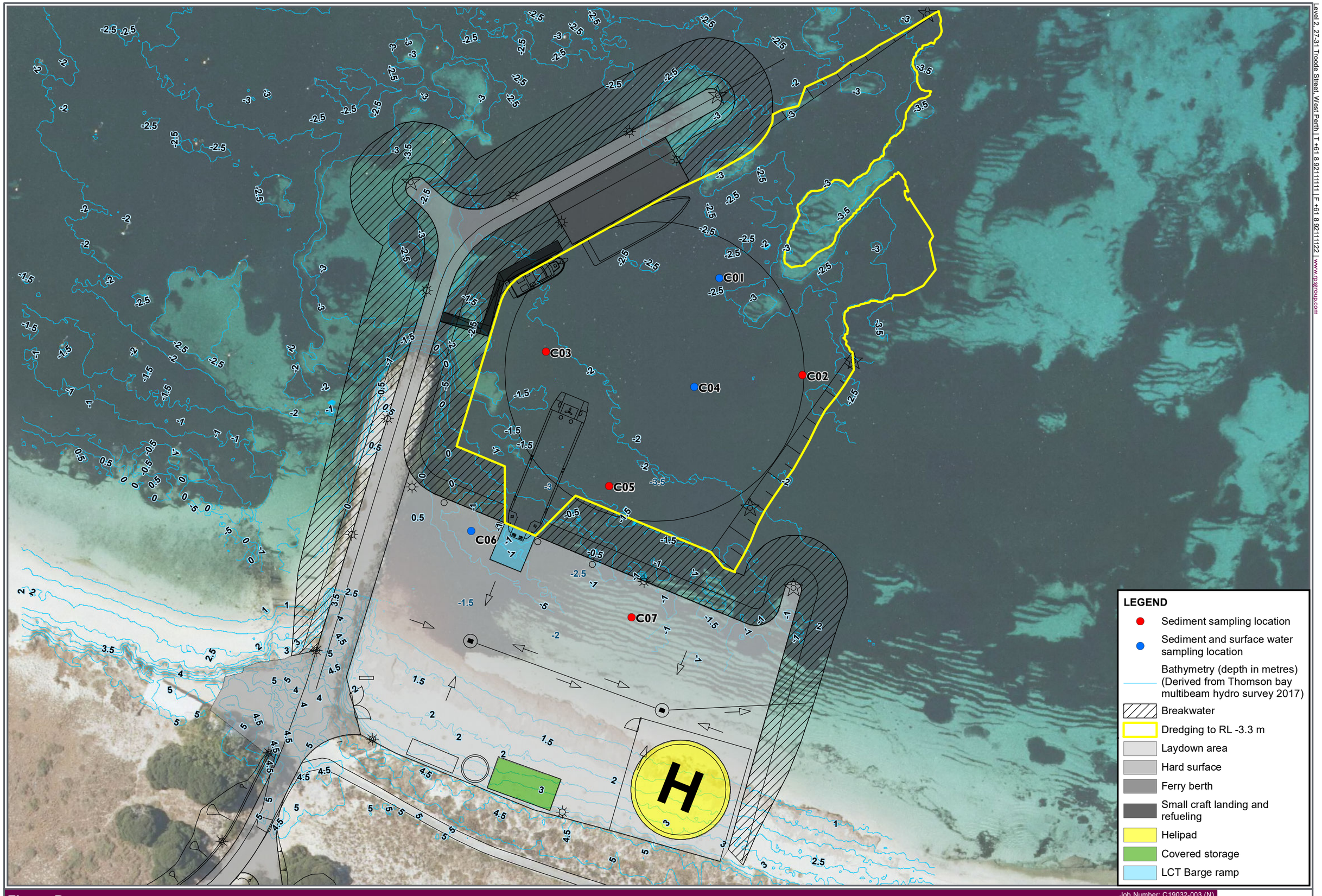

Figure D

Sediment sampling locations and proposed dredge design

0 5 10 20 m

Horizontal: GDA 1994 MGA Zone 50
Vertical: Chart Datum (0.72 m below AHD)

Job Number: C19032-003 (N)
Doc Number: 004
Date: 11.05.20
Scale: 1:1,000 @ A3
Created by: MA

Source: Orthophoto - Landgate, 2017 Proposed development - RIA Dec 2019

Document Path: G:\Jobs\N Jobs\N19032 - DBCA Rottnest\Figures C19032-011 Jetty Sed Assess\C19032-011_G_004_FigD_Sediment and Proposed Design_200511.mxd

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Appendix A
Sediment Sampling Logs

SEDIMENT PROFILE LOG

Project number:	EEC19032.011	**Weather:**	Fine
Site name:	Rottnest Army Jetty	**Sampling method:**	Push Probe
Sampling area:	Army Jetty	**Total depth (mbgl):**	1.2
Sampling location:	C01	**Refusal (Y/N):**	N
Scientist(s)	SMW	**Fill present (Y/N):**	N
Date	12/11/2019	**Fill thickness (m):**	-
Time:	825	**Water Column**	3 m
QAQC samples:	Dup: S21 + Trip: S221 Sampled at C01S0	**Easting / northing:**	363114/6458535

Soil depth (m)	Soil description (soil type, odour, texture, etc.)	Sample I.D.	Interval (m)
0-0.25	Sediment, Pale Grey, MFG, abundant sea grass, roots, rootlets, no odour/staining, some shell fragments	C01S01	0-0.25
0.25-1.20	Sediment, pale grey, some sea grass roots, rootlets + shell fragments, no odour/ staining	C01S02	0.25-0.50
		C01S03	0.50-1.20

Additional details / comments:

Elutriate Sample

SEDIMENT PROFILE LOG

Project number:	EEC19032.011	**Weather:**	Fine
Site name:	Rottnest Army Jetty	**Sampling method:**	Push Probe
Sampling area:	Army Jetty	**Total depth (mbgl):**	1.2
Sampling location:	C02	**Refusal (Y/N):**	1.1
Scientist(s)	SMW	**Fill present (Y/N):**	N
Date	12/11/2019	**Fill thickness (m):**	-
Time:	1120	**Water Column:**	2.5 m
QAQC samples:	-	**Easting / northing:**	363136/6458503

Soil depth (m)	Soil description (soil type, odour, texture, etc.)	Sample I.D.	Interval (m)
0-0.5	Sediment, pale grey, MFG is abundant, sea grass roots/detritus, some shell fragments, no odour/staining	C02S01	0-0.20
		C02S02	0.20-0.50
0.50-1.10	Sediment, Pale grey, MFG, some sea grass, detritus and shell fragments, no odour/staining	C02S03	0.50-1.10

Additional details / comments:

Elutriate Sample

SEDIMENT PROFILE LOG

Project number:	EEC19032.011	**Weather:**	Fine
Site name:	Rottnest Army Jetty	**Sampling method:**	Push Probe
Sampling area:	Army Jetty	**Total depth (mbgl):**	1.2
Sampling location:	C03	**Refusal (Y/N):**	N
Scientist(s)	SMW	**Fill present (Y/N):**	N
Date	12/11/2019	**Fill thickness (m):**	-
Time:	1440	**Water Column:**	2.5 m
QAQC samples:	Dup: S22 + Trip: S222	**Easting / northing:**	363067/6458515

Soil depth (m)	Soil description (soil type, odour, texture, etc.)	Sample I.D.	Interval (m)
0-0.25	Sediment, Pale Grey, MFG, some sea grass, roots/detritus + shell fraction, no odour/staining,	C03S01	0-0.20
0.25-1.20	Sediment, pale grey, some sea grass roots, rootlets + shell fragments, no odour/ staining	C03S02	0.20-0.50
		C03S03	0.50-1.20

Additional details / comments:

Elutriate Sample

SEDIMENT PROFILE LOG

Project number:	EEC19032.011	**Weather:**	Fine
Site name:	Rottnest Army Jetty	**Sampling method:**	Push Probe
Sampling area:	Army Jetty	**Total depth (mbgl):**	1
Sampling location:	C04	**Refusal (Y/N):**	Y @ 1.0m (hard layer)
Scientist(s)	SMW	**Fill present (Y/N):**	N
Date	13/11/2019	**Fill thickness (m):**	-
Time:	830	**Water Column:**	1.5 m
QAQC samples:	-	**Easting / northing:**	363109/6458487

Soil depth (m)	Soil description (soil type, odour, texture, etc.)	Sample I.D.	Interval (m)
0-1.0	Sediment, Pale Grey, MFG is abundant, some sea grass, roots/detritus + shell fraction, no odour/staining	C04S01	0-0.20
		C04S02	0.20-0.50
		C04S03	0.50-1.0

Additional details / comments:

Elutriate Sample

SEDIMENT PROFILE LOG

Project number:	EEC19032.011	**Weather:**	Fine
Site name:	Rottnest Army Jetty	**Sampling method:**	Push Probe
Sampling area:	Army Jetty	**Total depth (mbgl):**	1.2
Sampling location:	C05	**Refusal (Y/N):**	N
Scientist(s)	SMW	**Fill present (Y/N):**	N
Date	13/11/2019	**Fill thickness (m):**	N
Time:	1000	**Water Column:**	1.5 m
QAQC samples:	-	**Easting / northing:**	363073/6458469

Soil depth (m)	Soil description (soil type, odour, texture, etc.)	Sample I.D.	Interval (m)
0-1.2	Sediment, Pale Grey/Grey, MFG, abundant sea grass, detritus and roots, shell fraction, no odour/staining	C05S01	0-0.25
		C05S02	0.25-0.50
		C05S03	0.50-1.0

Additional details / comments:

Elutriate Sample

SEDIMENT PROFILE LOG

Project number:	EEC19032.011	**Weather:**	Fine
Site name:	Rottnest Army Jetty	**Sampling method:**	Push Probe
Sampling area:	Army Jetty	**Total depth (mbgl):**	1.2
Sampling location:	C06	**Refusal (Y/N):**	N
Scientist(s)	SMW	**Fill present (Y/N):**	N
Date	12/11/2019	**Fill thickness (m):**	-
Time:	1230	**Water Column:**	1.5 m
QAQC samples:	-	**Easting / northing:**	363035/6458455

Soil depth (m)	Soil description (soil type, odour, texture, etc.)	Sample I.D.	Interval (m)
0-1.2	Sediment, Pale Grey/Grey, MFG, brown/grey lens at 0.6mbgl, shell fraction + trace seagrass/weed/detritus, H_2S odour from 0.50 mbgl, compact, trace gravels/ cobbles	C06S01	0-0.25
		C06S02	0.25-0.50
		C06S03	0.50-1.2

Additional details / comments:

Elutriate Sample

SEDIMENT PROFILE LOG

Project number:	EEC19032.011	**Weather:**	Fine
Site name:	Rottnest Army Jetty	**Sampling method:**	Push Probe
Sampling area:	Army Jetty	**Total depth (mbgl):**	1.2
Sampling location:	C07	**Refusal (Y/N):**	N
Scientist(s)	SMW	**Fill present (Y/N):**	N
Date	12/11/2019	**Fill thickness (m):**	-
Time:	1345	**Water Column:**	1 m
QAQC samples:	-	**Easting / northing:**	363069/6458422

Soil depth (m)	Soil description (soil type, odour, texture, etc.)	Sample I.D.	Interval (m)
0-0.70	Sediment, Pale Grey compact, MFG, shell fraction, H_2S odour from 0.50mbgl	C07S01	0-0.20
		C07S02	0.20-0.70
0.7-1.20	Sediment, Grey, compact, F-CG,	C07S03	0.70-1.20

Additional details / comments:

Elutriate Sample

MULTI-PARAMETER METER CALIBRATION RECORD

Project number: EEC19032.001

Site location: Rottnest Island - Army Jetty

Date	pH 7		pH 4		EC buffer µs/cm		Temp. °C		D.O. ppm		Redox		Scientist
	Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	Zero	Air	Temp. °C	Measurement	
11/11/2019	7.02	7	3.98	4	12825	12880	24.7	24	0	9.9	25	226	SMW

SEDIMENT PROFILE LOG

Project number:	EEC19032.011	**Weather:**	Fine
Site name:	Rottnest Army Jetty	**Sampling method:**	Push Probe
Sampling area:	Dredge Grounds	**Total depth (mbgl):**	1.2
Sampling location:	C01	**Refusal (Y/N):**	N
Scientist(s)	SMW	**Fill present (Y/N):**	N
Date	23-Mar	**Fill thickness (m):**	---
Time:	15:10	**Water Column**	2.5 - 2.7
QAQC samples:	Duplicate - SZ1, Triplicate - SZZ1	**Easting / northing:**	SAP

Soil depth (m)	Soil description (soil type, odour, texture, etc.)	Sample I.D.	Interval (m)
0.00 - 0.40	Sediment: Pale Grey/Grey - mfg, abundant seagrass and detritus (decaying seagrass), shell fraction, no odour or staining.	C01_S01	0.00 - 0.20
		C01_S02	0.20 - 0.40
0.40 - 1.20	Sediment: Pale Grey - mfg with some detritus (decaying seagrass), some shell fractions, no odour or staining.	C01_S03	0.40 - 1.20

Additional details / comments:

SEDIMENT PROFILE LOG

Project number:	EEC19032.011	**Weather:**	Fine
Site name:	Rottnest Army Jetty	**Sampling method:**	Push Probe
Sampling area:	Dredge Grounds	**Total depth (mbgl):**	1.1
Sampling location:	C02	**Refusal (Y/N):**	Y - hard layer at 1.10 mbgl
Scientist(s)	SMW	**Fill present (Y/N):**	N
Date	23-Mar	**Fill thickness (m):**	---
Time:	16:00	**Water Column**	2.8
QAQC samples:	Duplicate - SZ2, Triplicate - SZZ2	**Easting / northing:**	SAP

Soil depth (m)	Soil description (soil type, odour, texture, etc.)	Sample I.D.	Interval (m)
0.00 - 1.10	Sediment: Pale Grey/Grey - mfg, abundant to some seagrass and detritus (decreasing with depth), shell fraction, no odour or staining.	C02_S01	0.00 - 0.20
		C02_S02	0.20 - 0.50
		C02_S03	0.50 - 1.10

Additional details / comments:

SEDIMENT PROFILE LOG

Project number:	EEC19032.011	**Weather:**	Fine
Site name:	Rottnest Army Jetty	**Sampling method:**	Push Probe
Sampling area:	Dredge Grounds	**Total depth (mbgl):**	1.2
Sampling location:	C03	**Refusal (Y/N):**	N
Scientist(s)	SMW	**Fill present (Y/N):**	N
Date	23-Mar	**Fill thickness (m):**	---
Time:	14:30	**Water Column**	2
QAQC samples:	---	**Easting / northing:**	SAP

Soil depth (m)	Soil description (soil type, odour, texture, etc.)	Sample I.D.	Interval (m)
0.00 - 1.20	Sediment: Pale Grey/Grey - mfg, abundant detritus (decaying seagrass), shell fraction, compact at base.	C03_S01	0.00 - 0.20
		C03_S02	0.20 - 0.50
		C03_S03	0.50 - 1.20

Additional details / comments:

SEDIMENT PROFILE LOG

Project number:	EEC19032.011	**Weather:**	Fine
Site name:	Rottnest Army Jetty	**Sampling method:**	Push Probe
Sampling area:	Dredge Grounds	**Total depth (mbgl):**	1.1
Sampling location:	C04	**Refusal (Y/N):**	Y - hard layer at 1.10 m
Scientist(s)	SMW	**Fill present (Y/N):**	N
Date	23-Mar	**Fill thickness (m):**	---
Time:	13:30	**Water Column**	1.5 m
QAQC samples:	---	**Easting / northing:**	SAP

Soil depth (m)	Soil description (soil type, odour, texture, etc.)	Sample I.D.	Interval (m)
0.00 - 1.10	Sediment: Pale Grey/Grey - mfg, abundant detritus (decaying seagrass and roots), shell fractions, no odour or staining.	C04_S01	0.00 - 0.20
		C04_S02	0.20 - 0.50
		C04_S03	0.50 - 1.10

Additional details / comments:

SEDIMENT PROFILE LOG

Project number:	EEC19032.011	**Weather:**	Fine
Site name:	Rottnest Army Jetty	**Sampling method:**	Push Probe
Sampling area:	Dredge Grounds	**Total depth (mbgl):**	1.2
Sampling location:	C05	**Refusal (Y/N):**	N
Scientist(s)	SMW	**Fill present (Y/N):**	N
Date	23-Mar	**Fill thickness (m):**	---
Time:	11:30	**Water Column**	1.50 - 1.80
QAQC samples:	---	**Easting / northing:**	SAP

Soil depth (m)	Soil description (soil type, odour, texture, etc.)	Sample I.D.	Interval (m)
0.00 - 1.20	Sediment: Pale Grey/Grey - mfg, abundant detritus (seagrass deposits throughout/roots within to 0.40 m), shell grit fraction, no odour or staining.	C05_S01	0.00 - 0.20
		C05_S02	0.20 - 0.50
		C05_S03	0.50 - 1.20

Additional details / comments:

SEDIMENT PROFILE LOG

Project number:	EEC19032.011	**Weather:**	Fine
Site name:	Rottnest Army Jetty	**Sampling method:**	Push Probe
Sampling area:	Main Site	**Total depth (mbgl):**	1
Sampling location:	C06	**Refusal (Y/N):**	Y - hard layer at 1.00 m
Scientist(s)	SMW	**Fill present (Y/N):**	N
Date	23-Mar	**Fill thickness (m):**	---
Time:	9:45	**Water Column**	1.00 - 1.20
QAQC samples:	---	**Easting / northing:**	SAP

Soil depth (m)	Soil description (soil type, odour, texture, etc.)	Sample I.D.	Interval (m)
0.00 - 1.00	Sediment: Pale Grey/Grey - mfg, abundant seaweed detritus and trace deposits throughout shell fraction, H_2S odour.	C06_S01	0.00 - 0.20
		C06_S02	0.20 - 0.50
		C06_S03	0.50 - 1.00

Additional details / comments:

SEDIMENT PROFILE LOG

Project number:	EEC19032.011	**Weather:**	Fine
Site name:	Rottnest Army Jetty	**Sampling method:**	Push Probe
Sampling area:	Main Site	**Total depth (mbgl):**	1.2
Sampling location:	C07	**Refusal (Y/N):**	N
Scientist(s)	SMW	**Fill present (Y/N):**	N
Date	23-Mar	**Fill thickness (m):**	---
Time:	10:50	**Water Column**	1.2
QAQC samples:	---	**Easting / northing:**	SAP

Soil depth (m)	Soil description (soil type, odour, texture, etc.)	Sample I.D.	Interval (m)
0.00 - 1.10	Sediment: Pale Grey/Grey - mfg, abundant seaweed detritus and trace deposits throughout shell fraction, H_2S odour.	C07_S01	0.00 - 0.20
		C07_S02	0.20 - 0.50
		C07_S03	0.50 - 1.10
1.10 - 1.20	Sediment: Pale Grey - mfg, shell and sediment fractions, compact.	C07_S04	1.10 - 1.20

Additional details / comments:

MULTI-PARAMETER METER CALIBRATION RECORD

Project number: EEC19032.012

Site location: Rottnest Sediment Program Resample

Date	pH 7		pH 4		EC buffer µs/cm		Temp. °C		D.O. ppm		Redox		Scientist
	Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	Zero	Air	Temp. °C	Measurement	
23/03/2020	6.45	7	3.31	4	12692	12880	---	25.4	0	9.01	25.4	226	SMW

Multi-parameter meter details		Solution	Batch / lot	Expiry date	Zobell B solution, for Ag/AgCl saturated KCl electrode				Calibration notes:
Manufacturer:	YSI - Pro Series	pH 4 buffer			T °C	mV	T °C	mV	
Model number:		pH 7 buffer			5	273	20	240	
Serial number:	19B100163	EC buffer			10	262	25	229	
		Zobell B			15	251	30	218	

SURFACE WATER SAMPLING LOG

Project number:	EEC19032.012	**Weather:**	Fine
Site name:	Rottnest Army Jetty	**Sampling method:**	Bailer
Sampling area:	Dredge Grounds	**Easting / northing:**	SAP
Sampling location:	C01	**0.45 micron filter used (Y/N):**	N
Scientist:	SMW	**Sample preservation (ice/esky):**	Y
Date:	23/03/2020	**QAQC samples:**	---
Time:	15:40		

Sample I.D.	Appearance	Colour	Temp. (°C)	pH	E.C. (µS/cm)	Redox. (mV)	D.O. (ppm)
C01-SW	Clear	Colourless	23.7	8.06	54,763	152.2	7.05

Additional details / comments:

Odour (Y/N):	**Other:**
Staining (Y/N):	
Sheen (Y/N):	
Total titratable acidity (mg/L $CaCO_3$ equivalents):	
Total alkalinity (mg/L $CaCO_3$ equivalents):	

SURFACE WATER SAMPLING LOG

Project number:	EEC19032.012	**Weather:**	Fine
Site name:	Rottnest Army Jetty	**Sampling method:**	Bailer
Sampling area:	Dredge Grounds	**Easting / northing:**	SAP
Sampling location:	C04	**0.45 micron filter used (Y/N):**	N
Scientist:	SMW	**Sample preservation (ice/esky):**	Y
Date:	23/03/2020	**QAQC samples:**	Duplicate - WZ2, Triplicate - WZZ2
Time:	14:00		

Sample I.D.	Appearance	Colour	Temp. (°C)	pH	E.C. (µS/cm)	Redox. (mV)	D.O. (ppm)
C04-SW	Clear	Colourless	24.1	8.02	54,786	126.4	6.7

Additional details / comments:

Odour (Y/N):	**Other:**
Staining (Y/N):	
Sheen (Y/N):	
Total titratable acidity (mg/L $CaCO_3$ equivalents):	
Total alkalinity (mg/L $CaCO_3$ equivalents):	

SURFACE WATER SAMPLING LOG

Project number:	EEC19032.012	**Weather:**	Fine
Site name:	Rottnest Army Jetty	**Sampling method:**	Bailer
Sampling area:	Main Site	**Easting / northing:**	SAP
Sampling location:	C06	**0.45 micron filter used (Y/N):**	N
Scientist:	SMW	**Sample preservation (ice/esky):**	Y
Date:	23/03/2020	**QAQC samples:**	Duplicate - WZ1, Triplicate - WZZ1
Time:	10:00		

Sample I.D.	Appearance	Colour	Temp. (°C)	pH	E.C. (µS/cm)	Redox. (mV)	D.O. (ppm)
C06-SW	Clear	Colourless	23.1	7.89	54,122	-6.8	6.26

Additional details / comments:

Odour (Y/N):	**Other:**
Staining (Y/N):	
Sheen (Y/N):	
Total titratable acidity (mg/L $CaCO_3$ equivalents):	
Total alkalinity (mg/L $CaCO_3$ equivalents):	

Appendix B
Laboratory Reporting

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EP1911899**	Page	: 1 of 56
Client	: **RPS Australia West Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: SHAE MILLER-WHITE	Contact	: Rhiannon Steere
Address	: PO BOX 170 WEST PERTH WA 6872	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: 9211 1111	Telephone	: 08 9406 1306
Project	: EEC19032.011	Date Samples Received	: 13-Nov-2019 14:45
Order number	: ----	Date Analysis Commenced	: 13-Nov-2019
C-O-C number	: ----	Issue Date	: 06-Dec-2019 17:06
Sampler	: ----		
Site	: Rottnest Army Jetty		
Quote number	: EP/705/19		
No. of samples received	: 30		
No. of samples analysed	: 25		

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. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive 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*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA
David Viner	SENIOR LAB TECH	Perth Organics, Wangara, WA
Dian Dao		Sydney Inorganics, Smithfield, NSW
Diana Mesa	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Dianne Blane	Laboratory Coordinator (2IC)	Newcastle - Inorganics, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Evie Sidarta	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Uyen Dalkin	Approved Asbestos Identifier	Melbourne Asbestos, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

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

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

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

- TOC and TBT conducted by ALS Brisbane, NATA Site No. 818.
- Asbestos conducted by ALS Melbourne, NATA accreditation no. 825, site no 13778
- PSD conducted by ALS Newcastle, NATA accreditation no. 825, site no 1656.
- Elutriate, UT Organics and UT nutrients conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EG020T: Positive results for copper, zinc for samples EP1911899-025, 027 have been confirmed by re-digestion and re-analysis.
- EK267PA-SW, EK271A-SW: It has been noted that Reactive Phosphorus is greater than Total Phosphorus for sample no:17, however this difference is within the limits of experimental variation.
- EP132-SD: LOR has been raised for EP1911899-009, 021 due to suspected matrix effects and interferences.
- ASS: EA033 (CRS Suite): Retained Acidity not required because pH KCl greater than or equal to 4.5
- EP090 Organotin: High surrogate recovery deemed acceptable as all associated analyte results are less than LOR
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.
- EA200N: Asbestos weights and percentages are not covered under the Scope of NATA Accreditation.
  Weights of Asbestos are based on extracted bulk asbestos, fibre bundles, and/or ACM and do not include respirable fibres (if present)
  The Asbestos (Fines and Fibrous) weight is calculated from the extracted Fibrous Asbestos and Asbestos Fines as an equivalent weight of 100% Asbestos
  Percentages for Asbestos content in ACM are based on the 2013 NEPM default values.
  All calculations of percentage Asbestos under this method are approximate and should be used as a guide only.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.

- EN68: This analysis in accordance with National Ocean Disposal Guidelines, Commonwealth of Australia, 2002 - (modified). Results reported are those determined on a 1:4 sediment/seawater elutriate without blank correction.
- EA200N: ALS laboratory procedures and methods used for the identification and quantitation of asbestos are consistent with AS4964-2004 and the requirements of the 2013 NEPM for Assessment of Site Contamination
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.
- EG093: Samples containing high levels of sulfate may precipitate barium under the acidic conditions of this method and may therefore bias results low.

Analytical Results

Sub-Matrix: ELUTRIATE (Matrix: WATER)				Client sample ID	C01S01	C02S01	C03S03	C04S02	C05S03
				Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-001	EP1911899-004	EP1911899-009	EP1911899-011	EP1911899-015
					Result	Result	Result	Result	Result
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L		<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
EG093T: Total Metals in Saline Water by ORC-ICPMS									
Antimony	7440-36-0	0.5	µg/L		**4.9**	**3.2**	**5.2**	**1.6**	**9.6**
Arsenic	7440-38-2	0.5	µg/L		**9.7**	**24.0**	**8.8**	**7.8**	**14.8**
Cadmium	7440-43-9	0.2	µg/L		**0.3**	<0.2	<0.2	<0.2	<0.2
Chromium	7440-47-3	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt	7440-48-4	0.2	µg/L		<0.2	<0.2	<0.2	<0.2	<0.2
Copper	7440-50-8	1	µg/L		**5**	**2**	<1	<1	<1
Lead	7439-92-1	0.2	µg/L		**0.3**	<0.2	<0.2	<0.2	<0.2
Manganese	7439-96-5	0.5	µg/L		**2.8**	<0.5	<0.5	<0.5	<0.5
Nickel	7440-02-0	0.5	µg/L		**0.8**	<0.5	<0.5	<0.5	<0.5
Selenium	7782-49-2	2	µg/L		<2	<2	<2	<2	**2**
Silver	7440-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Vanadium	7440-62-2	0.5	µg/L		**45.9**	**45.3**	**136**	**102**	**175**
Zinc	7440-66-6	5	µg/L		**28**	**10**	<5	<5	**6**
EK255A: Ammonia									
Ammonia as N	7664-41-7	0.005	mg/L		**0.472**	**0.327**	<0.005	<0.005	**0.056**
EK257A: Nitrite									
Nitrite as N	14797-65-0	0.002	mg/L		<0.002	<0.002	<0.002	<0.002	<0.002
EK258A: Nitrate									
Nitrate as N	14797-55-8	0.002	mg/L		**0.004**	**0.006**	<0.002	<0.002	**0.004**
EK259A: Nitrite and Nitrate (NOx)									
Nitrite + Nitrate as N	----	0.002	mg/L		**0.004**	**0.006**	<0.002	<0.002	**0.004**
EK261A: Total Kjeldahl Nitrogen									
Total Kjeldahl Nitrogen as N	----	0.050	mg/L		**0.971**	**0.895**	**0.264**	**0.504**	**0.361**
EK262A: Total Nitrogen									
Total Nitrogen as N	----	0.050	mg/L		**0.975**	**0.901**	**0.264**	**0.504**	**0.365**
EK267A: Total Phosphorus (Persulfate Digestion)									
Total Phosphorus as P	----	0.005	mg/L		**0.054**	**0.102**	**0.010**	**0.019**	**0.017**
EK271A: Reactive Phosphorus									
Reactive Phosphorus as P	14265-44-2	0.001	mg/L		**0.047**	**0.086**	**0.004**	**0.001**	**0.015**
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Analytical Results

Sub-Matrix: ELUTRIATE (Matrix: WATER)				Client sample ID	C01S01	C02S01	C03S03	C04S02	C05S03
				Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-001	EP1911899-004	EP1911899-009	EP1911899-011	EP1911899-015
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0005**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		**0.263**	**0.0126**	**0.0087**	**0.0110**	**0.0070**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		**0.0010**	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0009**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		**0.0009**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		**0.0011**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		**0.0025**	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: ELUTRIATE (Matrix: WATER)				Client sample ID	C01S01	C02S01	C03S03	C04S02	C05S03
				Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-001	EP1911899-004	EP1911899-009	EP1911899-011	EP1911899-015
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		**0.003**	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		**0.264**	**0.0126**	**0.0087**	**0.0110**	**0.0070**
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.267**	**0.0126**	**0.0087**	**0.0110**	**0.0070**
^ Sum of PFAS	----	0.0002	µg/L		**0.273**	**0.0126**	**0.0087**	**0.0110**	**0.0070**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**63.8**	**61.8**	**65.2**	**69.9**	**73.0**
13C8-PFOA	----	0.0005	%		**82.4**	**80.3**	**82.9**	**83.9**	**81.3**

Analytical Results

Sub-Matrix: ELUTRIATE (Matrix: WATER)				Client sample ID	C06S02	C07S01	EW	----	----
				Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	13-Nov-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		EP1911899-017	EP1911899-019	EP1911899-030	--------	--------
					Result	Result	Result	----	----
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L		<0.00004	<0.00004	<0.00004	----	----
EG093T: Total Metals in Saline Water by ORC-ICPMS									
Antimony	7440-36-0	0.5	µg/L		<0.5	<0.5	<0.5	----	----
Arsenic	7440-38-2	0.5	µg/L		**3.9**	**3.0**	**1.3**	----	----
Cadmium	7440-43-9	0.2	µg/L		<0.2	<0.2	<0.2	----	----
Chromium	7440-47-3	0.5	µg/L		<0.5	<0.5	<0.5	----	----
Cobalt	7440-48-4	0.2	µg/L		<0.2	<0.2	<0.2	----	----
Copper	7440-50-8	1	µg/L		<1	<1	**1**	----	----
Lead	7439-92-1	0.2	µg/L		<0.2	<0.2	<0.2	----	----
Manganese	7439-96-5	0.5	µg/L		<0.5	**0.7**	<0.5	----	----
Nickel	7440-02-0	0.5	µg/L		<0.5	<0.5	<0.5	----	----
Selenium	7782-49-2	2	µg/L		<2	<2	<2	----	----
Silver	7440-22-4	0.1	µg/L		<0.1	<0.1	<0.1	----	----
Vanadium	7440-62-2	0.5	µg/L		**16.2**	<0.5	<0.5	----	----
Zinc	7440-66-6	5	µg/L		<5	**14**	**7**	----	----
EK255A: Ammonia									
Ammonia as N	7664-41-7	0.005	mg/L		**0.110**	<0.005	<0.005	----	----
EK257A: Nitrite									
Nitrite as N	14797-65-0	0.002	mg/L		<0.002	<0.002	<0.002	----	----
EK258A: Nitrate									
Nitrate as N	14797-55-8	0.002	mg/L		**0.005**	**0.009**	**0.003**	----	----
EK259A: Nitrite and Nitrate (NOx)									
Nitrite + Nitrate as N	----	0.002	mg/L		**0.005**	**0.009**	**0.003**	----	----
EK261A: Total Kjeldahl Nitrogen									
Total Kjeldahl Nitrogen as N	----	0.050	mg/L		**0.283**	**0.170**	**0.089**	----	----
EK262A: Total Nitrogen									
Total Nitrogen as N	----	0.050	mg/L		**0.288**	**0.179**	**0.092**	----	----
EK267A: Total Phosphorus (Persulfate Digestion)									
Total Phosphorus as P	----	0.005	mg/L		**0.050**	<0.005	<0.005	----	----
EK271A: Reactive Phosphorus									
Reactive Phosphorus as P	14265-44-2	0.001	mg/L		**0.053**	**0.004**	<0.001	----	----
EN68: Seawater Elutriate Testing Procedure									
Seawater Sampling Date	----	-	-		**----**	**----**	**21/11/2019**	----	----

Analytical Results

Sub-Matrix: ELUTRIATE (Matrix: WATER)				Client sample ID	C06S02	C07S01	EW	----	----
				Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	13-Nov-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		EP1911899-017	EP1911899-019	EP1911899-030	--------	--------
					Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		**0.0132**	**0.0197**	**0.0348**	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	----	----

Analytical Results

Sub-Matrix: ELUTRIATE (Matrix: WATER)				Client sample ID	C06S02	C07S01	EW	----	----
				Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	13-Nov-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		EP1911899-017	EP1911899-019	EP1911899-030	--------	--------
					Result	Result	Result	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	----	----
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		**0.0132**	**0.0197**	**0.0348**	----	----
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.0132**	**0.0197**	**0.0348**	----	----
^ Sum of PFAS	----	0.0002	µg/L		**0.0132**	**0.0197**	**0.0348**	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**74.3**	**94.5**	**94.4**	----	----
13C8-PFOA	----	0.0005	%		**88.0**	**93.9**	**89.1**	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C01S01	C01S03	C02S01	C02S02	C03S01
				Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-001	EP1911899-003	EP1911899-004	EP1911899-005	EP1911899-007
					Result	Result	Result	Result	Result
EA029-A: pH Measurements									
pH OX (23B)	----	0.1	pH Unit		7.9	7.9	8.0	----	7.9
EA029-B: Acidity Trail									
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t		<2	<2	<2	----	<2
EA033-A: Actual Acidity									
pH KCl (23A)	----	0.1	pH Unit		9.7	10.0	9.6	----	9.9
Titratable Actual Acidity (23F)	----	2	mole H+ / t		<2	<2	<2	----	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S		<0.02	<0.02	<0.02	----	<0.02
EA033-B: Potential Acidity									
Chromium Reducible Sulfur (22B)	----	0.005	% S		0.054	0.007	0.007	----	0.009
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t		34	<10	<10	----	<10
EA033-C: Acid Neutralising Capacity									
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3		83.7	87.4	83.9	----	83.2
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t		16700	17500	16800	----	16600
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S		26.8	28.0	26.9	----	26.6
EA033-E: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		1.5	1.5	1.5	----	1.5
Net Acidity (sulfur units)	----	0.02	% S		<0.02	<0.02	<0.02	----	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t		<10	<10	<10	----	<10
Liming Rate	----	1	kg CaCO3/t		<1	<1	<1	----	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S		0.05	<0.02	<0.02	----	<0.02
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t		34	<10	<10	----	<10
Liming Rate excluding ANC	----	1	kg CaCO3/t		3	<1	<1	----	<1
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		31.9	31.5	26.2	30.4	30.7
EA150: Particle Sizing									
+75µm	----	1	%		96	----	96	----	95
+150µm	----	1	%		73	----	82	----	60
+300µm	----	1	%		13	----	15	----	9
+425µm	----	1	%		6	----	6	----	5
+600µm	----	1	%		3	----	3	----	3
+1180µm	----	1	%		1	----	1	----	2

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C01S01	C01S03	C02S01	C02S02	C03S01
				Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-001	EP1911899-003	EP1911899-004	EP1911899-005	EP1911899-007
					Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued									
+2.36mm	----	1	%		<1	----	<1	----	1
+4.75mm	----	1	%		<1	----	<1	----	<1
+9.5mm	----	1	%		<1	----	<1	----	<1
+19.0mm	----	1	%		<1	----	<1	----	<1
+37.5mm	----	1	%		<1	----	<1	----	<1
+75.0mm	----	1	%		<1	----	<1	----	<1
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		4	----	3	----	2
Silt (2-60 µm)	----	1	%		<1	----	<1	----	2
Sand (0.06-2.00 mm)	----	1	%		95	----	96	----	95
Gravel (>2mm)	----	1	%		1	----	1	----	1
Cobbles (>6cm)	----	1	%		<1	----	<1	----	<1
EA152: Soil Particle Density									
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		2.70	----	2.68	----	2.69
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	----	No
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	----	No
Asbestos Type	1332-21-4	-	--		-	-	-	----	-
Sample weight (dry)	----	0.01	g		320	273	231	----	174
APPROVED IDENTIFIER:	----	-	--		U.DALKIN	U.DALKIN	U.DALKIN	----	U.DALKIN
Synthetic Mineral Fibre	----	0.1	g/kg		No	No	No	----	No
Organic Fibre	----	0.1	g/kg		Yes	Yes	Yes	----	Yes
EA200N: Asbestos Quantification (non-NATA)									
ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g		<0.0004	<0.0004	<0.0004	----	<0.0004
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)		<0.001	<0.001	<0.001	----	<0.001
ø Weight Used for % Calculation	----	0.0001	kg		0.320	0.273	0.231	----	0.174
ø Fibrous Asbestos >7mm	----	0.0004	g		<0.0004	<0.0004	<0.0004	----	<0.0004
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		1.47	<0.50	<0.50	0.85	<0.50
Arsenic	7440-38-2	1.00	mg/kg		1.79	<1.00	1.20	<1.00	<1.00
Cadmium	7440-43-9	0.1	mg/kg		0.3	0.2	0.1	0.2	0.1
Chromium	7440-47-3	1.0	mg/kg		11.2	9.7	11.0	10.1	9.9
Copper	7440-50-8	1.0	mg/kg		<1.0	<1.0	<1.0	<1.0	<1.0

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C01S01	C01S03	C02S01	C02S02	C03S01
				Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-001	EP1911899-003	EP1911899-004	EP1911899-005	EP1911899-007
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued									
Cobalt	7440-48-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Lead	7439-92-1	1.0	mg/kg		<1.0	<1.0	<1.0	<1.0	<1.0
Manganese	7439-96-5	10	mg/kg		<10	<10	<10	<10	<10
Nickel	7440-02-0	1.0	mg/kg		**1.6**	<1.0	<1.0	<1.0	<1.0
Selenium	7782-49-2	0.1	mg/kg		**0.3**	**0.1**	**0.3**	**0.2**	**0.2**
Silver	7440-22-4	0.1	mg/kg		**0.2**	<0.1	**0.2**	<0.1	<0.1
Vanadium	7440-62-2	2.0	mg/kg		**11.3**	**11.3**	**6.1**	**13.3**	**4.2**
Zinc	7440-66-6	1.0	mg/kg		**1.7**	**1.1**	**1.5**	**1.2**	**3.7**
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg		<0.1	<0.1	<0.1	----	<0.1
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg		<0.1	<0.1	<0.1	----	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg		<0.1	<0.1	<0.1	----	<0.1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		**330**	**310**	**230**	----	**260**
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg		**330**	**310**	**230**	----	**260**
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		**303**	**232**	**280**	----	**269**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.1	mg/kg		**0.1**	<0.1	**0.6**	----	**0.3**
EK255A SD: Ammonia in Sediment									
Ammonia as N	7664-41-7	0.2	mg/kg		**4.1**	<0.2	**0.7**	----	<0.2
EN68: Seawater Elutriate Testing Procedure									
Seawater Sampling Date	----	-	-		**21/11/2019**	----	**21/11/2019**	----	----
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		**0.46**	**0.32**	**0.48**	----	**0.34**
EP070: Total Petroleum Hydrocarbons - Speciation									
Aliphatic C16-C35	----	100	mg/kg		<100	----	<100	----	<100
Aliphatic > C35	----	100	mg/kg		<100	----	<100	----	<100

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C01S01	C01S03	C02S01	C02S02	C03S01
				Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-001	EP1911899-003	EP1911899-004	EP1911899-005	EP1911899-007
					Result	Result	Result	Result	Result
EP070: Total Petroleum Hydrocarbons - Speciation - Continued									
Aromatic C16-C35	----	90	mg/kg		<90	----	<90	----	<90
Aromatic > C35	----	100	mg/kg		<100	----	<100	----	<100
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
>C16 - C34 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	<5	<5	<5
>C10 - C40 Fraction (sum)	----	3	mg/kg		<3	<3	<3	<3	<3
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	<3	<3	<3	<3
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
C10 - C14 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
C15 - C28 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
C29 - C36 Fraction	----	5	mg/kg		<5	<5	<5	<5	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg		<3	<3	<3	<3	<3
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	<3	<3	<3
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	<3.0	<3.0	<3.0
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	<0.5	<0.5	----	<0.5
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	10	µg/kg		<10	<10	<10	<10	<10
Carbophenothion	786-19-6	10	µg/kg		<10	<10	<10	<10	<10
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg		<10.0	<10.0	<10.0	<10.0	<10.0

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C01S01	C01S03	C02S01	C02S02	C03S01
				Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-001	EP1911899-003	EP1911899-004	EP1911899-005	EP1911899-007
					Result	Result	Result	Result	Result
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued									
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg		<10	<10	<10	<10	<10
Chlorpyrifos	2921-88-2	10	µg/kg		<10	<10	<10	<10	<10
Chlorpyrifos-methyl	5598-13-0	10	µg/kg		<10	<10	<10	<10	<10
Demeton-S-methyl	919-86-8	10	µg/kg		<10	<10	<10	<10	<10
Diazinon	333-41-5	10	µg/kg		<10	<10	<10	<10	<10
Dichlorvos	62-73-7	10	µg/kg		<10	<10	<10	<10	<10
Dimethoate	60-51-5	10	µg/kg		<10	<10	<10	<10	<10
Ethion	563-12-2	10	µg/kg		<10	<10	<10	<10	<10
Fenamiphos	22224-92-6	10	µg/kg		<10	<10	<10	<10	<10
Fenthion	55-38-9	10	µg/kg		<10	<10	<10	<10	<10
Malathion	121-75-5	10	µg/kg		<10	<10	<10	<10	<10
Azinphos Methyl	86-50-0	10	µg/kg		<10	<10	<10	<10	<10
Monocrotophos	6923-22-4	10	µg/kg		<10	<10	<10	<10	<10
Parathion	56-38-2	10	µg/kg		<10	<10	<10	<10	<10
Parathion-methyl	298-00-0	10	µg/kg		<10	<10	<10	<10	<10
Pirimphos-ethyl	23505-41-1	10	µg/kg		<10	<10	<10	<10	<10
Prothiofos	34643-46-4	10	µg/kg		<10	<10	<10	<10	<10
EP131A: Organochlorine Pesticides									
Aldrin	309-00-2	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
alpha-BHC	319-84-6	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
beta-BHC	319-85-7	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
delta-BHC	319-86-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
4.4`-DDD	72-54-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
4.4`-DDE	72-55-9	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
4.4`-DDT	50-29-3	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Dieldrin	60-57-1	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
alpha-Endosulfan	959-98-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
beta-Endosulfan	33213-65-9	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Endosulfan sulfate	1031-07-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
^ Endosulfan (sum)	115-29-7	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Endrin	72-20-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Endrin aldehyde	7421-93-4	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Endrin ketone	53494-70-5	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C01S01	C01S03	C02S01	C02S02	C03S01
				Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-001	EP1911899-003	EP1911899-004	EP1911899-005	EP1911899-007
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
Heptachlor	76-44-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor epoxide	1024-57-3	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
gamma-BHC	58-89-9	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	<0.25
Methoxychlor	72-43-5	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
cis-Chlordane	5103-71-9	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	<0.25
trans-Chlordane	5103-74-2	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	<0.25
^ Total Chlordane (sum)	----	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	<0.25
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	<5	<5	<5	<5
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	<5	<5	<5	<5
Acenaphthylene	208-96-8	4	µg/kg		<4	<4	<4	<4	<4
Acenaphthene	83-32-9	4	µg/kg		<4	<4	<4	<4	<4
Fluorene	86-73-7	4	µg/kg		<4	<4	<4	<4	<4
Phenanthrene	85-01-8	4	µg/kg		<4	<4	<4	<4	<4
Anthracene	120-12-7	4	µg/kg		<4	<4	<4	<4	<4
Fluoranthene	206-44-0	4	µg/kg		<4	<4	<4	<4	<4
Pyrene	129-00-0	4	µg/kg		<4	<4	<4	<4	<4
Benz(a)anthracene	56-55-3	4	µg/kg		<4	<4	<4	<4	<4
Chrysene	218-01-9	4	µg/kg		<4	<4	<4	<4	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	<4	<4	<4	<4
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	<4	<4	<4	<4
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	<4	<4	<4	<4
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	<4	<4	<4	<4
Perylene	198-55-0	4	µg/kg		<4	<4	<4	<4	<4
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		<4	<4	<4	<4	<4
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		<4	<4	<4	<4	<4
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<4	<4	<4	<4	<4
Coronene	191-07-1	5	µg/kg		<5	<5	<5	<5	<5
^ Sum of PAHs	----	4	µg/kg		<4	<4	<4	<4	<4
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		<4	<4	<4	<4	<4
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		5	5	5	5	5
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		10	10	10	10	10

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C01S01	C01S03	C02S01	C02S02	C03S01
				Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-001	EP1911899-003	EP1911899-004	EP1911899-005	EP1911899-007
					Result	Result	Result	Result	Result
EP203A: Explosives									
HMX	2691-41-0	0.1	mg/kg		<0.1	<0.1	<0.1	----	<0.1
RDX	----	0.1	mg/kg		<0.1	<0.1	<0.1	----	<0.1
1.3.5-Trinitrobenzene	99-35-4	0.1	mg/kg		<0.1	<0.1	<0.1	----	<0.1
1.3-Dinitrobenzene	99-65-0	0.1	mg/kg		<0.1	<0.1	<0.1	----	<0.1
Tetryl	479-45-8	0.1	mg/kg		<0.1	<0.1	<0.1	----	<0.1
2.4.6-TNT	118-96-7	0.1	mg/kg		<0.1	<0.1	<0.1	----	<0.1
4-Amino.2.6-DNT	19406-51-0	0.1	mg/kg		<0.1	<0.1	<0.1	----	<0.1
2-Amino-4.6-DNT	35572-78-2	0.1	mg/kg		<0.1	<0.1	<0.1	----	<0.1
^ 4-& 2-AM-DNT(Isomeric Mixture)	----	0.1	mg/kg		<0.1	<0.1	<0.1	----	<0.1
2.4-Dinitrotoluene	121-14-2	0.1	mg/kg		<0.1	<0.1	<0.1	----	<0.1
2.6-Dinitrotoluene	606-20-2	0.1	mg/kg		<0.1	<0.1	<0.1	----	<0.1
^ 2.4-& 2.6-DNT(Isomeric Mixture)	121-14-2/606-20-2	0.1	mg/kg		<0.1	<0.1	<0.1	----	<0.1
Nitrobenzene	98-95-3	0.1	mg/kg		<0.1	<0.1	<0.1	----	<0.1
2-Nitrotoluene	88-72-2	0.1	mg/kg		<0.1	<0.1	<0.1	----	<0.1
3-Nitrotoluene	99-08-1	0.1	mg/kg		<0.1	<0.1	<0.1	----	<0.1
4-Nitrotoluene	99-99-0	0.1	mg/kg		<0.1	<0.1	<0.1	----	<0.1
Nitroglycerine	55-63-0	1	mg/kg		<1	<1	<1	----	<1
PETN	78-11-5	1	mg/kg		<1	<1	<1	----	<1
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	<0.0002	<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		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
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

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C01S01	C01S03	C02S01	C02S02	C03S01
				Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-001	EP1911899-003	EP1911899-004	EP1911899-005	EP1911899-007
					Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
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
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

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C01S01	C01S03	C02S01	C02S02	C03S01
				Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-001	EP1911899-003	EP1911899-004	EP1911899-005	EP1911899-007
					Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
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		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP070: Total Petroleum Hydrocarbons - Speciation									
2-Bromonaphthalene	580-13-2	1	%		103	----	75.6	----	89.7
2-Fluorobiphenyl	321-60-8	1	%		116	----	108	----	103
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		78.2	95.6	88.6	91.6	89.0
Toluene-D8	2037-26-5	0.2	%		83.0	76.6	101	91.3	83.5
4-Bromofluorobenzene	460-00-4	0.2	%		72.1	85.1	72.2	72.7	76.1
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		106	102	94.9	----	114
EP130S: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	10	%		57.8	49.4	69.0	71.4	73.3
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		74.6	56.3	67.4	74.9	68.4
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		99.4	97.8	104	88.6	85.9
Anthracene-d10	1719-06-8	10	%		97.4	106	104	91.5	96.4
4-Terphenyl-d14	1718-51-0	10	%		83.9	106	84.0	72.8	77.4
EP203S: Explosives Surrogate									
o-Dinitrobenzene	528-29-0	0.1	%		104	106	103	----	102
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		87.0	83.0	76.5	86.0	81.0
13C8-PFOA	----	0.0002	%		81.5	85.5	76.0	81.5	76.5

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	C03S03	C04S01	C04S02	C05S01	C05S02
			Client sampling date / time	12-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EP1911899-009	EP1911899-010	EP1911899-011	EP1911899-013	EP1911899-014
				Result	Result	Result	Result	Result
EA029-A: pH Measurements								
pH OX (23B)	----	0.1	pH Unit	----	8.0	----	8.0	----
EA029-B: Acidity Trail								
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	<2	----	<2	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	----	9.7	----	10.0	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	<2	----	<2	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	<0.02	----	<0.02	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	----	0.008	----	0.005	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	----	<10	----	<10	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	85.8	----	85.5	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	17100	----	17100	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	27.5	----	27.4	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	1.5	----	1.5	----
Net Acidity (sulfur units)	----	0.02	% S	----	<0.02	----	<0.02	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	<10	----	<10	----
Liming Rate	----	1	kg CaCO3/t	----	<1	----	<1	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	<0.02	----	<0.02	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	<10	----	<10	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	<1	----	<1	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	----	----	----	----	28.5
Moisture Content	----	1.0	%	32.4	28.5	35.3	24.2	----
EA150: Particle Sizing								
+75µm	----	1	%	----	96	----	----	96
+150µm	----	1	%	----	67	----	----	62
+300µm	----	1	%	----	10	----	----	15
+425µm	----	1	%	----	5	----	----	10
+600µm	----	1	%	----	3	----	----	6

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C03S03	C04S01	C04S02	C05S01	C05S02
				Client sampling date / time	12-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-009	EP1911899-010	EP1911899-011	EP1911899-013	EP1911899-014
					Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued									
+1180µm	----	1	%		----	1	----	----	2
+2.36mm	----	1	%		----	<1	----	----	1
+4.75mm	----	1	%		----	<1	----	----	<1
+9.5mm	----	1	%		----	<1	----	----	<1
+19.0mm	----	1	%		----	<1	----	----	<1
+37.5mm	----	1	%		----	<1	----	----	<1
+75.0mm	----	1	%		----	<1	----	----	<1
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		----	3	----	----	3
Silt (2-60 µm)	----	1	%		----	<1	----	----	<1
Sand (0.06-2.00 mm)	----	1	%		----	96	----	----	96
Gravel (>2mm)	----	1	%		----	1	----	----	1
Cobbles (>6cm)	----	1	%		----	<1	----	----	<1
EA152: Soil Particle Density									
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		----	2.68	----	----	2.67
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		----	No	----	No	----
Asbestos (Trace)	1332-21-4	5	Fibres		----	No	----	No	----
Asbestos Type	1332-21-4	-	--		----	-	----	-	----
Sample weight (dry)	----	0.01	g		----	323	----	299	----
APPROVED IDENTIFIER:	----	-	--		----	U.DALKIN	----	U.DALKIN	----
Synthetic Mineral Fibre	----	0.1	g/kg		----	No	----	No	----
Organic Fibre	----	0.1	g/kg		----	Yes	----	Yes	----
EA200N: Asbestos Quantification (non-NATA)									
ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g		----	<0.0004	----	<0.0004	----
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)		----	<0.001	----	<0.001	----
ø Weight Used for % Calculation	----	0.0001	kg		----	0.323	----	0.299	----
ø Fibrous Asbestos >7mm	----	0.0004	g		----	<0.0004	----	<0.0004	----
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		0.77	0.61	<0.50	<0.50	----
Arsenic	7440-38-2	1.00	mg/kg		1.21	1.18	<1.00	1.18	----
Cadmium	7440-43-9	0.1	mg/kg		0.1	0.2	0.2	<0.1	----
Chromium	7440-47-3	1.0	mg/kg		10.2	10.4	10.6	9.4	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C03S03	C04S01	C04S02	C05S01	C05S02
				Client sampling date / time	12-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-009	EP1911899-010	EP1911899-011	EP1911899-013	EP1911899-014
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued									
Copper	7440-50-8	1.0	mg/kg		<1.0	<1.0	<1.0	<1.0	----
Cobalt	7440-48-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Lead	7439-92-1	1.0	mg/kg		**1.0**	<1.0	<1.0	<1.0	----
Manganese	7439-96-5	10	mg/kg		<10	<10	<10	<10	----
Nickel	7440-02-0	1.0	mg/kg		<1.0	<1.0	**1.0**	<1.0	----
Selenium	7782-49-2	0.1	mg/kg		**0.2**	**0.2**	**0.2**	**0.1**	----
Silver	7440-22-4	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
Vanadium	7440-62-2	2.0	mg/kg		**12.3**	**10.5**	**12.4**	<2.0	----
Zinc	7440-66-6	1.0	mg/kg		**3.5**	**2.2**	**1.3**	**2.0**	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg		----	<0.1	----	<0.1	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg		----	<0.1	----	<0.1	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg		----	<0.1	----	<0.1	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		----	**330**	----	**250**	----
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg		----	**330**	----	**250**	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		----	**254**	----	**274**	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.1	mg/kg		----	**0.8**	----	**0.2**	----
EK255A SD: Ammonia in Sediment									
Ammonia as N	7664-41-7	0.2	mg/kg		----	**20.6**	----	<0.2	----
EN68: Seawater Elutriate Testing Procedure									
Seawater Sampling Date	----	-	-		**21/11/2019**	----	**21/11/2019**	----	----
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		----	**0.72**	----	**0.23**	----
EP070: Total Petroleum Hydrocarbons - Speciation									
Aliphatic C16-C35	----	100	mg/kg		----	<100	----	----	<100

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C03S03	C04S01	C04S02	C05S01	C05S02
				Client sampling date / time	12-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-009	EP1911899-010	EP1911899-011	EP1911899-013	EP1911899-014
					Result	Result	Result	Result	Result
EP070: Total Petroleum Hydrocarbons - Speciation - Continued									
Aliphatic > C35	----	100	mg/kg		----	<100	----	----	<100
Aromatic C16-C35	----	90	mg/kg		----	<90	----	----	<90
Aromatic > C35	----	100	mg/kg		----	<100	----	----	<100
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	<3	<3	<3	----
>C16 - C34 Fraction	----	3	mg/kg		<3	<3	<3	<3	----
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	<5	<5	----
>C10 - C40 Fraction (sum)	----	3	mg/kg		<3	<3	<3	<3	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	<3	<3	<3	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	<3	<3	<3	----
C10 - C14 Fraction	----	3	mg/kg		<3	<3	<3	<3	----
C15 - C28 Fraction	----	3	mg/kg		<3	<3	<3	<3	----
C29 - C36 Fraction	----	5	mg/kg		<5	<5	<5	<5	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg		<3	<3	<3	<3	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	<3	<3	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	<3.0	<3.0	----
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Naphthalene	91-20-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		----	<0.5	----	<0.5	----
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	10	µg/kg		<10	<10	<10	<10	----
Carbophenothion	786-19-6	10	µg/kg		<10	<10	<10	<10	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C03S03	C04S01	C04S02	C05S01	C05S02
				Client sampling date / time	12-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-009	EP1911899-010	EP1911899-011	EP1911899-013	EP1911899-014
					Result	Result	Result	Result	Result
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued									
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg		<10.0	<10.0	<10.0	<10.0	----
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg		<10	<10	<10	<10	----
Chlorpyrifos	2921-88-2	10	µg/kg		<10	<10	<10	<10	----
Chlorpyrifos-methyl	5598-13-0	10	µg/kg		<10	<10	<10	<10	----
Demeton-S-methyl	919-86-8	10	µg/kg		<10	<10	<10	<10	----
Diazinon	333-41-5	10	µg/kg		<10	<10	<10	<10	----
Dichlorvos	62-73-7	10	µg/kg		<10	<10	<10	<10	----
Dimethoate	60-51-5	10	µg/kg		<10	<10	<10	<10	----
Ethion	563-12-2	10	µg/kg		<10	<10	<10	<10	----
Fenamiphos	22224-92-6	10	µg/kg		<10	<10	<10	<10	----
Fenthion	55-38-9	10	µg/kg		<10	<10	<10	<10	----
Malathion	121-75-5	10	µg/kg		<10	<10	<10	<10	----
Azinphos Methyl	86-50-0	10	µg/kg		<10	<10	<10	<10	----
Monocrotophos	6923-22-4	10	µg/kg		<10	<10	<10	<10	----
Parathion	56-38-2	10	µg/kg		<10	<10	<10	<10	----
Parathion-methyl	298-00-0	10	µg/kg		<10	<10	<10	<10	----
Pirimphos-ethyl	23505-41-1	10	µg/kg		<10	<10	<10	<10	----
Prothiofos	34643-46-4	10	µg/kg		<10	<10	<10	<10	----
EP131A: Organochlorine Pesticides									
Aldrin	309-00-2	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
alpha-BHC	319-84-6	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
beta-BHC	319-85-7	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
delta-BHC	319-86-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
4.4`-DDD	72-54-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
4.4`-DDE	72-55-9	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
4.4`-DDT	50-29-3	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
Dieldrin	60-57-1	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
alpha-Endosulfan	959-98-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
beta-Endosulfan	33213-65-9	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
^ Endosulfan (sum)	115-29-7	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
Endrin	72-20-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
Endrin aldehyde	7421-93-4	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C03S03	C04S01	C04S02	C05S01	C05S02
				Client sampling date / time	12-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-009	EP1911899-010	EP1911899-011	EP1911899-013	EP1911899-014
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
Endrin ketone	53494-70-5	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
Heptachlor	76-44-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
gamma-BHC	58-89-9	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	----
Methoxychlor	72-43-5	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
cis-Chlordane	5103-71-9	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	----
trans-Chlordane	5103-74-2	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	----
^ Total Chlordane (sum)	----	0.25	µg/kg		<0.25	<0.25	<0.25	<0.25	----
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	<0.50	<0.50	<0.50	----
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	<5	<5	<5	----
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	<5	<5	<5	----
Acenaphthylene	208-96-8	4	µg/kg		<8	<4	<4	<4	----
Acenaphthene	83-32-9	4	µg/kg		<4	<4	<4	<4	----
Fluorene	86-73-7	4	µg/kg		<4	<4	<4	<4	----
Phenanthrene	85-01-8	4	µg/kg		<4	<4	<4	<4	----
Anthracene	120-12-7	4	µg/kg		<20	<4	<4	<4	----
Fluoranthene	206-44-0	4	µg/kg		<20	<4	<4	<4	----
Pyrene	129-00-0	4	µg/kg		<20	<4	<4	<4	----
Benz(a)anthracene	56-55-3	4	µg/kg		<20	<4	<4	<4	----
Chrysene	218-01-9	4	µg/kg		<20	<4	<4	<4	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<20	<4	<4	<4	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<20	<4	<4	<4	----
Benzo(e)pyrene	192-97-2	4	µg/kg		<20	<4	<4	<4	----
Benzo(a)pyrene	50-32-8	4	µg/kg		<20	<4	<4	<4	----
Perylene	198-55-0	4	µg/kg		<4	<4	<4	<4	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		<4	<4	<4	<4	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		<4	<4	<4	<4	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<20	<4	<4	<4	----
Coronene	191-07-1	5	µg/kg		<5	<5	<5	<5	----
^ Sum of PAHs	----	4	µg/kg		<4	<4	<4	<4	----
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		<4	<4	<4	<4	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		5	5	5	5	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		10	10	10	10	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C03S03	C04S01	C04S02	C05S01	C05S02
				Client sampling date / time	12-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-009	EP1911899-010	EP1911899-011	EP1911899-013	EP1911899-014
					Result	Result	Result	Result	Result
EP203A: Explosives									
HMX	2691-41-0	0.1	mg/kg		----	<0.1	----	<0.1	----
RDX	----	0.1	mg/kg		----	<0.1	----	<0.1	----
1.3.5-Trinitrobenzene	99-35-4	0.1	mg/kg		----	<0.1	----	<0.1	----
1.3-Dinitrobenzene	99-65-0	0.1	mg/kg		----	<0.1	----	<0.1	----
Tetryl	479-45-8	0.1	mg/kg		----	<0.1	----	<0.1	----
2.4.6-TNT	118-96-7	0.1	mg/kg		----	<0.1	----	<0.1	----
4-Amino.2.6-DNT	19406-51-0	0.1	mg/kg		----	<0.1	----	<0.1	----
2-Amino-4.6-DNT	35572-78-2	0.1	mg/kg		----	<0.1	----	<0.1	----
^ 4-& 2-AM-DNT(Isomeric Mixture)	----	0.1	mg/kg		----	<0.1	----	<0.1	----
2.4-Dinitrotoluene	121-14-2	0.1	mg/kg		----	<0.1	----	<0.1	----
2.6-Dinitrotoluene	606-20-2	0.1	mg/kg		----	<0.1	----	<0.1	----
^ 2.4-& 2.6-DNT(Isomeric Mixture)	121-14-2/606-20-2	0.1	mg/kg		----	<0.1	----	<0.1	----
Nitrobenzene	98-95-3	0.1	mg/kg		----	<0.1	----	<0.1	----
2-Nitrotoluene	88-72-2	0.1	mg/kg		----	<0.1	----	<0.1	----
3-Nitrotoluene	99-08-1	0.1	mg/kg		----	<0.1	----	<0.1	----
4-Nitrotoluene	99-99-0	0.1	mg/kg		----	<0.1	----	<0.1	----
Nitroglycerine	55-63-0	1	mg/kg		----	<1	----	<1	----
PETN	78-11-5	1	mg/kg		----	<1	----	<1	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<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	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		<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	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	**0.0004**	<0.0002	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<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	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<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	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C03S03	C04S01	C04S02	C05S01	C05S02
				Client sampling date / time	12-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-009	EP1911899-010	EP1911899-011	EP1911899-013	EP1911899-014
					Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<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	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<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	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<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	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<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	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<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	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<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	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<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	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<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	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<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	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C03S03	C04S01	C04S02	C05S01	C05S02
				Client sampling date / time	12-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00	13-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-009	EP1911899-010	EP1911899-011	EP1911899-013	EP1911899-014
					Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		<0.0002	<0.0002	**0.0004**	<0.0002	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	**0.0004**	<0.0002	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	<0.0002	**0.0004**	<0.0002	----
EP070: Total Petroleum Hydrocarbons - Speciation									
2-Bromonaphthalene	580-13-2	1	%		----	**92.1**	----	----	**96.0**
2-Fluorobiphenyl	321-60-8	1	%		----	**105**	----	----	**111**
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**94.6**	**88.9**	**96.4**	**102**	----
Toluene-D8	2037-26-5	0.2	%		**86.2**	**93.3**	**75.8**	**79.2**	----
4-Bromofluorobenzene	460-00-4	0.2	%		**73.4**	**76.2**	**80.3**	**85.1**	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		----	**101**	----	**104**	----
EP130S: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	10	%		**54.8**	**68.4**	**55.7**	**60.7**	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		**94.4**	**50.9**	**47.9**	**65.0**	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		**92.6**	**113**	**83.1**	**105**	----
Anthracene-d10	1719-06-8	10	%		**99.5**	**113**	**94.2**	**109**	----
4-Terphenyl-d14	1718-51-0	10	%		**84.9**	**103**	**80.2**	**86.4**	----
EP203S: Explosives Surrogate									
o-Dinitrobenzene	528-29-0	0.1	%		----	**108**	----	**101**	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**74.0**	**75.0**	**88.5**	**90.5**	----
13C8-PFOA	----	0.0002	%		**81.0**	**83.5**	**81.5**	**83.0**	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C05S03	C06S01	C06S02	C06S03	C07S01
				Client sampling date / time	13-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-015	EP1911899-016	EP1911899-017	EP1911899-018	EP1911899-019
					Result	Result	Result	Result	Result
EA029-A: pH Measurements									
pH OX (23B)	----	0.1	pH Unit		----	8.1	----	8.1	8.1
EA029-B: Acidity Trail									
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t		----	<2	----	<2	<2
EA033-A: Actual Acidity									
pH KCl (23A)	----	0.1	pH Unit		----	10.1	----	10.0	10.1
Titratable Actual Acidity (23F)	----	2	mole H+ / t		----	<2	----	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S		----	<0.02	----	<0.02	<0.02
EA033-B: Potential Acidity									
Chromium Reducible Sulfur (22B)	----	0.005	% S		----	0.008	----	0.024	0.007
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t		----	<10	----	15	<10
EA033-C: Acid Neutralising Capacity									
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3		----	83.8	----	78.5	85.2
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t		----	16700	----	15700	17000
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S		----	26.8	----	25.2	27.3
EA033-E: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		----	1.5	----	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S		----	<0.02	----	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t		----	<10	----	<10	<10
Liming Rate	----	1	kg CaCO3/t		----	<1	----	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S		----	<0.02	----	0.02	<0.02
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t		----	<10	----	15	<10
Liming Rate excluding ANC	----	1	kg CaCO3/t		----	<1	----	1	<1
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		----	----	----	22.4	----
Moisture Content	----	1.0	%		26.2	20.9	26.1	----	20.6
EA150: Particle Sizing									
+75µm	----	1	%		----	----	----	97	----
+150µm	----	1	%		----	----	----	82	----
+300µm	----	1	%		----	----	----	48	----
+425µm	----	1	%		----	----	----	30	----
+600µm	----	1	%		----	----	----	12	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C05S03	C06S01	C06S02	C06S03	C07S01
				Client sampling date / time	13-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-015	EP1911899-016	EP1911899-017	EP1911899-018	EP1911899-019
					Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued									
+1180µm	----	1	%		----	----	----	4	----
+2.36mm	----	1	%		----	----	----	2	----
+4.75mm	----	1	%		----	----	----	2	----
+9.5mm	----	1	%		----	----	----	<1	----
+19.0mm	----	1	%		----	----	----	<1	----
+37.5mm	----	1	%		----	----	----	<1	----
+75.0mm	----	1	%		----	----	----	<1	----
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		----	----	----	2	----
Silt (2-60 µm)	----	1	%		----	----	----	<1	----
Sand (0.06-2.00 mm)	----	1	%		----	----	----	95	----
Gravel (>2mm)	----	1	%		----	----	----	3	----
Cobbles (>6cm)	----	1	%		----	----	----	<1	----
EA152: Soil Particle Density									
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		----	----	----	2.70	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		----	No	----	----	No
Asbestos (Trace)	1332-21-4	5	Fibres		----	No	----	----	No
Asbestos Type	1332-21-4	-	--		----	-	----	----	-
Sample weight (dry)	----	0.01	g		----	444	----	----	381
APPROVED IDENTIFIER:	----	-	--		----	U.DALKIN	----	----	U.DALKIN
Synthetic Mineral Fibre	----	0.1	g/kg		----	No	----	----	No
Organic Fibre	----	0.1	g/kg		----	Yes	----	----	Yes
EA200N: Asbestos Quantification (non-NATA)									
ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g		----	<0.0004	----	----	<0.0004
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)		----	<0.001	----	----	<0.001
ø Weight Used for % Calculation	----	0.0001	kg		----	0.444	----	----	0.381
ø Fibrous Asbestos >7mm	----	0.0004	g		----	<0.0004	----	----	<0.0004
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		<0.50	<0.50	<0.50	----	<0.50
Arsenic	7440-38-2	1.00	mg/kg		<1.00	1.26	1.14	----	1.32
Cadmium	7440-43-9	0.1	mg/kg		0.1	<0.1	0.1	----	0.1
Chromium	7440-47-3	1.0	mg/kg		9.5	8.8	8.8	----	9.2

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C05S03	C06S01	C06S02	C06S03	C07S01
				Client sampling date / time	13-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-015	EP1911899-016	EP1911899-017	EP1911899-018	EP1911899-019
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued									
Copper	7440-50-8	1.0	mg/kg		<1.0	<1.0	<1.0	----	<1.0
Cobalt	7440-48-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	<0.5
Lead	7439-92-1	1.0	mg/kg		<1.0	<1.0	<1.0	----	<1.0
Manganese	7439-96-5	10	mg/kg		<10	<10	<10	----	<10
Nickel	7440-02-0	1.0	mg/kg		<1.0	<1.0	<1.0	----	<1.0
Selenium	7782-49-2	0.1	mg/kg		**0.1**	<0.1	<0.1	----	<0.1
Silver	7440-22-4	0.1	mg/kg		<0.1	<0.1	<0.1	----	**0.1**
Vanadium	7440-62-2	2.0	mg/kg		**3.2**	<2.0	**2.7**	----	<2.0
Zinc	7440-66-6	1.0	mg/kg		**3.9**	**1.8**	**2.6**	----	**1.5**
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		<0.01	<0.01	<0.01	----	<0.01
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg		----	<0.1	----	----	<0.1
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg		----	<0.1	----	----	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg		----	<0.1	----	----	<0.1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		----	**190**	----	----	**210**
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg		----	**190**	----	----	**210**
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		----	**311**	----	----	**327**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.1	mg/kg		----	**0.2**	----	----	**0.3**
EK255A SD: Ammonia in Sediment									
Ammonia as N	7664-41-7	0.2	mg/kg		----	**0.4**	----	----	**1.0**
EN68: Seawater Elutriate Testing Procedure									
Seawater Sampling Date	----	-	-		**21/11/2019**	----	**21/11/2019**	----	**21/11/2019**
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		----	**0.05**	----	----	**0.04**
EP070: Total Petroleum Hydrocarbons - Speciation									
Aliphatic C16-C35	----	100	mg/kg		----	----	----	<100	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C05S03	C06S01	C06S02	C06S03	C07S01
				Client sampling date / time	13-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-015	EP1911899-016	EP1911899-017	EP1911899-018	EP1911899-019
					Result	Result	Result	Result	Result
EP070: Total Petroleum Hydrocarbons - Speciation - Continued									
Aliphatic > C35	----	100	mg/kg		----	----	----	<100	----
Aromatic C16-C35	----	90	mg/kg		----	----	----	<90	----
Aromatic > C35	----	100	mg/kg		----	----	----	<100	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	<3	<3	----	<3
>C16 - C34 Fraction	----	3	mg/kg		<3	5	<3	----	<3
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	<5	----	<5
>C10 - C40 Fraction (sum)	----	3	mg/kg		<3	5	<3	----	<3
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	<3	<3	----	<3
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	<3	<3	----	<3
C10 - C14 Fraction	----	3	mg/kg		<3	<3	<3	----	<3
C15 - C28 Fraction	----	3	mg/kg		<3	5	<3	----	<3
C29 - C36 Fraction	----	5	mg/kg		<5	<5	<5	----	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg		<3	5	<3	----	<3
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	<3	----	<3
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	<3.0	----	<3.0
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	----	<0.2
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2	<0.2	----	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	<0.2	----	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2	<0.2	----	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	<0.2	----	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	----	<0.2
Naphthalene	91-20-3	0.2	mg/kg		<0.2	<0.2	<0.2	----	<0.2
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		----	<0.5	----	----	<0.5
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	10	µg/kg		<10	<10	<10	----	<10
Carbophenothion	786-19-6	10	µg/kg		<10	<10	<10	----	<10

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C05S03	C06S01	C06S02	C06S03	C07S01
				Client sampling date / time	13-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-015	EP1911899-016	EP1911899-017	EP1911899-018	EP1911899-019
					Result	Result	Result	Result	Result
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued									
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg		<10.0	<10.0	<10.0	----	<10.0
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg		<10	<10	<10	----	<10
Chlorpyrifos	2921-88-2	10	µg/kg		<10	<10	<10	----	<10
Chlorpyrifos-methyl	5598-13-0	10	µg/kg		<10	<10	<10	----	<10
Demeton-S-methyl	919-86-8	10	µg/kg		<10	<10	<10	----	<10
Diazinon	333-41-5	10	µg/kg		<10	<10	<10	----	<10
Dichlorvos	62-73-7	10	µg/kg		<10	<10	<10	----	<10
Dimethoate	60-51-5	10	µg/kg		<10	<10	<10	----	<10
Ethion	563-12-2	10	µg/kg		<10	<10	<10	----	<10
Fenamiphos	22224-92-6	10	µg/kg		<10	<10	<10	----	<10
Fenthion	55-38-9	10	µg/kg		<10	<10	<10	----	<10
Malathion	121-75-5	10	µg/kg		<10	<10	<10	----	<10
Azinphos Methyl	86-50-0	10	µg/kg		<10	<10	<10	----	<10
Monocrotophos	6923-22-4	10	µg/kg		<10	<10	<10	----	<10
Parathion	56-38-2	10	µg/kg		<10	<10	<10	----	<10
Parathion-methyl	298-00-0	10	µg/kg		<10	<10	<10	----	<10
Pirimphos-ethyl	23505-41-1	10	µg/kg		<10	<10	<10	----	<10
Prothiofos	34643-46-4	10	µg/kg		<10	<10	<10	----	<10
EP131A: Organochlorine Pesticides									
Aldrin	309-00-2	0.50	µg/kg		<0.50	<0.50	<0.50	----	<0.50
alpha-BHC	319-84-6	0.50	µg/kg		<0.50	<0.50	<0.50	----	<0.50
beta-BHC	319-85-7	0.50	µg/kg		<0.50	<0.50	<0.50	----	<0.50
delta-BHC	319-86-8	0.50	µg/kg		<0.50	<0.50	<0.50	----	<0.50
4.4`-DDD	72-54-8	0.50	µg/kg		<0.50	<0.50	<0.50	----	<0.50
4.4`-DDE	72-55-9	0.50	µg/kg		<0.50	<0.50	<0.50	----	<0.50
4.4`-DDT	50-29-3	0.50	µg/kg		<0.50	<0.50	<0.50	----	<0.50
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.50	µg/kg		<0.50	<0.50	<0.50	----	<0.50
Dieldrin	60-57-1	0.50	µg/kg		<0.50	<0.50	<0.50	----	<0.50
alpha-Endosulfan	959-98-8	0.50	µg/kg		<0.50	<0.50	<0.50	----	<0.50
beta-Endosulfan	33213-65-9	0.50	µg/kg		<0.50	<0.50	<0.50	----	<0.50
Endosulfan sulfate	1031-07-8	0.50	µg/kg		<0.50	<0.50	<0.50	----	<0.50
^ Endosulfan (sum)	115-29-7	0.50	µg/kg		<0.50	<0.50	<0.50	----	<0.50
Endrin	72-20-8	0.50	µg/kg		<0.50	<0.50	<0.50	----	<0.50
Endrin aldehyde	7421-93-4	0.50	µg/kg		<0.50	<0.50	<0.50	----	<0.50

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C05S03	C06S01	C06S02	C06S03	C07S01
				Client sampling date / time	13-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-015	EP1911899-016	EP1911899-017	EP1911899-018	EP1911899-019
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
Endrin ketone	53494-70-5	0.50	µg/kg		<0.50	<0.50	<0.50	----	<0.50
Heptachlor	76-44-8	0.50	µg/kg		<0.50	<0.50	<0.50	----	<0.50
Heptachlor epoxide	1024-57-3	0.50	µg/kg		<0.50	<0.50	<0.50	----	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		<0.50	<0.50	<0.50	----	<0.50
gamma-BHC	58-89-9	0.25	µg/kg		<0.25	<0.25	<0.25	----	<0.25
Methoxychlor	72-43-5	0.50	µg/kg		<0.50	<0.50	<0.50	----	<0.50
cis-Chlordane	5103-71-9	0.25	µg/kg		<0.25	<0.25	<0.25	----	<0.25
trans-Chlordane	5103-74-2	0.25	µg/kg		<0.25	<0.25	<0.25	----	<0.25
^ Total Chlordane (sum)	----	0.25	µg/kg		<0.25	<0.25	<0.25	----	<0.25
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	<0.50	<0.50	----	<0.50
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	<5	<5	----	<5
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	<5	<5	----	<5
Acenaphthylene	208-96-8	4	µg/kg		<4	<4	<4	----	<4
Acenaphthene	83-32-9	4	µg/kg		<4	<4	<4	----	<4
Fluorene	86-73-7	4	µg/kg		<4	<4	<4	----	<4
Phenanthrene	85-01-8	4	µg/kg		<4	<4	<4	----	<4
Anthracene	120-12-7	4	µg/kg		<4	<4	<4	----	<4
Fluoranthene	206-44-0	4	µg/kg		<4	<4	<4	----	<4
Pyrene	129-00-0	4	µg/kg		<4	<4	<4	----	<4
Benz(a)anthracene	56-55-3	4	µg/kg		<4	<4	<4	----	<4
Chrysene	218-01-9	4	µg/kg		<4	<4	<4	----	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	<4	<4	----	<4
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	<4	<4	----	<4
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	<4	<4	----	<4
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	<4	<4	----	<4
Perylene	198-55-0	4	µg/kg		<4	<4	<4	----	<4
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		<4	<4	<4	----	<4
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		<4	<4	<4	----	<4
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<4	<4	<4	----	<4
Coronene	191-07-1	5	µg/kg		<5	<5	<5	----	<5
^ Sum of PAHs	----	4	µg/kg		<4	<4	<4	----	<4
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		<4	<4	<4	----	<4
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		**5**	**5**	**5**	----	**5**
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		**10**	**10**	**10**	----	**10**

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C05S03	C06S01	C06S02	C06S03	C07S01
				Client sampling date / time	13-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-015	EP1911899-016	EP1911899-017	EP1911899-018	EP1911899-019
					Result	Result	Result	Result	Result
EP203A: Explosives									
HMX	2691-41-0	0.1	mg/kg		----	<0.1	----	----	<0.1
RDX	----	0.1	mg/kg		----	<0.1	----	----	<0.1
1.3.5-Trinitrobenzene	99-35-4	0.1	mg/kg		----	<0.1	----	----	<0.1
1.3-Dinitrobenzene	99-65-0	0.1	mg/kg		----	<0.1	----	----	<0.1
Tetryl	479-45-8	0.1	mg/kg		----	<0.1	----	----	<0.1
2.4.6-TNT	118-96-7	0.1	mg/kg		----	<0.1	----	----	<0.1
4-Amino.2.6-DNT	19406-51-0	0.1	mg/kg		----	<0.1	----	----	<0.1
2-Amino-4.6-DNT	35572-78-2	0.1	mg/kg		----	<0.1	----	----	<0.1
^ 4-& 2-AM-DNT(Isomeric Mixture)	----	0.1	mg/kg		----	<0.1	----	----	<0.1
2.4-Dinitrotoluene	121-14-2	0.1	mg/kg		----	<0.1	----	----	<0.1
2.6-Dinitrotoluene	606-20-2	0.1	mg/kg		----	<0.1	----	----	<0.1
^ 2.4-& 2.6-DNT(Isomeric Mixture)	121-14-2/606-20-2	0.1	mg/kg		----	<0.1	----	----	<0.1
Nitrobenzene	98-95-3	0.1	mg/kg		----	<0.1	----	----	<0.1
2-Nitrotoluene	88-72-2	0.1	mg/kg		----	<0.1	----	----	<0.1
3-Nitrotoluene	99-08-1	0.1	mg/kg		----	<0.1	----	----	<0.1
4-Nitrotoluene	99-99-0	0.1	mg/kg		----	<0.1	----	----	<0.1
Nitroglycerine	55-63-0	1	mg/kg		----	<1	----	----	<1
PETN	78-11-5	1	mg/kg		----	<1	----	----	<1
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<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
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		<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
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0006**	<0.0002	<0.0002	----	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<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
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<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

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C05S03	C06S01	C06S02	C06S03	C07S01
				Client sampling date / time	13-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-015	EP1911899-016	EP1911899-017	EP1911899-018	EP1911899-019
					Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<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
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<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
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<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
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<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
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<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
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<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
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<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
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<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
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<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

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C05S03	C06S01	C06S02	C06S03	C07S01
				Client sampling date / time	13-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-015	EP1911899-016	EP1911899-017	EP1911899-018	EP1911899-019
					Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	----	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0006**	<0.0002	<0.0002	----	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0006**	<0.0002	<0.0002	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0006**	<0.0002	<0.0002	----	<0.0002
EP070: Total Petroleum Hydrocarbons - Speciation									
2-Bromonaphthalene	580-13-2	1	%		----	----	----	**97.4**	----
2-Fluorobiphenyl	321-60-8	1	%		----	----	----	**112**	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**94.9**	**95.7**	**99.0**	----	**106**
Toluene-D8	2037-26-5	0.2	%		**74.2**	**77.6**	**80.6**	----	**87.6**
4-Bromofluorobenzene	460-00-4	0.2	%		**77.2**	**82.2**	**86.1**	----	**92.2**
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		----	**172**	----	----	**107**
EP130S: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	10	%		**54.3**	**52.7**	**54.7**	----	**61.1**
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		**50.2**	**65.6**	**62.3**	----	**84.4**
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		**95.1**	**91.8**	**90.4**	----	**111**
Anthracene-d10	1719-06-8	10	%		**102**	**99.0**	**104**	----	**118**
4-Terphenyl-d14	1718-51-0	10	%		**89.6**	**90.3**	**86.0**	----	**97.5**
EP203S: Explosives Surrogate									
o-Dinitrobenzene	528-29-0	0.1	%		----	**102**	----	----	**106**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**89.0**	**78.5**	**66.0**	----	**79.5**
13C8-PFOA	----	0.0002	%		**89.5**	**78.0**	**79.0**	----	**76.5**

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	C07S02	C07S03	SZ1	SZ2	----
			Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	----
Compound	CAS Number	LOR	Unit	EP1911899-020	EP1911899-021	EP1911899-022	EP1911899-023	--------
				Result	Result	Result	Result	----
EA029-A: pH Measurements								
pH OX (23B)	----	0.1	pH Unit	----	----	**8.0**	----	----
EA029-B: Acidity Trail								
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	<2	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	----	----	**10.0**	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	<2	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	<0.02	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	----	----	**0.007**	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	----	----	<10	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	----	**84.9**	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	----	**17000**	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	----	**27.2**	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	**1.5**	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	----	<0.02	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	<10	----	----
Liming Rate	----	1	kg CaCO3/t	----	----	<1	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	<0.02	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	<10	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	<1	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**24.2**	----	----	**28.6**	----
Moisture Content	----	1.0	%	----	**20.5**	**34.6**	----	----
EA150: Particle Sizing								
+75µm	----	1	%	**97**	----	----	----	----
+150µm	----	1	%	**84**	----	----	----	----
+300µm	----	1	%	**68**	----	----	----	----
+425µm	----	1	%	**48**	----	----	----	----
+600µm	----	1	%	**17**	----	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C07S02	C07S03	SZ1	SZ2	----
				Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	----
Compound	CAS Number	LOR	Unit		EP1911899-020	EP1911899-021	EP1911899-022	EP1911899-023	--------
					Result	Result	Result	Result	----
EA150: Particle Sizing - Continued									
+1180µm	----	1	%		1	----	----	----	----
+2.36mm	----	1	%		<1	----	----	----	----
+4.75mm	----	1	%		<1	----	----	----	----
+9.5mm	----	1	%		<1	----	----	----	----
+19.0mm	----	1	%		<1	----	----	----	----
+37.5mm	----	1	%		<1	----	----	----	----
+75.0mm	----	1	%		<1	----	----	----	----
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		2	----	----	----	----
Silt (2-60 µm)	----	1	%		<1	----	----	----	----
Sand (0.06-2.00 mm)	----	1	%		97	----	----	----	----
Gravel (>2mm)	----	1	%		1	----	----	----	----
Cobbles (>6cm)	----	1	%		<1	----	----	----	----
EA152: Soil Particle Density									
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		2.70	----	----	----	----
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		----	<0.50	0.60	----	----
Arsenic	7440-38-2	1.00	mg/kg		----	1.99	1.09	----	----
Cadmium	7440-43-9	0.1	mg/kg		----	<0.1	0.2	----	----
Chromium	7440-47-3	1.0	mg/kg		----	8.6	9.8	----	----
Copper	7440-50-8	1.0	mg/kg		----	<1.0	<1.0	----	----
Cobalt	7440-48-4	0.5	mg/kg		----	<0.5	<0.5	----	----
Lead	7439-92-1	1.0	mg/kg		----	<1.0	<1.0	----	----
Manganese	7439-96-5	10	mg/kg		----	<10	<10	----	----
Nickel	7440-02-0	1.0	mg/kg		----	<1.0	1.0	----	----
Selenium	7782-49-2	0.1	mg/kg		----	<0.1	0.2	----	----
Silver	7440-22-4	0.1	mg/kg		----	<0.1	<0.1	----	----
Vanadium	7440-62-2	2.0	mg/kg		----	<2.0	11.4	----	----
Zinc	7440-66-6	1.0	mg/kg		----	1.2	1.2	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		----	<0.01	<0.01	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg		----	----	<0.1	----	----
EK058G: Nitrate as N by Discrete Analyser									

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	C07S02	C07S03	SZ1	SZ2	----
			Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	----
Compound	CAS Number	LOR	Unit	EP1911899-020	EP1911899-021	EP1911899-022	EP1911899-023	--------
				Result	Result	Result	Result	----
EK058G: Nitrate as N by Discrete Analyser - Continued								
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg	----	----	<0.1	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	----	----	<0.1	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	20	mg/kg	----	----	**310**	----	----
EK062: Total Nitrogen as N (TKN + NOx)								
^ Total Nitrogen as N	----	20	mg/kg	----	----	**310**	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	----	----	**305**	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.1	mg/kg	----	----	<0.1	----	----
EK255A SD: Ammonia in Sediment								
Ammonia as N	7664-41-7	0.2	mg/kg	----	----	**0.5**	----	----
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	----	----	**0.24**	----	----
EP070: Total Petroleum Hydrocarbons - Speciation								
Aliphatic C16-C35	----	100	mg/kg	<100	----	----	----	----
Aliphatic > C35	----	100	mg/kg	<100	----	----	----	----
Aromatic C16-C35	----	90	mg/kg	<90	----	----	----	----
Aromatic > C35	----	100	mg/kg	<100	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	3	mg/kg	----	<3	<3	----	----
>C16 - C34 Fraction	----	3	mg/kg	----	**6**	<3	----	----
>C34 - C40 Fraction	----	5	mg/kg	----	**7**	<5	----	----
>C10 - C40 Fraction (sum)	----	3	mg/kg	----	**13**	<3	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg	----	<3	<3	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	----	<3	<3	----	----
C10 - C14 Fraction	----	3	mg/kg	----	<3	<3	----	----
C15 - C28 Fraction	----	3	mg/kg	----	<3	<3	----	----
C29 - C36 Fraction	----	5	mg/kg	----	**7**	<5	----	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg	----	**7**	<3	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C07S02	C07S03	SZ1	SZ2	----
				Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	----
Compound	CAS Number	LOR	Unit		EP1911899-020	EP1911899-021	EP1911899-022	EP1911899-023	--------
					Result	Result	Result	Result	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		----	<3	<3	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		----	<3.0	<3.0	----	----
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	<0.2	<0.2	----	----
Toluene	108-88-3	0.2	mg/kg		----	<0.2	<0.2	----	----
Ethylbenzene	100-41-4	0.2	mg/kg		----	<0.2	<0.2	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		----	<0.2	<0.2	----	----
ortho-Xylene	95-47-6	0.2	mg/kg		----	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		----	<0.5	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg		----	<0.2	<0.2	----	----
Naphthalene	91-20-3	0.2	mg/kg		----	<0.2	<0.2	----	----
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		----	----	<0.5	----	----
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	10	µg/kg		----	<10	<10	----	----
Carbophenothion	786-19-6	10	µg/kg		----	<10	<10	----	----
Chlorfenvinphos (E)	18708-86-6	10.0	µg/kg		----	<10.0	<10.0	----	----
Chlorfenvinphos (Z)	18708-87-7	10	µg/kg		----	<10	<10	----	----
Chlorpyrifos	2921-88-2	10	µg/kg		----	<10	<10	----	----
Chlorpyrifos-methyl	5598-13-0	10	µg/kg		----	<10	<10	----	----
Demeton-S-methyl	919-86-8	10	µg/kg		----	<10	<10	----	----
Diazinon	333-41-5	10	µg/kg		----	<10	<10	----	----
Dichlorvos	62-73-7	10	µg/kg		----	<10	<10	----	----
Dimethoate	60-51-5	10	µg/kg		----	<10	<10	----	----
Ethion	563-12-2	10	µg/kg		----	<10	<10	----	----
Fenamiphos	22224-92-6	10	µg/kg		----	<10	<10	----	----
Fenthion	55-38-9	10	µg/kg		----	<10	<10	----	----
Malathion	121-75-5	10	µg/kg		----	<10	<10	----	----
Azinphos Methyl	86-50-0	10	µg/kg		----	<10	<10	----	----
Monocrotophos	6923-22-4	10	µg/kg		----	<10	<10	----	----
Parathion	56-38-2	10	µg/kg		----	<10	<10	----	----
Parathion-methyl	298-00-0	10	µg/kg		----	<10	<10	----	----
Pirimphos-ethyl	23505-41-1	10	µg/kg		----	<10	<10	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C07S02	C07S03	SZ1	SZ2	----
				Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	----
Compound	CAS Number	LOR	Unit		EP1911899-020	EP1911899-021	EP1911899-022	EP1911899-023	--------
					Result	Result	Result	Result	----
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued									
Prothiofos	34643-46-4	10	µg/kg		----	<10	<10	----	----
EP131A: Organochlorine Pesticides									
Aldrin	309-00-2	0.50	µg/kg		----	<0.50	<0.50	----	----
alpha-BHC	319-84-6	0.50	µg/kg		----	<0.50	<0.50	----	----
beta-BHC	319-85-7	0.50	µg/kg		----	<0.50	<0.50	----	----
delta-BHC	319-86-8	0.50	µg/kg		----	<0.50	<0.50	----	----
4.4`-DDD	72-54-8	0.50	µg/kg		----	<0.50	<0.50	----	----
4.4`-DDE	72-55-9	0.50	µg/kg		----	<0.50	<0.50	----	----
4.4`-DDT	50-29-3	0.50	µg/kg		----	<0.50	<0.50	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.50	µg/kg		----	<0.50	<0.50	----	----
Dieldrin	60-57-1	0.50	µg/kg		----	<0.50	<0.50	----	----
alpha-Endosulfan	959-98-8	0.50	µg/kg		----	<0.50	<0.50	----	----
beta-Endosulfan	33213-65-9	0.50	µg/kg		----	<0.50	<0.50	----	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg		----	<0.50	<0.50	----	----
^ Endosulfan (sum)	115-29-7	0.50	µg/kg		----	<0.50	<0.50	----	----
Endrin	72-20-8	0.50	µg/kg		----	<0.50	<0.50	----	----
Endrin aldehyde	7421-93-4	0.50	µg/kg		----	<0.50	<0.50	----	----
Endrin ketone	53494-70-5	0.50	µg/kg		----	<0.50	<0.50	----	----
Heptachlor	76-44-8	0.50	µg/kg		----	<0.50	<0.50	----	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg		----	<0.50	<0.50	----	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		----	<0.50	<0.50	----	----
gamma-BHC	58-89-9	0.25	µg/kg		----	<0.25	<0.25	----	----
Methoxychlor	72-43-5	0.50	µg/kg		----	<0.50	<0.50	----	----
cis-Chlordane	5103-71-9	0.25	µg/kg		----	<0.25	<0.25	----	----
trans-Chlordane	5103-74-2	0.25	µg/kg		----	<0.25	<0.25	----	----
^ Total Chlordane (sum)	----	0.25	µg/kg		----	<0.25	<0.25	----	----
Oxychlordane	27304-13-8	0.50	µg/kg		----	<0.50	<0.50	----	----
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		----	<5	<5	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg		----	<5	<5	----	----
Acenaphthylene	208-96-8	4	µg/kg		----	<200	<4	----	----
Acenaphthene	83-32-9	4	µg/kg		----	<4	<4	----	----
Fluorene	86-73-7	4	µg/kg		----	<4	<4	----	----
Phenanthrene	85-01-8	4	µg/kg		----	<4	<4	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C07S02	C07S03	SZ1	SZ2	----
				Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	----
Compound	CAS Number	LOR	Unit		EP1911899-020	EP1911899-021	EP1911899-022	EP1911899-023	--------
					Result	Result	Result	Result	----
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Anthracene	120-12-7	4	µg/kg		----	<40	<4	----	----
Fluoranthene	206-44-0	4	µg/kg		----	<4	<4	----	----
Pyrene	129-00-0	4	µg/kg		----	<8	<4	----	----
Benz(a)anthracene	56-55-3	4	µg/kg		----	<24	<4	----	----
Chrysene	218-01-9	4	µg/kg		----	<4	<4	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		----	<28	<4	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		----	<20	<4	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg		----	<20	<4	----	----
Benzo(a)pyrene	50-32-8	4	µg/kg		----	<60	<4	----	----
Perylene	198-55-0	4	µg/kg		----	<20	<4	----	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		----	<60	<4	----	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		----	<4	<4	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		----	<40	<4	----	----
Coronene	191-07-1	5	µg/kg		----	<5	<5	----	----
^ Sum of PAHs	----	4	µg/kg		----	<4	<4	----	----
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		----	<4	<4	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		----	5	5	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		----	10	10	----	----
EP203A: Explosives									
HMX	2691-41-0	0.1	mg/kg		----	----	<0.1	----	----
RDX	----	0.1	mg/kg		----	----	<0.1	----	----
1.3.5-Trinitrobenzene	99-35-4	0.1	mg/kg		----	----	<0.1	----	----
1.3-Dinitrobenzene	99-65-0	0.1	mg/kg		----	----	<0.1	----	----
Tetryl	479-45-8	0.1	mg/kg		----	----	<0.1	----	----
2.4.6-TNT	118-96-7	0.1	mg/kg		----	----	<0.1	----	----
4-Amino.2.6-DNT	19406-51-0	0.1	mg/kg		----	----	<0.1	----	----
2-Amino-4.6-DNT	35572-78-2	0.1	mg/kg		----	----	<0.1	----	----
^ 4-& 2-AM-DNT(Isomeric Mixture)	----	0.1	mg/kg		----	----	<0.1	----	----
2.4-Dinitrotoluene	121-14-2	0.1	mg/kg		----	----	<0.1	----	----
2.6-Dinitrotoluene	606-20-2	0.1	mg/kg		----	----	<0.1	----	----
^ 2.4-& 2.6-DNT(Isomeric Mixture)	121-14-2/606-20-2	0.1	mg/kg		----	----	<0.1	----	----
Nitrobenzene	98-95-3	0.1	mg/kg		----	----	<0.1	----	----
2-Nitrotoluene	88-72-2	0.1	mg/kg		----	----	<0.1	----	----
3-Nitrotoluene	99-08-1	0.1	mg/kg		----	----	<0.1	----	----
4-Nitrotoluene	99-99-0	0.1	mg/kg		----	----	<0.1	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C07S02	C07S03	SZ1	SZ2	----
				Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	----
Compound	CAS Number	LOR	Unit		EP1911899-020	EP1911899-021	EP1911899-022	EP1911899-023	--------
					Result	Result	Result	Result	----
EP203A: Explosives - Continued									
Nitroglycerine	55-63-0	1	mg/kg		----	----	<1	----	----
PETN	78-11-5	1	mg/kg		----	----	<1	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
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		----	**0.0003**	<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	----
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	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	C07S02	C07S03	SZ1	SZ2	----
				Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	----
Compound	CAS Number	LOR	Unit		EP1911899-020	EP1911899-021	EP1911899-022	EP1911899-023	--------
					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	----
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		----	**0.0003**	<0.0002	<0.0002	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		----	**0.0003**	<0.0002	<0.0002	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		----	**0.0003**	<0.0002	<0.0002	----
EP070: Total Petroleum Hydrocarbons - Speciation									
2-Bromonaphthalene	580-13-2	1	%		**90.4**	----	----	----	----
2-Fluorobiphenyl	321-60-8	1	%		**106**	----	----	----	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	**99.2**	**95.5**	----	----
Toluene-D8	2037-26-5	0.2	%		----	**80.4**	**76.3**	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	**85.2**	**81.0**	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	C07S02	C07S03	SZ1	SZ2	----
			Client sampling date / time	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	12-Nov-2019 00:00	----
Compound	CAS Number	LOR	Unit	EP1911899-020	EP1911899-021	EP1911899-022	EP1911899-023	--------
				Result	Result	Result	Result	----
EP090S: Organotin Surrogate								
Tripropyltin	----	0.5	%	----	----	**116**	----	----
EP130S: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	10	%	----	**56.0**	**54.1**	----	----
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.50	%	----	**68.0**	**49.2**	----	----
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	10	%	----	**91.6**	**106**	----	----
Anthracene-d10	1719-06-8	10	%	----	**101**	**98.5**	----	----
4-Terphenyl-d14	1718-51-0	10	%	----	**86.6**	**94.4**	----	----
EP203S: Explosives Surrogate								
o-Dinitrobenzene	528-29-0	0.1	%	----	----	**109**	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	**83.5**	**84.5**	**85.0**	----
13C8-PFOA	----	0.0002	%	----	**80.5**	**76.0**	**85.5**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	WR1	WR2	WB1	WB2	WTB1
				Client sampling date / time	12-Nov-2019 00:00	13-Nov-2019 00:00	12-Nov-2019 00:00	13-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-024	EP1911899-025	EP1911899-026	EP1911899-027	EP1911899-028
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
Antimony	7440-36-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		<0.001	**0.014**	<0.001	**0.014**	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Manganese	7439-96-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L		<0.005	**0.011**	<0.005	**0.012**	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	WR1	WR2	WB1	WB2	WTB1
				Client sampling date / time	12-Nov-2019 00:00	13-Nov-2019 00:00	12-Nov-2019 00:00	13-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-024	EP1911899-025	EP1911899-026	EP1911899-027	EP1911899-028
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
beta-BHC	319-85-7	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
gamma-BHC	58-89-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
delta-BHC	319-86-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Heptachlor	76-44-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Aldrin	309-00-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
4.4`-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Endrin	72-20-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
4.4`-DDD	72-54-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Endosulfan sulfate	1031-07-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
4.4`-DDT	50-29-3	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	----
Endrin ketone	53494-70-5	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Methoxychlor	72-43-5	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	----
^ Total Chlordane (sum)	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Demeton-S-methyl	919-86-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Monocrotophos	6923-22-4	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	----
Dimethoate	60-51-5	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Diazinon	333-41-5	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Parathion-methyl	298-00-0	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	----
Malathion	121-75-5	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Fenthion	55-38-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Chlorpyrifos	2921-88-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	WR1	WR2	WB1	WB2	WTB1
				Client sampling date / time	12-Nov-2019 00:00	13-Nov-2019 00:00	12-Nov-2019 00:00	13-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-024	EP1911899-025	EP1911899-026	EP1911899-027	EP1911899-028
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Parathion	56-38-2	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Chlorfenvinphos	470-90-6	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Bromophos-ethyl	4824-78-6	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Fenamiphos	22224-92-6	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Prothiofos	34643-46-4	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Ethion	563-12-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Carbophenothion	786-19-6	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	WR1	WR2	WB1	WB2	WTB1
				Client sampling date / time	12-Nov-2019 00:00	13-Nov-2019 00:00	12-Nov-2019 00:00	13-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-024	EP1911899-025	EP1911899-026	EP1911899-027	EP1911899-028
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	<100	<100	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
^ **Total Xylenes**	----	2	µg/L		<2	<2	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP090: Organotin Compounds (Soluble)									
Tributyltin	56573-85-4	2	ngSn/L		<2	<2	<2	<2	----
EP203A: Explosives									
HMX	2691-41-0	20	µg/L		<20	<20	<20	<20	----
RDX	----	20	µg/L		<20	<20	<20	<20	----
1.3.5-Trinitrobenzene	99-35-4	20	µg/L		<20	<20	<20	<20	----
1.3-Dinitrobenzene	99-65-0	20	µg/L		<20	<20	<20	<20	----
Tetryl	479-45-8	20	µg/L		<20	<20	<20	<20	----
2.4.6-TNT	118-96-7	20	µg/L		<20	<20	<20	<20	----
4-Amino.2.6-DNT	19406-51-0	20	µg/L		<20	<20	<20	<20	----
2-Amino-4.6-DNT	35572-78-2	20	µg/L		<20	<20	<20	<20	----
^ **4-& 2-AM-DNT(Isomeric Mixture)**	----	20	µg/L		<20	<20	<20	<20	----
2.4-Dinitrotoluene	121-14-2	20	µg/L		<20	<20	<20	<20	----
2.6-Dinitrotoluene	606-20-2	20	µg/L		<20	<20	<20	<20	----
^ **2.4-& 2.6-DNT(Isomeric Mixture)**	121-14-2/606-20-2	20	µg/L		<20	<20	<20	<20	----
Nitrobenzene	98-95-3	20	µg/L		<20	<20	<20	<20	----
2-Nitrotoluene	88-72-2	20	µg/L		<20	<20	<20	<20	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	WR1	WR2	WB1	WB2	WTB1
				Client sampling date / time	12-Nov-2019 00:00	13-Nov-2019 00:00	12-Nov-2019 00:00	13-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-024	EP1911899-025	EP1911899-026	EP1911899-027	EP1911899-028
					Result	Result	Result	Result	Result
EP203A: Explosives - Continued									
3-Nitrotoluene	99-08-1	20	µg/L		<20	<20	<20	<20	----
4-Nitrotoluene	99-99-0	20	µg/L		<20	<20	<20	<20	----
Nitroglycerine	55-63-0	200	µg/L		<200	<200	<200	<200	----
PETN	78-11-5	200	µg/L		<200	<200	<200	<200	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	WR1	WR2	WB1	WB2	WTB1
				Client sampling date / time	12-Nov-2019 00:00	13-Nov-2019 00:00	12-Nov-2019 00:00	13-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-024	EP1911899-025	EP1911899-026	EP1911899-027	EP1911899-028
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
^ Sum of PFAS	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		**99.5**	**102**	**101**	**87.2**	**----**
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		**92.2**	**83.0**	**92.9**	**77.7**	**----**
EP075(SIM)S: Phenolic Compound Surrogates									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	WR1	WR2	WB1	WB2	WTB1
				Client sampling date / time	12-Nov-2019 00:00	13-Nov-2019 00:00	12-Nov-2019 00:00	13-Nov-2019 00:00	12-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911899-024	EP1911899-025	EP1911899-026	EP1911899-027	EP1911899-028
					Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued									
Phenol-d6	13127-88-3	1.0	%		19.6	21.3	17.7	17.4	----
2-Chlorophenol-D4	93951-73-6	1.0	%		48.6	47.5	58.7	50.6	----
2.4.6-Tribromophenol	118-79-6	1.0	%		36.4	39.7	42.8	49.0	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		62.8	66.2	83.0	74.5	----
Anthracene-d10	1719-06-8	1.0	%		83.4	88.2	87.9	72.3	----
4-Terphenyl-d14	1718-51-0	1.0	%		87.5	90.3	88.6	78.7	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		122	117	121	121	122
Toluene-D8	2037-26-5	2	%		114	113	111	105	107
4-Bromofluorobenzene	460-00-4	2	%		108	110	85.4	81.4	82.4
EP090S: Organotin Surrogate									
Tripropyltin	----	5	%		133	36.8	101	126	----
EP203S: Explosives Surrogate									
o-Dinitrobenzene	528-29-0	20	%		100	104	101	100	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		67.3	64.9	68.9	63.2	70.1
13C8-PFOA	----	0.0005	%		81.5	80.2	81.6	81.5	82.4

Analytical Results

Descriptive Results

Sub-Matrix: **SEDIMENT**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Disintegration	C01S01 - 12-Nov-2019 00:00	No
EA200: Disintegration	C01S03 - 12-Nov-2019 00:00	No
EA200: Disintegration	C02S01 - 12-Nov-2019 00:00	No
EA200: Disintegration	C03S01 - 12-Nov-2019 00:00	No
EA200: Disintegration	C04S01 - 13-Nov-2019 00:00	No
EA200: Disintegration	C05S01 - 13-Nov-2019 00:00	No
EA200: Disintegration	C06S01 - 12-Nov-2019 00:00	No
EA200: Disintegration	C07S01 - 12-Nov-2019 00:00	No
EA200: Description	C01S01 - 12-Nov-2019 00:00	White sandy soil with organic and shell like matter.
EA200: Description	C01S03 - 12-Nov-2019 00:00	White sandy soil with organic and shell like matter.
EA200: Description	C02S01 - 12-Nov-2019 00:00	White sandy soil with organic and shell like matter.
EA200: Description	C03S01 - 12-Nov-2019 00:00	White sandy soil with organic and shell like matter.
EA200: Description	C04S01 - 13-Nov-2019 00:00	White sandy soil with organic and shell like matter.
EA200: Description	C05S01 - 13-Nov-2019 00:00	White sandy soil with organic and shell like matter.
EA200: Description	C06S01 - 12-Nov-2019 00:00	White sandy soil with organic and shell like matter.
EA200: Description	C07S01 - 12-Nov-2019 00:00	White sandy soil with organic and shell like matter.

Surrogate Control Limits

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

Sub-Matrix: SEDIMENT		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP070: Total Petroleum Hydrocarbons - Speciation			
2-Bromonaphthalene	580-13-2	70	130
2-Fluorobiphenyl	321-60-8	70	130
EP080-SD: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	70	130
Toluene-D8	2037-26-5	70	130
4-Bromofluorobenzene	460-00-4	70	130
EP090S: Organotin Surrogate			
Tripropyltin	----	35	130
EP130S: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	14	102
EP131S: OC Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	119
EP132T: Base/Neutral Extractable Surrogates			
2-Fluorobiphenyl	321-60-8	70	130
Anthracene-d10	1719-06-8	70	130
4-Terphenyl-d14	1718-51-0	70	130
EP203S: Explosives Surrogate			
o-Dinitrobenzene	528-29-0	50	144
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	67	111
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	67	111
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128
EP090S: Organotin Surrogate			
Tripropyltin	----	24	116
EP203S: Explosives Surrogate			
o-Dinitrobenzene	528-29-0	55	133
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EP1911899**	Page	: 1 of 36
Client	: **RPS Australia West Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: SHAE MILLER-WHITE	Contact	: Rhiannon Steere
Address	: PO BOX 170 WEST PERTH WA 6872	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: 9211 1111	Telephone	: 08 9406 1306
Project	: EEC19032.011	Date Samples Received	: 13-Nov-2019
Order number	: ----	Date Analysis Commenced	: 13-Nov-2019
C-O-C number	: ----	Issue Date	: 06-Dec-2019
Sampler	: ----		
Site	: Rottnest Army Jetty		
Quote number	: EP/705/19		
No. of samples received	: 30		
No. of samples analysed	: 25		

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. 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*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA
David Viner	SENIOR LAB TECH	Perth Organics, Wangara, WA
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Evie Sidarta	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Uyen Dalkin	Approved Asbestos Identifier	Melbourne Asbestos, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG035T: Total Recoverable Mercury by FIMS (Low Level) (QC Lot: 2707197)									
EP1911899-001	C01S01	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	<0.01	0.01	0.00	No Limit
EP1911899-016	C06S01	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
EA029-A: pH Measurements (QC Lot: 2731245)									
EP1911899-001	C01S01	EA029-TPA: pH OX (23B)	----	0.1	pH Unit	7.9	8.0	0.00	0% - 20%
EA029-B: Acidity Trail (QC Lot: 2731245)									
EP1911899-001	C01S01	EA029-TPA: Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	<2	<2	0.00	No Limit
EA033-A: Actual Acidity (QC Lot: 2731244)									
EP1911899-001	C01S01	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	9.7	9.8	0.00	0% - 20%
EA033-B: Potential Acidity (QC Lot: 2731244)									
EP1911899-001	C01S01	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.054	0.052	3.77	0% - 50%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	34	33	0.00	No Limit
EA033-C: Acid Neutralising Capacity (QC Lot: 2731244)									
EP1911899-001	C01S01	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	83.7	83.8	0.0955	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	26.8	26.8	0.112	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	16700	16700	0.100	0% - 20%
EA033-E: Acid Base Accounting (QC Lot: 2731244)									
EP1911899-001	C01S01	EA033: Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.00	No Limit
		EA033: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.05	0.05	0.00	No Limit
		EA033: Liming Rate	----	1	kg CaCO3/t	<1	<1	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-E: Acid Base Accounting (QC Lot: 2731244) - continued									
EP1911899-001	C01S01	EA033: Liming Rate excluding ANC	----	1	kg CaCO3/t	3	2	40.0	No Limit
		EA033: Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	0.00	No Limit
		EA033: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	34	33	2.98	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2707423)									
EP1911833-001	Anonymous	EA055: Moisture Content	----	0.1	%	44.3	44.7	0.750	0% - 20%
EP1911833-009	Anonymous	EA055: Moisture Content	----	0.1	%	45.2	44.7	1.01	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2707424)									
EP1911899-007	C03S01	EA055: Moisture Content	----	0.1	%	30.7	31.3	2.06	0% - 20%
EP1911899-018	C06S03	EA055: Moisture Content	----	0.1	%	22.4	23.7	5.81	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2707432)									
EP1911901-002	Anonymous	EA055: Moisture Content	----	0.1	%	50.9	42.8	17.3	0% - 20%
ME1901509-008	Anonymous	EA055: Moisture Content	----	0.1	%	5.8	6.0	3.70	No Limit
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 2707198)									
EP1911899-001	C01S01	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	0.3	0.2	0.00	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	0.3	0.2	57.8	No Limit
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	0.2	<0.1	76.7	No Limit
		EG020-SD: Antimony	7440-36-0	0.5	mg/kg	1.47	0.76	63.6	No Limit
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EG020-SD: Arsenic	7440-38-2	1	mg/kg	1.79	1.24	35.8	No Limit
		EG020-SD: Chromium	7440-47-3	1	mg/kg	11.2	11.1	0.00	0% - 50%
		EG020-SD: Copper	7440-50-8	1	mg/kg	<1.0	<1.0	0.00	No Limit
		EG020-SD: Lead	7439-92-1	1	mg/kg	<1.0	<1.0	0.00	No Limit
		EG020-SD: Nickel	7440-02-0	1	mg/kg	1.6	1.3	21.9	No Limit
		EG020-SD: Zinc	7440-66-6	1	mg/kg	1.7	1.4	16.6	No Limit
		EG020-SD: Manganese	7439-96-5	10	mg/kg	<10	<10	0.00	No Limit
		EG020-SD: Vanadium	7440-62-2	2	mg/kg	11.3	8.4	29.9	No Limit
EP1911899-016	C06S01	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	<0.50	0.00	No Limit
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EG020-SD: Arsenic	7440-38-2	1	mg/kg	1.26	1.15	8.94	No Limit
		EG020-SD: Chromium	7440-47-3	1	mg/kg	8.8	8.6	1.90	No Limit
		EG020-SD: Copper	7440-50-8	1	mg/kg	<1.0	<1.0	0.00	No Limit
		EG020-SD: Lead	7439-92-1	1	mg/kg	<1.0	<1.0	0.00	No Limit
		EG020-SD: Nickel	7440-02-0	1	mg/kg	<1.0	<1.0	0.00	No Limit
		EG020-SD: Zinc	7440-66-6	1	mg/kg	1.8	1.7	8.95	No Limit
		EG020-SD: Manganese	7439-96-5	10	mg/kg	<10	<10	0.00	No Limit
		EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	<2.0	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 2707179)									
EP1911899-001	C01S01	EK057G: Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 2707177)									
EP1911899-001	C01S01	EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 2742269)									
EP1911899-001	C01S01	EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	330	340	0.00	0% - 50%
EP1912343-062	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	750	680	10.3	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 2742268)									
EP1911899-001	C01S01	EK067G: Total Phosphorus as P	----	2	mg/kg	303	277	8.83	0% - 20%
EP1912343-062	Anonymous	EK067G: Total Phosphorus as P	----	2	mg/kg	614	580	5.66	0% - 20%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 2707178)									
EP1911899-001	C01S01	EK071G: Reactive Phosphorus as P	14265-44-2	0.1	mg/kg	0.1	0.2	0.00	No Limit
EK255A SD: Ammonia in Sediment (QC Lot: 2729942)									
EP1911584-010	Anonymous	EK255A: Ammonia as N	7664-41-7	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP1911899-022	SZ1	EK255A: Ammonia as N	7664-41-7	0.2	mg/kg	0.5	<0.2	88.0	No Limit
EP003: Total Organic Carbon (TOC) in Soil (QC Lot: 2739227)									
EB1932126-001	Anonymous	EP003: Total Organic Carbon	----	0.02	%	1.50	1.48	1.01	0% - 20%
EP1911899-016	C06S01	EP003: Total Organic Carbon	----	0.02	%	0.05	0.02	72.2	No Limit
EP070: Total Petroleum Hydrocarbons - Speciation (QC Lot: 2701287)									
EP1911899-001	C01S01	EP070: Aliphatic C16-C35	----	100	mg/kg	<100	<100	0.00	No Limit
		EP070: Aliphatic > C35	----	100	mg/kg	<100	<100	0.00	No Limit
		EP070: Aromatic > C35	----	100	mg/kg	<100	<100	0.00	No Limit
		EP070: Aromatic C16-C35	----	90	mg/kg	<90	<90	0.00	No Limit
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 2701281)									
EP1911899-001	C01S01	EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	<3	0.00	0% - 3%
EP1911899-016	C06S01	EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	<3	0.00	0% - 3%
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 2701282)									
EP1911899-001	C01S01	EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: C15 - C28 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: C10 - C36 Fraction (sum)	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit
EP1911899-016	C06S01	EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: C15 - C28 Fraction	----	3	mg/kg	5	<3	47.4	No Limit
		EP071-SD: C10 - C36 Fraction (sum)	----	3	mg/kg	5	<3	50.0	No Limit
		EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QC Lot: 2701281)									
EP1911899-001	C01S01	EP080-SD: C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	0.00	0% - 3%
EP1911899-016	C06S01	EP080-SD: C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	0.00	0% - 3%
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QC Lot: 2701282)									

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QC Lot: 2701282) - continued									
EP1911899-001	C01S01	EP071-SD: >C10 - C16 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: >C16 - C34 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: >C10 - C40 Fraction (sum)	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: >C34 - C40 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit
EP1911899-016	C06S01	EP071-SD: >C10 - C16 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
		EP071-SD: >C16 - C34 Fraction	----	3	mg/kg	5	<3	43.0	No Limit
		EP071-SD: >C10 - C40 Fraction (sum)	----	3	mg/kg	5	<3	50.0	No Limit
		EP071-SD: >C34 - C40 Fraction	----	5	mg/kg	<5	<5	0.00	No Limit
EP080-SD: BTEXN (QC Lot: 2701281)									
EP1911899-001	C01S01	EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	0% - .2%
		EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	0.00	0% - .2%
		EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	0.00	0% - .2%
		EP080-SD: meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	0.00	0% - .2%
		EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	0.00	0% - .2%
		EP080-SD: Total Xylenes	----	0.2	mg/kg	<0.5	<0.5	0.00	0% - .2%
		EP080-SD: Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	0.00	0% - .2%
		EP080-SD: Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	0.00	0% - .2%
EP1911899-016	C06S01	EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	0% - .2%
		EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	0.00	0% - .2%
		EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	0.00	0% - .2%
		EP080-SD: meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	0.00	0% - .2%
		EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	0.00	0% - .2%
		EP080-SD: Total Xylenes	----	0.2	mg/kg	<0.5	<0.5	0.00	0% - .2%
		EP080-SD: Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	0.00	0% - .2%
		EP080-SD: Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	0.00	0% - .2%
EP090: Organotin Compounds (QC Lot: 2707442)									
EP1911899-001	C01S01	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.00	No Limit
EP130A: Organophosphorus Pesticides (Ultra-trace) (QC Lot: 2707412)									
EP1911899-001	C01S01	EP130: Bromophos-ethyl	4824-78-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Carbophenothion	786-19-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorfenvinphos (E)	18708-86-6	10	µg/kg	<10.0	<10.0	0.00	No Limit
		EP130: Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos	2921-88-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Demeton-S-methyl	919-86-8	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Diazinon	333-41-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dichlorvos	62-73-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dimethoate	60-51-5	10	µg/kg	<10	<10	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP130A: Organophosphorus Pesticides (Ultra-trace) (QC Lot: 2707412) - continued									
EP1911899-001	C01S01	EP130: Ethion	563-12-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenamiphos	22224-92-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenthion	55-38-9	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Malathion	121-75-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Monocrotophos	6923-22-4	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion	56-38-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion-methyl	298-00-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Prothiofos	34643-46-4	10	µg/kg	<10	<10	0.00	No Limit
EP1911899-016	C06S01	EP130: Bromophos-ethyl	4824-78-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Carbophenothion	786-19-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorfenvinphos (E)	18708-86-6	10	µg/kg	<10.0	<10.0	0.00	No Limit
		EP130: Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos	2921-88-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Demeton-S-methyl	919-86-8	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Diazinon	333-41-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dichlorvos	62-73-7	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Dimethoate	60-51-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Ethion	563-12-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenamiphos	22224-92-6	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Fenthion	55-38-9	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Malathion	121-75-5	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Azinphos Methyl	86-50-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Monocrotophos	6923-22-4	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion	56-38-2	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Parathion-methyl	298-00-0	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	<10	0.00	No Limit
		EP130: Prothiofos	34643-46-4	10	µg/kg	<10	<10	0.00	No Limit
EP131A: Organochlorine Pesticides (QC Lot: 2707411)									
EP1911899-001	C01S01	EP131A: gamma-BHC	58-89-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Total Chlordane (sum)	----	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4.4`-DDD	72-54-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP131A: Organochlorine Pesticides (QC Lot: 2707411) - continued									
EP1911899-001	C01S01	EP131A: 4.4`-DDE	72-55-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4.4`-DDT	50-29-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Dieldrin	60-57-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan (sum)	115-29-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin	72-20-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
EP1911899-016	C06S01	EP131A: gamma-BHC	58-89-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Total Chlordane (sum)	----	0.25	µg/kg	<0.25	<0.25	0.00	No Limit
		EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4.4`-DDD	72-54-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4.4`-DDE	72-55-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: 4.4`-DDT	50-29-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Dieldrin	60-57-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endosulfan (sum)	115-29-7	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin	72-20-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
		EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	<0.50	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP131A: Organochlorine Pesticides (QC Lot: 2707411) - continued									
EP1911899-016	C06S01	EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	<0.50	0.00	No Limit
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2701283)									
EP1911899-001	C01S01	EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(g.h.i)perylene	191-24-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Dibenz(a.h)anthracene	53-70-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Sum of PAHs	----	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	<5	0.00	No Limit
EP1911899-016	C06S01	EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Benzo(g.h.i)perylene	191-24-2	4	µg/kg	<4	<4	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2701283) - continued									
EP1911899-016	C06S01	EP132B-SD: Dibenz(a.h)anthracene	53-70-3	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Sum of PAHs	----	4	µg/kg	<4	<4	0.00	No Limit
		EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	<5	0.00	No Limit
		EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	<5	0.00	No Limit
EP203A: Explosives (QC Lot: 2707316)									
EM1919349-001	Anonymous	EP203: HMX	2691-41-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: RDX	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 1.3.5-Trinitrobenzene	99-35-4	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 1.3-Dinitrobenzene	99-65-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: Tetryl	479-45-8	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 2.4.6-TNT	118-96-7	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 4-Amino.2.6-DNT	19406-51-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 2-Amino-4.6-DNT	35572-78-2	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 4-& 2-AM-DNT(Isomeric Mixture)	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 2.4-Dinitrotoluene	121-14-2	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 2.6-Dinitrotoluene	606-20-2	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 2.4-& 2.6-DNT(Isomeric Mixture)	121-14-2/606-20-2	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: Nitrobenzene	98-95-3	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 2-Nitrotoluene	88-72-2	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 3-Nitrotoluene	99-08-1	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 4-Nitrotoluene	99-99-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: Nitroglycerine	55-63-0	1	mg/kg	<1	<1	0.00	No Limit
		EP203: PETN	78-11-5	1	mg/kg	<1	<1	0.00	No Limit
EP1911899-004	C02S01	EP203: HMX	2691-41-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: RDX	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 1.3.5-Trinitrobenzene	99-35-4	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 1.3-Dinitrobenzene	99-65-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: Tetryl	479-45-8	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 2.4.6-TNT	118-96-7	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 4-Amino.2.6-DNT	19406-51-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 2-Amino-4.6-DNT	35572-78-2	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 4-& 2-AM-DNT(Isomeric Mixture)	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 2.4-Dinitrotoluene	121-14-2	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 2.6-Dinitrotoluene	606-20-2	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 2.4-& 2.6-DNT(Isomeric Mixture)	121-14-2/606-20-2	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: Nitrobenzene	98-95-3	0.1	mg/kg	<0.1	<0.1	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP203A: Explosives (QC Lot: 2707316) - continued									
EP1911899-004	C02S01	EP203: 2-Nitrotoluene	88-72-2	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 3-Nitrotoluene	99-08-1	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 4-Nitrotoluene	99-99-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: Nitroglycerine	55-63-0	1	mg/kg	<1	<1	0.00	No Limit
		EP203: PETN	78-11-5	1	mg/kg	<1	<1	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2706601)									
EM1919294-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0016	0.0015	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0005	0.0006	0.00	No Limit
EP1911899-010	C04S01	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.0008	120	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2706601)									
EM1919294-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP1911899-010	C04S01	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2706601) - continued									
EP1911899-010	C04S01	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 2706601)									
EM1919294-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EP1911899-010	C04S01	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 2706601)									
EM1919294-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EP1911899-010	C04S01	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 2706601) - continued									
EP1911899-010	C04S01	EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 2704610)									
EP1911893-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0003	0.0004	0.00	No Limit
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.003	0.002	47.4	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.002	0.001	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.006	0.006	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.008	0.010	15.4	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.010	0.010	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1911808-006	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	0.018	0.017	0.00	0% - 50%
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.843	0.824	2.34	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.009	0.009	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 2704611)									
EP1911808-006	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG035T: Total Mercury by FIMS (QC Lot: 2718842)									
EP1911899-001	C01S01	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.00006	33.3	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2704652)									
EP1911699-010	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP1911804-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2704653)									

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2704653) - continued									
EP1911899-026	WB1	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG093T: Total Metals in Saline Water by ORC-ICPMS (QC Lot: 2720861)									
EP1911899-019	C07S01	EG093A-T: Silver	7440-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EG093A-T: Cadmium	7440-43-9	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG093A-T: Cobalt	7440-48-4	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG093A-T: Lead	7439-92-1	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG093A-T: Antimony	7440-36-0	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG093A-T: Arsenic	7440-38-2	0.5	µg/L	3.0	3.0	0.00	No Limit
		EG093A-T: Chromium	7440-47-3	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG093A-T: Manganese	7439-96-5	0.5	µg/L	0.7	0.7	0.00	No Limit
		EG093A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG093A-T: Vanadium	7440-62-2	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG093A-T: Copper	7440-50-8	1	µg/L	<1	<1	0.00	No Limit
		EG093A-T: Zinc	7440-66-6	5	µg/L	14	14	0.00	No Limit
EP1911899-001	C01S01	EG093A-T: Silver	7440-22-4	0.1	µg/L	<0.1	0.1	0.00	No Limit
		EG093A-T: Cadmium	7440-43-9	0.2	µg/L	0.3	0.4	0.00	No Limit
		EG093A-T: Cobalt	7440-48-4	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG093A-T: Lead	7439-92-1	0.2	µg/L	0.3	0.3	0.00	No Limit
		EG093A-T: Antimony	7440-36-0	0.5	µg/L	4.9	4.7	3.64	No Limit
		EG093A-T: Arsenic	7440-38-2	0.5	µg/L	9.7	9.0	6.87	0% - 50%
		EG093A-T: Chromium	7440-47-3	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG093A-T: Manganese	7439-96-5	0.5	µg/L	2.8	2.8	0.00	No Limit
		EG093A-T: Nickel	7440-02-0	0.5	µg/L	0.8	<0.5	42.8	No Limit
		EG093A-T: Vanadium	7440-62-2	0.5	µg/L	45.9	44.5	3.15	0% - 20%
		EG093A-T: Copper	7440-50-8	1	µg/L	5	5	0.00	No Limit
		EG093A-T: Zinc	7440-66-6	5	µg/L	28	27	3.93	No Limit
EG093T: Total Metals in Saline Water by ORC-ICPMS (QC Lot: 2720862)									
EP1911899-001	C01S01	EG093B-T: Selenium	7782-49-2	2	µg/L	<2	<2	0.00	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 2700453)									
EP1911894-002	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	2.15	2.19	2.23	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 2700456)									
EP1911899-027	WB2	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1911885-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 2700454)									
EP1911894-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	1.58	1.57	0.881	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 2710684)									
EP1911883-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.5	0.5	0.00	No Limit
EP1911899-024	WR1	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 2710683)									

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 2710683) - continued									
EP1911883-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1911899-024	WR1	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 2700459)									
EP1911899-027	WB2	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1911885-002	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK255A: Ammonia (QC Lot: 2720021)									
EP1911899-001	C01S01	EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	0.472	0.467	1.17	0% - 20%
EK257A: Nitrite (QC Lot: 2720020)									
EP1911899-001	C01S01	EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	<0.002	0.00	No Limit
EK259A: Nitrite and Nitrate (NOx) (QC Lot: 2720023)									
EP1911899-001	C01S01	EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	0.004	0.004	0.00	No Limit
EK262A: Total Nitrogen (QC Lot: 2719099)									
EP1911899-001	C01S01	EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	0.975	0.989	1.44	0% - 50%
EW1905103-003	Anonymous	EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	0.153	0.159	3.78	No Limit
EK267A: Total Phosphorus (Persulfate Digestion) (QC Lot: 2719098)									
EP1911899-001	C01S01	EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	0.054	0.048	12.7	0% - 50%
EW1905103-003	Anonymous	EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	<0.005	0.00	No Limit
EK271A: Reactive Phosphorus (QC Lot: 2720022)									
EP1911899-001	C01S01	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	0.047	0.047	0.00	0% - 20%
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2705846)									
EP1911899-024	WR1	EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Endrin	72-20-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2705846) - continued									
EP1911899-024	WR1	EP068: 4.4`-DDT	50-29-3	2	µg/L	<2.0	<2.0	0.00	No Limit
		EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	<2.0	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 2705846)									
EP1911899-024	WR1	EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	<2.0	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	<2.0	0.00	No Limit
		EP068: Parathion	56-38-2	2	µg/L	<2.0	<2.0	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2705844)									
EP1911899-024	WR1	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	<1.0	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2705845)									
EP1911899-024	WR1	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2708918)									
EP1911885-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP1911899-026	WB1	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2705845)									
EP1911899-024	WR1	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2708918)									
EP1911885-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP1911899-026	WB1	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 2708918)									
EP1911885-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP1911899-026	WB1	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP203A: Explosives (QC Lot: 2707326)									
EP1911899-024	WR1	EP203-SL: HMX	2691-41-0	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: RDX	----	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: 1.3.5-Trinitrobenzene	99-35-4	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: 1.3-Dinitrobenzene	99-65-0	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: Tetryl	479-45-8	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: 2.4.6-TNT	118-96-7	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: 4-Amino.2.6-DNT	19406-51-0	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: 2-Amino-4.6-DNT	35572-78-2	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: 2.4-Dinitrotoluene	121-14-2	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: 2.6-Dinitrotoluene	606-20-2	20	µg/L	<20	<20	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP203A: Explosives (QC Lot: 2707326) - continued									
EP1911899-024	WR1	EP203-SL: Nitrobenzene	98-95-3	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: 2-Nitrotoluene	88-72-2	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: 3-Nitrotoluene	99-08-1	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: 4-Nitrotoluene	99-99-0	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: Nitroglycerine	55-63-0	200	µg/L	<200	<200	0.00	No Limit
		EP203-SL: PETN	78-11-5	200	µg/L	<200	<200	0.00	No Limit
ES1936704-001	Anonymous	EP203-SL: HMX	2691-41-0	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: RDX	----	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: 1.3.5-Trinitrobenzene	99-35-4	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: 1.3-Dinitrobenzene	99-65-0	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: Tetryl	479-45-8	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: 2.4.6-TNT	118-96-7	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: 4-Amino.2.6-DNT	19406-51-0	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: 2-Amino-4.6-DNT	35572-78-2	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: 2.4-Dinitrotoluene	121-14-2	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: 2.6-Dinitrotoluene	606-20-2	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: Nitrobenzene	98-95-3	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: 2-Nitrotoluene	88-72-2	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: 3-Nitrotoluene	99-08-1	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: 4-Nitrotoluene	99-99-0	20	µg/L	<20	<20	0.00	No Limit
		EP203-SL: Nitroglycerine	55-63-0	200	µg/L	<200	<200	0.00	No Limit
		EP203-SL: PETN	78-11-5	200	µg/L	<200	<200	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG035T: Total Recoverable Mercury by FIMS (Low Level) (QCLot: 2707197)								
EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	<0.01	2.154 mg/kg	105	80.0	120
EA029-B: Acidity Trail (QCLot: 2731245)								
EA029-TPA: Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	<2	----	----	----	----
EA033-A: Actual Acidity (QCLot: 2731244)								
EA033: pH KCl (23A)	----	0.1	pH Unit	<0.1	----	----	----	----
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	24.27 mole H+ / t	97.8	79.4	110
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 2731244)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.202 % S	95.5	84.6	110
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 2731244)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	4.9 % CaCO3	104	98.1	108
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----
EA033-E: Acid Base Accounting (QCLot: 2731244)								
EA033: Net Acidity (sulfur units)	----	0.02	% S	<0.02	----	----	----	----
EA033: Net Acidity (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
EA033: Liming Rate	----	1	kg CaCO3/t	<1	----	----	----	----
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 2707198)								
EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	----	----	----	----
EG020-SD: Arsenic	7440-38-2	1	mg/kg	<1.00	21.62091 mg/kg	111	74.0	130
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	4.6838 mg/kg	105	97.0	113
EG020-SD: Chromium	7440-47-3	1	mg/kg	<1.0	33.904 mg/kg	119	72.0	152
EG020-SD: Copper	7440-50-8	1	mg/kg	<1.0	33.782 mg/kg	96.9	76.0	116
EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	<0.5	----	----	----	----
EG020-SD: Lead	7439-92-1	1	mg/kg	<1.0	40.33169 mg/kg	95.1	74.0	124
EG020-SD: Manganese	7439-96-5	10	mg/kg	<10	----	----	----	----
EG020-SD: Nickel	7440-02-0	1	mg/kg	<1.0	51.10088 mg/kg	116	81.0	135
EG020-SD: Selenium	7782-49-2	0.1	mg/kg	<0.1	----	----	----	----
EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----
EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	----	----	----	----
EG020-SD: Zinc	7440-66-6	1	mg/kg	<1.0	61.70999 mg/kg	118	81.0	143
EK057G: Nitrite as N by Discrete Analyser (QCLot: 2707179)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EK057G: Nitrite as N by Discrete Analyser (QCLot: 2707179) - continued								
EK057G: Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	2.5 mg/kg	97.8	89.0	121
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2707177)								
EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	2.5 mg/kg	99.3	90.0	112
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 2742269)								
EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	<20	1000 mg/kg	78.5	78.0	112
				<20	100 mg/kg	84.6	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 2742268)								
EK067G: Total Phosphorus as P	----	2	mg/kg	<2	440 mg/kg	84.7	78.0	108
				<2	44 mg/kg	83.2	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 2707178)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.1	mg/kg	<0.1	2.5 mg/kg	100	92.3	112
EK255A SD: Ammonia in Sediment (QCLot: 2729942)								
EK255A: Ammonia as N	7664-41-7	0.2	mg/kg	<0.2	1 mg/kg	99.3	79.0	121
EP003: Total Organic Carbon (TOC) in Soil (QCLot: 2739227)								
EP003: Total Organic Carbon	----	0.02	%	<0.02	0.11 %	121	70.0	130
				<0.02	0.48 %	97.3	70.0	130
EP070: Total Petroleum Hydrocarbons - Speciation (QCLot: 2701287)								
EP070: Aliphatic C16-C35	----	100	mg/kg	<100	1252 mg/kg	117	70.0	130
EP070: Aliphatic > C35	----	100	mg/kg	<100	----	----	----	----
EP070: Aromatic C16-C35	----	90	mg/kg	<90	374 mg/kg	104	70.0	130
EP070: Aromatic > C35	----	100	mg/kg	<100	----	----	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 2701281)								
EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	32 mg/kg	122	70.0	130
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 2701282)								
EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	252 mg/kg	93.0	70.0	130
EP071-SD: C15 - C28 Fraction	----	3	mg/kg	<3	634 mg/kg	83.6	70.0	130
EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	99 mg/kg	75.4	70.0	130
EP071-SD: C10 - C36 Fraction (sum)	----	3	mg/kg	<3	----	----	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 2701281)								
EP080-SD: C6 - C10 Fraction	C6_C10	3	mg/kg	<3	37 mg/kg	119	70.0	130
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 2701282)								
EP071-SD: >C10 - C16 Fraction	----	3	mg/kg	<3	404 mg/kg	91.9	70.0	130
EP071-SD: >C16 - C34 Fraction	----	3	mg/kg	<3	567 mg/kg	76.6	70.0	130
EP071-SD: >C34 - C40 Fraction	----	5	mg/kg	<5	33 mg/kg	78.9	70.0	130
EP071-SD: >C10 - C40 Fraction (sum)	----	3	mg/kg	<3	----	----	----	----
EP080-SD: BTEXN (QCLot: 2701281)								
EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	126	70.0	130

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP080-SD: BTEXN (QCLot: 2701281) - continued								
EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	2 mg/kg	112	70.0	130
EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	2 mg/kg	118	70.0	130
EP080-SD: meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	4 mg/kg	122	70.0	130
EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	2 mg/kg	110	70.0	130
EP080-SD: Total Xylenes	----	0.2	mg/kg	<0.2	----	----	----	----
EP080-SD: Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
EP080-SD: Naphthalene	91-20-3	0.2	mg/kg	<0.2	0.5 mg/kg	80.4	70.0	130
EP090: Organotin Compounds (QCLot: 2707442)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	1.25 µgSn/kg	106	52.0	139
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 2707412)								
EP130: Bromophos-ethyl	4824-78-6	10	µg/kg	<10	50 µg/kg	88.1	49.0	117
EP130: Carbophenothion	786-19-6	10	µg/kg	<10	50 µg/kg	95.3	54.0	104
EP130: Chlorfenvinphos (E)	18708-86-6	10	µg/kg	<10.0	5 µg/kg	99.0	48.0	156
EP130: Chlorfenvinphos (Z)	18708-87-7	10	µg/kg	<10	50 µg/kg	91.1	53.0	119
EP130: Chlorpyrifos	2921-88-2	10	µg/kg	<10	50 µg/kg	99.2	54.0	112
EP130: Chlorpyrifos-methyl	5598-13-0	10	µg/kg	<10	50 µg/kg	98.8	52.0	108
EP130: Demeton-S-methyl	919-86-8	10	µg/kg	<10	50 µg/kg	78.2	51.0	109
EP130: Diazinon	333-41-5	10	µg/kg	<10	50 µg/kg	95.7	57.0	121
EP130: Dichlorvos	62-73-7	10	µg/kg	<10	50 µg/kg	82.5	48.0	104
EP130: Dimethoate	60-51-5	10	µg/kg	<10	50 µg/kg	82.2	52.0	120
EP130: Ethion	563-12-2	10	µg/kg	<10	50 µg/kg	89.7	51.0	121
EP130: Fenamiphos	22224-92-6	10	µg/kg	<10	50 µg/kg	101	50.0	120
EP130: Fenthion	55-38-9	10	µg/kg	<10	50 µg/kg	92.3	48.0	112
EP130: Malathion	121-75-5	10	µg/kg	<10	50 µg/kg	94.8	51.0	121
EP130: Azinphos Methyl	86-50-0	10	µg/kg	<10	50 µg/kg	87.3	45.0	127
EP130: Monocrotophos	6923-22-4	10	µg/kg	<10	50 µg/kg	91.6	48.0	128
EP130: Parathion	56-38-2	10	µg/kg	<10	50 µg/kg	105	49.0	125
EP130: Parathion-methyl	298-00-0	10	µg/kg	<10	50 µg/kg	96.0	51.0	119
EP130: Pirimphos-ethyl	23505-41-1	10	µg/kg	<10	50 µg/kg	102	48.0	120
EP130: Prothiofos	34643-46-4	10	µg/kg	<10	50 µg/kg	83.2	51.0	117
EP131A: Organochlorine Pesticides (QCLot: 2707411)								
EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	5 µg/kg	80.6	38.0	139
EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	5 µg/kg	68.1	17.6	136
EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	5 µg/kg	56.4	30.5	131
EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	5 µg/kg	57.4	37.0	140
EP131A: 4.4`-DDD	72-54-8	0.5	µg/kg	<0.50	5 µg/kg	92.0	25.9	141
EP131A: 4.4`-DDE	72-55-9	0.5	µg/kg	<0.50	5 µg/kg	86.7	35.0	129

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP131A: Organochlorine Pesticides (QCLot: 2707411) - continued								
EP131A: 4.4`-DDT	50-29-3	0.5	µg/kg	<0.50	5 µg/kg	92.3	23.4	138
EP131A: Sum of DDD + DDE + DDT	72-54-8/72-5 5-9/50-2	0.5	µg/kg	<0.50	----	----	----	----
EP131A: Dieldrin	60-57-1	0.5	µg/kg	<0.50	5 µg/kg	100	30.2	140
EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	5 µg/kg	81.1	38.0	140
EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	5 µg/kg	106	32.0	152
EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	5 µg/kg	85.7	36.0	155
EP131A: Endosulfan (sum)	115-29-7	0.5	µg/kg	<0.50	----	----	----	----
EP131A: Endrin	72-20-8	0.5	µg/kg	<0.50	5 µg/kg	117	25.8	158
EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	5 µg/kg	90.0	20.1	118
EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	5 µg/kg	111	13.4	135
EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	5 µg/kg	78.8	39.0	155
EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	5 µg/kg	83.7	34.0	148
EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	5 µg/kg	88.2	26.1	152
EP131A: gamma-BHC	58-89-9	0.25	µg/kg	<0.25	5 µg/kg	66.8	31.2	137
EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	5 µg/kg	92.4	36.0	152
EP131A: cis-Chlordane	5103-71-9	0.25	µg/kg	<0.25	5 µg/kg	86.3	36.0	142
EP131A: trans-Chlordane	5103-74-2	0.25	µg/kg	<0.25	5 µg/kg	91.7	29.5	138
EP131A: Total Chlordane (sum)	----	0.25	µg/kg	<0.25	----	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 2701283)								
EP132B-SD: Naphthalene	91-20-3	5	µg/kg	<5	25 µg/kg	84.5	55.0	131
EP132B-SD: 2-Methylnaphthalene	91-57-6	5	µg/kg	<5	----	----	----	----
EP132B-SD: Acenaphthylene	208-96-8	4	µg/kg	<4	25 µg/kg	97.2	64.0	110
EP132B-SD: Acenaphthene	83-32-9	4	µg/kg	<4	25 µg/kg	96.4	62.0	112
EP132B-SD: Fluorene	86-73-7	4	µg/kg	<4	25 µg/kg	101	64.0	118
EP132B-SD: Phenanthrene	85-01-8	4	µg/kg	<4	25 µg/kg	99.8	59.0	117
EP132B-SD: Anthracene	120-12-7	4	µg/kg	<4	25 µg/kg	92.0	69.0	111
EP132B-SD: Fluoranthene	206-44-0	4	µg/kg	<4	25 µg/kg	88.9	66.0	118
EP132B-SD: Pyrene	129-00-0	4	µg/kg	<4	25 µg/kg	103	70.0	116
EP132B-SD: Benz(a)anthracene	56-55-3	4	µg/kg	<4	25 µg/kg	96.5	59.0	121
EP132B-SD: Chrysene	218-01-9	4	µg/kg	<4	25 µg/kg	92.1	68.0	116
EP132B-SD: Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg	<4	25 µg/kg	80.8	51.0	107
EP132B-SD: Benzo(k)fluoranthene	207-08-9	4	µg/kg	<4	25 µg/kg	93.6	52.0	118
EP132B-SD: Benzo(e)pyrene	192-97-2	4	µg/kg	<4	----	----	----	----
EP132B-SD: Benzo(a)pyrene	50-32-8	4	µg/kg	<4	25 µg/kg	89.1	55.0	111
EP132B-SD: Perylene	198-55-0	4	µg/kg	<4	----	----	----	----
EP132B-SD: Benzo(g.h.i)perylene	191-24-2	4	µg/kg	<4	25 µg/kg	88.4	62.0	106
EP132B-SD: Dibenz(a.h)anthracene	53-70-3	4	µg/kg	<4	25 µg/kg	104	35.0	141

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 2701283) - continued								
EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg	<4	25 µg/kg	99.5	48.0	122
EP132B-SD: Coronene	191-07-1	5	µg/kg	<5	----	----	----	----
EP132B-SD: Sum of PAHs	----	4	µg/kg	<4	----	----	----	----
EP203A: Explosives (QCLot: 2707316)								
EP203: HMX	2691-41-0	0.1	mg/kg	<0.1	1 mg/kg	105	54.0	122
EP203: RDX	----	0.1	mg/kg	<0.1	----	----	----	----
EP203: 1.3.5-Trinitrobenzene	99-35-4	0.1	mg/kg	<0.1	----	----	----	----
EP203: 1.3-Dinitrobenzene	99-65-0	0.1	mg/kg	<0.1	----	----	----	----
EP203: Tetryl	479-45-8	0.1	mg/kg	<0.1	----	----	----	----
EP203: 2.4.6-TNT	118-96-7	0.1	mg/kg	<0.1	1 mg/kg	111	61.0	1220
EP203: 4-Amino.2.6-DNT	19406-51-0	0.1	mg/kg	<0.1	1 mg/kg	81.0	53.0	127
EP203: 2-Amino-4.6-DNT	35572-78-2	0.1	mg/kg	<0.1	----	----	----	----
EP203: 2.4-Dinitrotoluene	121-14-2	0.1	mg/kg	<0.1	1 mg/kg	96.1	56.0	126
EP203: 2.6-Dinitrotoluene	606-20-2	0.1	mg/kg	<0.1	----	----	----	----
EP203: Nitrobenzene	98-95-3	0.1	mg/kg	<0.1	1 mg/kg	80.7	60.0	132
EP203: 2-Nitrotoluene	88-72-2	0.1	mg/kg	<0.1	----	----	----	----
EP203: 3-Nitrotoluene	99-08-1	0.1	mg/kg	<0.1	----	----	----	----
EP203: 4-Nitrotoluene	99-99-0	0.1	mg/kg	<0.1	----	----	----	----
EP203: Nitroglycerine	55-63-0	1	mg/kg	<1	----	----	----	----
EP203: PETN	78-11-5	1	mg/kg	<1	1 mg/kg	110	71.0	147
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2706601)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.4	56.7	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.2	55.2	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.2	52.3	126
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.4	53.5	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.2	54.8	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	75.2	54.0	125
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2706601)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	72.9	51.6	128
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.2	54.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.2	58.0	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.0	57.1	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.2	60.3	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.2	62.8	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.4	54.9	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.4	62.0	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.8	52.9	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	69.6	48.5	129

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2706601) - continued								
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	75.3	59.1	129
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2706601)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.2	52.4	132
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	85.2	65.2	126
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	76.9	63.9	126
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	75.3	62.5	124
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	76.4	57.6	125
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.2	60.8	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.8	54.9	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2706601)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	71.6	54.1	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	67.2	60.8	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	62.8	62.3	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	74.0	59.8	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 2704610)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.02 mg/L	106	82.9	120
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	116	89.6	118
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	108	89.2	116
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	110	87.8	114
EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	109	89.0	115
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	105	85.8	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	106	88.4	111
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	108	88.5	115
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	103	87.4	116
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	105	87.6	120
EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	110	89.5	116
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	112	88.1	120
EG020T: Total Metals by ICP-MS (QCLot: 2704611)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	101	66.8	120
EG035T: Total Mercury by FIMS (QCLot: 2718842)								
EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	97.0	85.0	105

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2704652)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	92.4	85.1	115
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2704653)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	92.1	85.1	115
EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 2720861)								
EG093A-T: Antimony	7440-36-0	0.5	µg/L	<0.5	2 µg/L	114	70.0	130
EG093A-T: Arsenic	7440-38-2	0.5	µg/L	<0.5	10 µg/L	100	89.0	125
EG093A-T: Cadmium	7440-43-9	0.2	µg/L	<0.2	10 µg/L	101	82.0	122
EG093A-T: Chromium	7440-47-3	0.5	µg/L	<0.5	10 µg/L	97.0	85.0	123
EG093A-T: Cobalt	7440-48-4	0.2	µg/L	<0.2	10 µg/L	103	86.0	122
EG093A-T: Copper	7440-50-8	1	µg/L	<1	10 µg/L	95.0	84.0	128
EG093A-T: Lead	7439-92-1	0.2	µg/L	<0.2	10 µg/L	97.6	85.0	125
EG093A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	97.6	86.0	126
EG093A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	101	85.0	125
EG093A-T: Silver	7440-22-4	0.1	µg/L	<0.1	2 µg/L	110	70.0	130
EG093A-T: Vanadium	7440-62-2	0.5	µg/L	<0.5	10 µg/L	111	86.0	126
EG093A-T: Zinc	7440-66-6	5	µg/L	<5	10 µg/L	94.9	82.0	128
EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 2720862)								
EG093B-T: Selenium	7782-49-2	2	µg/L	<2	10 µg/L	102	80.0	138
EK055G: Ammonia as N by Discrete Analyser (QCLot: 2700453)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	100	86.2	111
EK057G: Nitrite as N by Discrete Analyser (QCLot: 2700456)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	100	93.7	108
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2700454)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	99.1	90.5	110
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 2710684)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	87.1	75.8	100
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 2710683)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	76.6	70.0	110
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 2700459)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	97.7	89.4	109
EK255A: Ammonia (QCLot: 2720021)								
EK255A-SW: Ammonia as N	7664-41-7	0.005	mg/L	<0.005	0.1 mg/L	99.7	77.0	121
EK257A: Nitrite (QCLot: 2720020)								
EK257A-SW: Nitrite as N	14797-65-0	0.002	mg/L	<0.002	0.1 mg/L	97.5	91.0	127
EK259A: Nitrite and Nitrate (NOx) (QCLot: 2720023)								
EK259A-SW: Nitrite + Nitrate as N	----	0.002	mg/L	<0.002	0.1 mg/L	105	92.0	120
EK262A: Total Nitrogen (QCLot: 2719099)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EK262A: Total Nitrogen (QCLot: 2719099) - continued								
EK262PA-SW: Total Nitrogen as N	----	0.025	mg/L	<0.025	1 mg/L	102	81.0	111
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 2719098)								
EK267PA-SW: Total Phosphorus as P	----	0.005	mg/L	<0.005	0.44 mg/L	102	88.0	112
EK271A: Reactive Phosphorus (QCLot: 2720022)								
EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.001	mg/L	<0.001	0.1 mg/L	98.1	72.0	118
EP068A: Organochlorine Pesticides (OC) (QCLot: 2705846)								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	91.7	64.9	107
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	83.6	58.3	111
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	104	69.0	117
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	95.8	70.0	112
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	104	68.9	110
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	102	65.2	108
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	105	65.8	109
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	102	67.1	107
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	99.7	64.1	110
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	101	66.7	112
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	95.5	63.2	111
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	80.7	65.2	113
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	91.2	66.0	112
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	86.5	65.2	113
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	84.6	67.3	114
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	77.4	72.0	122
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	77.4	66.9	109
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	96.1	65.2	112
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2.0	5 µg/L	88.2	65.2	112
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	87.0	63.8	110
EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	5 µg/L	88.6	61.1	114
EP068B: Organophosphorus Pesticides (OP) (QCLot: 2705846)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	89.1	65.6	114
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	76.9	63.7	113
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	24.2	19.7	48.0
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	97.2	69.5	110
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	103	71.1	110
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	102	77.0	119
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	101	70.0	124
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	107	68.4	116
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	101	68.6	112
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	103	75.0	119

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 2705846) - continued								
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	99.7	67.0	121
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	100	69.0	121
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	105	71.8	110
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	98.3	67.5	112
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	97.2	64.1	116
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	100	67.8	114
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	74.4	74.0	120
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	91.7	66.2	114
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	91.3	51.6	128
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2705844)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	66.5	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	70.4	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	71.7	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	73.5	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	79.1	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	90.3	64.3	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	87.3	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	98.4	63.1	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	66.2	64.1	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	84.6	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	69.1	61.7	119
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	69.3	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	82.3	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	69.5	59.9	118
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	69.5	61.2	117
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	82.4	59.1	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2705845)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	64.4	55.8	112
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	77.2	71.6	113
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	76.1	56.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2708918)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	89.9	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2705845)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	2500 µg/L	68.7	57.9	119
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	76.4	62.5	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	74.7	61.5	121
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2708918)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2708918) - continued								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	87.2	75.0	127
EP080: BTEXN (QCLot: 2708918)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	92.5	70.0	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	92.5	69.0	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	91.9	70.0	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	93.2	69.0	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	92.3	72.0	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	99.5	70.0	120
EP090: Organotin Compounds (Soluble) (QCLot: 2707059)								
EP090S: Tributyltin	56573-85-4	2	ngSn/L	<2	147 ngSn/L	81.1	30.7	134
EP203A: Explosives (QCLot: 2707326)								
EP203-SL: HMX	2691-41-0	20	µg/L	<20	200 µg/L	97.3	53.0	147
EP203-SL: RDX	----	20	µg/L	<20	----	----	----	----
EP203-SL: 1.3.5-Trinitrobenzene	99-35-4	20	µg/L	<20	----	----	----	----
EP203-SL: 1.3-Dinitrobenzene	99-65-0	20	µg/L	<20	----	----	----	----
EP203-SL: Tetryl	479-45-8	20	µg/L	<20	----	----	----	----
EP203-SL: 2.4.6-TNT	118-96-7	20	µg/L	<20	200 µg/L	107	63.0	145
EP203-SL: 4-Amino.2.6-DNT	19406-51-0	20	µg/L	<20	200 µg/L	96.0	59.0	135
EP203-SL: 2-Amino-4.6-DNT	35572-78-2	20	µg/L	<20	----	----	----	----
EP203-SL: 2.4-Dinitrotoluene	121-14-2	20	µg/L	<20	200 µg/L	96.0	59.0	131
EP203-SL: 2.6-Dinitrotoluene	606-20-2	20	µg/L	<20	----	----	----	----
EP203-SL: Nitrobenzene	98-95-3	20	µg/L	<20	200 µg/L	79.4	52.0	140
EP203-SL: 2-Nitrotoluene	88-72-2	20	µg/L	<20	----	----	----	----
EP203-SL: 3-Nitrotoluene	99-08-1	20	µg/L	<20	----	----	----	----
EP203-SL: 4-Nitrotoluene	99-99-0	20	µg/L	<20	----	----	----	----
EP203-SL: Nitroglycerine	55-63-0	200	µg/L	<200	----	----	----	----
EP203-SL: PETN	78-11-5	200	µg/L	<200	200 µg/L	93.9	75.0	143
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2710050)								
EP231X-SUT: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.0025 µg/L	75.8	50.0	130
EP231X-SUT: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.0025 µg/L	87.0	50.0	130
EP231X-SUT: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.0025 µg/L	86.2	50.0	130
EP231X-SUT: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.0025 µg/L	96.6	50.0	130
EP231X-SUT: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	0.0025 µg/L	80.0	50.0	130
EP231X-SUT: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.0025 µg/L	51.8	50.0	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2735784)								
EP231X-SUT: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.0025 µg/L	61.6	50.0	130
EP231X-SUT: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.0025 µg/L	62.0	50.0	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2735784) - continued								
EP231X-SUT: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.0025 µg/L	57.0	50.0	130
EP231X-SUT: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.0025 µg/L	64.8	50.0	130
EP231X-SUT: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	0.0025 µg/L	75.8	50.0	130
EP231X-SUT: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.0025 µg/L	50.2	50.0	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2710050)								
EP231X-SUT: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.0020	0.0125 µg/L	60.3	30.0	130
EP231X-SUT: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.0025 µg/L	83.2	50.0	130
EP231X-SUT: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.0025 µg/L	83.4	50.0	130
EP231X-SUT: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.0025 µg/L	86.0	50.0	130
EP231X-SUT: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.0025 µg/L	91.6	50.0	130
EP231X-SUT: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.0025 µg/L	86.0	50.0	130
EP231X-SUT: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.0025 µg/L	74.2	50.0	130
EP231X-SUT: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.0025 µg/L	61.2	40.0	130
EP231X-SUT: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.0025 µg/L	62.0	40.0	130
EP231X-SUT: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.0025 µg/L	41.8	40.0	130
EP231X-SUT: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.00625 µg/L	67.3	40.0	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2735784)								
EP231X-SUT: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.0020	0.0125 µg/L	51.5	30.0	130
EP231X-SUT: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.0025 µg/L	76.6	50.0	130
EP231X-SUT: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.0025 µg/L	72.4	50.0	130
EP231X-SUT: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.0025 µg/L	81.8	50.0	130
EP231X-SUT: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.0025 µg/L	82.4	50.0	130
EP231X-SUT: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.0025 µg/L	83.2	50.0	130
EP231X-SUT: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.0025 µg/L	93.8	50.0	130
EP231X-SUT: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.0025 µg/L	60.2	40.0	130
EP231X-SUT: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.0025 µg/L	44.4	40.0	130
EP231X-SUT: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.0025 µg/L	41.6	40.0	130
EP231X-SUT: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.00625 µg/L	50.1	40.0	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2710050)								
EP231X-SUT: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.0025 µg/L	73.2	40.0	130
EP231X-SUT: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.00625 µg/L	51.4	40.0	130
EP231X-SUT: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.00625 µg/L	68.1	40.0	130
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.00625 µg/L	56.6	40.0	130
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.00625 µg/L	52.7	40.0	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2710050) - continued								
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.0025 µg/L	43.6	40.0	130
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.0025 µg/L	55.6	40.0	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2735784)								
EP231X-SUT: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.0025 µg/L	62.8	40.0	130
EP231X-SUT: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.00625 µg/L	56.9	40.0	130
EP231X-SUT: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.00625 µg/L	54.1	40.0	130
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.00625 µg/L	57.9	40.0	130
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.00625 µg/L	56.2	40.0	130
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.0025 µg/L	50.2	40.0	130
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.0025 µg/L	45.2	40.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2710050)								
EP231X-SUT: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.0025 µg/L	88.8	50.0	130
EP231X-SUT: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.0025 µg/L	89.4	50.0	130
EP231X-SUT: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.0025 µg/L	92.4	50.0	130
EP231X-SUT: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.0025 µg/L	87.8	50.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2735784)								
EP231X-SUT: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.0025 µg/L	78.6	50.0	130
EP231X-SUT: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.0025 µg/L	78.6	50.0	130
EP231X-SUT: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.0025 µg/L	72.6	50.0	130
EP231X-SUT: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.0025 µg/L	53.6	50.0	130
EP231P: PFAS Sums (QCLot: 2710050)								
EP231X-SUT: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS (WA DER List)	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231P: PFAS Sums (QCLot: 2735784)								
EP231X-SUT: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS (WA DER List)	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS	----	0.0002	µg/L	<0.0002	----	----	----	----

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(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG035T: Total Recoverable Mercury by FIMS (Low Level) (QCLot: 2707197)							
EP1911899-003	C01S03	EG035T-LL: Mercury	7439-97-6	10 mg/kg	97.1	70.0	130
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 2707198)							
EP1911899-003	C01S03	EG020-SD: Arsenic	7440-38-2	50 mg/kg	109	70.0	130
		EG020-SD: Cadmium	7440-43-9	50 mg/kg	102	70.0	130
		EG020-SD: Chromium	7440-47-3	50 mg/kg	108	70.0	130
		EG020-SD: Copper	7440-50-8	50 mg/kg	99.3	70.0	130
		EG020-SD: Lead	7439-92-1	50 mg/kg	94.2	70.0	130
		EG020-SD: Nickel	7440-02-0	50 mg/kg	104	70.0	130
		EG020-SD: Selenium	7782-49-2	10 mg/kg	99.3	70.0	130
		EG020-SD: Zinc	7440-66-6	50 mg/kg	103	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 2707179)							
EP1911899-003	C01S03	EK057G: Nitrite as N (Sol.)	14797-65-0	2.5 mg/kg	103	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2707177)							
EP1911899-003	C01S03	EK059G: Nitrite + Nitrate as N (Sol.)	----	2.5 mg/kg	98.6	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 2742269)							
EP1911899-003	C01S03	EK061G: Total Kjeldahl Nitrogen as N	----	500 mg/kg	88.4	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 2742268)							
EP1911899-003	C01S03	EK067G: Total Phosphorus as P	----	100 mg/kg	109	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 2707178)							
EP1911899-003	C01S03	EK071G: Reactive Phosphorus as P	14265-44-2	2.5 mg/kg	99.7	70.0	130
EK255A SD: Ammonia in Sediment (QCLot: 2729942)							
EP1911584-010	Anonymous	EK255A: Ammonia as N	7664-41-7	0.5 mg/kg	118	70.0	130
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 2701281)							
EP1911899-003	C01S03	EP080-SD: C6 - C9 Fraction	----	32 mg/kg	82.4	70.0	130
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 2701282)							
EP1911899-003	C01S03	EP071-SD: C10 - C14 Fraction	----	252 mg/kg	93.5	70.0	130
		EP071-SD: C15 - C28 Fraction	----	634 mg/kg	83.4	70.0	130
		EP071-SD: C29 - C36 Fraction	----	99 mg/kg	72.8	70.0	130
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 2701281)							
EP1911899-003	C01S03	EP080-SD: C6 - C10 Fraction	C6_C10	37 mg/kg	75.2	70.0	130
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 2701282)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 2701282) - continued							
EP1911899-003	C01S03	EP071-SD: >C10 - C16 Fraction	----	404 mg/kg	92.1	70.0	130
		EP071-SD: >C16 - C34 Fraction	----	567 mg/kg	76.2	70.0	130
		EP071-SD: >C34 - C40 Fraction	----	33 mg/kg	73.7	70.0	130
EP080-SD: BTEXN (QCLot: 2701281)							
EP1911899-003	C01S03	EP080-SD: Benzene	71-43-2	2 mg/kg	115	70.0	130
		EP080-SD: Toluene	108-88-3	2 mg/kg	107	70.0	130
EP090: Organotin Compounds (QCLot: 2707442)							
EP1911899-003	C01S03	EP090: Tributyltin	56573-85-4	1.25 µgSn/kg	100	20.0	130
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 2707412)							
EP1911899-001	C01S01	EP130: Bromophos-ethyl	4824-78-6	50 µg/kg	53.4	36.0	144
		EP130: Carbophenothion	786-19-6	50 µg/kg	52.2	38.0	120
		EP130: Chlorfenvinphos (E)	18708-86-6	5 µg/kg	53.4	49.0	157
		EP130: Chlorfenvinphos (Z)	18708-87-7	50 µg/kg	58.8	53.0	145
		EP130: Chlorpyrifos	2921-88-2	50 µg/kg	60.3	60.0	140
		EP130: Chlorpyrifos-methyl	5598-13-0	50 µg/kg	62.2	56.0	126
		EP130: Demeton-S-methyl	919-86-8	50 µg/kg	54.9	9.70	148
		EP130: Diazinon	333-41-5	50 µg/kg	69.5	60.0	122
		EP130: Dichlorvos	62-73-7	50 µg/kg	54.8	33.0	123
		EP130: Dimethoate	60-51-5	50 µg/kg	61.9	36.0	142
		EP130: Ethion	563-12-2	50 µg/kg	52.8	48.0	136
		EP130: Fenamiphos	22224-92-6	50 µg/kg	55.8	42.0	136
		EP130: Fenthion	55-38-9	50 µg/kg	55.9	35.0	131
		EP130: Malathion	121-75-5	50 µg/kg	56.8	55.0	141
		EP130: Azinphos Methyl	86-50-0	50 µg/kg	60.4	23.5	132
		EP130: Monocrotophos	6923-22-4	50 µg/kg	55.1	35.0	153
		EP130: Parathion	56-38-2	50 µg/kg	57.8	57.0	147
		EP130: Parathion-methyl	298-00-0	50 µg/kg	55.0	48.0	140
		EP130: Pirimphos-ethyl	23505-41-1	50 µg/kg	54.0	45.0	137
		EP130: Prothiofos	34643-46-4	50 µg/kg	52.2	51.0	137
EP131A: Organochlorine Pesticides (QCLot: 2707411)							
EP1911899-001	C01S01	EP131A: Aldrin	309-00-2	5 µg/kg	36.0	23.4	153
		EP131A: alpha-BHC	319-84-6	5 µg/kg	38.1	17.6	156
		EP131A: beta-BHC	319-85-7	5 µg/kg	42.5	24.9	153
		EP131A: delta-BHC	319-86-8	5 µg/kg	32.3	25.2	147
		EP131A: 4.4`-DDD	72-54-8	5 µg/kg	41.7	25.9	150
		EP131A: 4.4`-DDE	72-55-9	5 µg/kg	44.7	31.2	125
		EP131A: 4.4`-DDT	50-29-3	5 µg/kg	60.2	23.4	163
		EP131A: Dieldrin	60-57-1	5 µg/kg	42.4	30.2	140

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP131A: Organochlorine Pesticides (QCLot: 2707411) - continued							
EP1911899-001	C01S01	EP131A: alpha-Endosulfan	959-98-8	5 µg/kg	51.1	28.8	135
		EP131A: beta-Endosulfan	33213-65-9	5 µg/kg	56.1	22.6	141
		EP131A: Endosulfan sulfate	1031-07-8	5 µg/kg	56.4	16.1	156
		EP131A: Endrin	72-20-8	5 µg/kg	75.5	17.7	162
		EP131A: Endrin aldehyde	7421-93-4	5 µg/kg	56.4	20.1	116
		EP131A: Endrin ketone	53494-70-5	5 µg/kg	51.9	13.4	151
		EP131A: Heptachlor	76-44-8	5 µg/kg	37.0	23.8	170
		EP131A: Heptachlor epoxide	1024-57-3	5 µg/kg	34.6	28.3	140
		EP131A: Hexachlorobenzene (HCB)	118-74-1	5 µg/kg	41.9	17.7	144
		EP131A: gamma-BHC	58-89-9	5 µg/kg	25.1	21.8	158
		EP131A: Methoxychlor	72-43-5	5 µg/kg	62.8	24.4	158
		EP131A: cis-Chlordane	5103-71-9	5 µg/kg	44.9	27.3	139
		EP131A: trans-Chlordane	5103-74-2	5 µg/kg	41.7	29.5	138
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 2701283)							
EP1911899-003	C01S03	EP132B-SD: Naphthalene	91-20-3	25 µg/kg	90.0	70.0	130
		EP132B-SD: Acenaphthylene	208-96-8	25 µg/kg	98.3	70.0	130
		EP132B-SD: Acenaphthene	83-32-9	25 µg/kg	96.2	70.0	130
		EP132B-SD: Fluorene	86-73-7	25 µg/kg	97.9	70.0	130
		EP132B-SD: Phenanthrene	85-01-8	25 µg/kg	93.7	70.0	130
		EP132B-SD: Anthracene	120-12-7	25 µg/kg	89.3	70.0	130
		EP132B-SD: Fluoranthene	206-44-0	25 µg/kg	94.1	70.0	130
		EP132B-SD: Pyrene	129-00-0	25 µg/kg	94.4	70.0	130
		EP132B-SD: Benz(a)anthracene	56-55-3	25 µg/kg	91.4	70.0	130
		EP132B-SD: Chrysene	218-01-9	25 µg/kg	81.3	70.0	130
		EP132B-SD: Benzo(b+j)fluoranthene	205-99-2 205-82-3	25 µg/kg	104	70.0	130
		EP132B-SD: Benzo(k)fluoranthene	207-08-9	25 µg/kg	102	70.0	130
		EP132B-SD: Benzo(a)pyrene	50-32-8	25 µg/kg	87.6	70.0	130
		EP132B-SD: Benzo(g.h.i)perylene	191-24-2	25 µg/kg	101	70.0	130
		EP132B-SD: Dibenz(a.h)anthracene	53-70-3	25 µg/kg	89.8	70.0	130
		EP132B-SD: Indeno(1.2.3.cd)pyrene	193-39-5	25 µg/kg	102	70.0	130
EP203A: Explosives (QCLot: 2707316)							
EM1919349-001	Anonymous	EP203: HMX	2691-41-0	1 mg/kg	110	58.0	141
		EP203: 2.4.6-TNT	118-96-7	1 mg/kg	114	58.0	139
		EP203: 4-Amino.2.6-DNT	19406-51-0	1 mg/kg	81.0	56.0	140
		EP203: 2.4-Dinitrotoluene	121-14-2	1 mg/kg	92.4	59.0	139
		EP203: Nitrobenzene	98-95-3	1 mg/kg	80.1	60.0	132
		EP203: PETN	78-11-5	1 mg/kg	108	59.0	136

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2706601)							
EM1919294-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	74.0	50.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	81.6	50.0	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	75.2	50.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	71.6	50.0	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	62.8	50.0	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	70.4	50.0	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2706601)							
EM1919294-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	63.4	30.0	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	75.2	50.0	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	86.8	50.0	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	85.6	50.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	80.0	50.0	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	85.6	50.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	76.8	50.0	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	74.4	50.0	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	72.0	50.0	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	79.2	30.0	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	70.0	30.0	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2706601)							
EM1919294-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	90.8	50.0	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	62.7	30.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	60.9	30.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	55.4	30.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	65.4	30.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	85.2	30.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	80.4	30.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2706601)							
EM1919294-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	70.4	50.0	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	84.0	50.0	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	92.8	50.0	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	109	50.0	130

Sub-Matrix: **WATER**

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

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 2704610)							
EP1911804-007	Anonymous	EG020A-T: Arsenic	7440-38-2	1.3 mg/L	# Not Determined	70.0	130
		EG020A-T: Cadmium	7440-43-9	0.325 mg/L	96.8	70.0	130
		EG020A-T: Chromium	7440-47-3	1.3 mg/L	98.3	70.0	130
		EG020A-T: Cobalt	7440-48-4	1.3 mg/L	91.2	70.0	130
		EG020A-T: Copper	7440-50-8	1.3 mg/L	# Not Determined	70.0	130
		EG020A-T: Lead	7439-92-1	1.3 mg/L	96.2	70.0	130
		EG020A-T: Manganese	7439-96-5	1.3 mg/L	94.4	70.0	130
		EG020A-T: Nickel	7440-02-0	1.3 mg/L	72.3	70.0	130
		EG020A-T: Vanadium	7440-62-2	1.3 mg/L	94.7	70.0	130
		EG020A-T: Zinc	7440-66-6	1.3 mg/L	102	70.0	130
EG035T: Total Mercury by FIMS (QCLot: 2718842)							
EP1911899-009	C03S03	EG035T-LL: Mercury	7439-97-6	0.0001 mg/L	113	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2704652)							
EP1911699-011	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	102	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2704653)							
EP1911899-027	WB2	EG035T: Mercury	7439-97-6	0.01 mg/L	96.5	70.0	130
EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 2720861)							
EM1919085-001	Anonymous	EG093A-T: Arsenic	7440-38-2	50 µg/L	105	70.0	130
		EG093A-T: Cadmium	7440-43-9	12.5 µg/L	104	70.0	130
		EG093A-T: Chromium	7440-47-3	50 µg/L	103	70.0	130
		EG093A-T: Cobalt	7440-48-4	50 µg/L	102	70.0	130
		EG093A-T: Copper	7440-50-8	50 µg/L	95.1	70.0	130
		EG093A-T: Lead	7439-92-1	50 µg/L	94.8	70.0	130
		EG093A-T: Manganese	7439-96-5	50 µg/L	104	70.0	130
		EG093A-T: Nickel	7440-02-0	50 µg/L	96.4	70.0	130
		EG093A-T: Vanadium	7440-62-2	50 µg/L	106	70.0	130
		EG093A-T: Zinc	7440-66-6	50 µg/L	95.5	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 2700453)							
EP1911894-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	75.3	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 2700456)							
EP1911885-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	103	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2700454)							
EP1911894-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	95.2	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 2710684)							

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 2710684) - continued							
EP1911883-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	86.4	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 2710683)							
EP1911883-001	Anonymous	EK067G: Total Phosphorus as P	----	0.842 mg/L	80.9	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 2700459)							
EP1911885-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	100	70.0	130
EK255A: Ammonia (QCLot: 2720021)							
EP1911899-001	C01S01	EK255A-SW: Ammonia as N	7664-41-7	0.1 mg/L	# Not Determined	70.0	130
EK257A: Nitrite (QCLot: 2720020)							
EP1911899-001	C01S01	EK257A-SW: Nitrite as N	14797-65-0	0.1 mg/L	94.3	70.0	130
EK259A: Nitrite and Nitrate (NOx) (QCLot: 2720023)							
EP1911899-001	C01S01	EK259A-SW: Nitrite + Nitrate as N	----	0.1 mg/L	104	70.0	130
EK262A: Total Nitrogen (QCLot: 2719099)							
EP1911899-001	C01S01	EK262PA-SW: Total Nitrogen as N	----	0.5 mg/L	74.4	70.0	130
EK267A: Total Phosphorus (Persulfate Digestion) (QCLot: 2719098)							
EP1911899-001	C01S01	EK267PA-SW: Total Phosphorus as P	----	0.5 mg/L	74.6	70.0	130
EK271A: Reactive Phosphorus (QCLot: 2720022)							
EP1911899-001	C01S01	EK271A-SW: Reactive Phosphorus as P	14265-44-2	0.1 mg/L	94.6	70.0	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 2705846)							
EP1911899-025	WR2	EP068: gamma-BHC	58-89-9	5 µg/L	95.1	70.0	130
		EP068: Heptachlor	76-44-8	5 µg/L	99.0	70.0	130
		EP068: Aldrin	309-00-2	5 µg/L	103	70.0	130
		EP068: Dieldrin	60-57-1	5 µg/L	77.8	70.0	130
		EP068: Endrin	72-20-8	20 µg/L	86.6	70.0	130
		EP068: 4.4`-DDT	50-29-3	20 µg/L	84.9	70.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 2705846)							
EP1911899-025	WR2	EP068: Diazinon	333-41-5	5 µg/L	107	70.0	130
		EP068: Chlorpyrifos-methyl	5598-13-0	5 µg/L	94.7	70.0	130
		EP068: Pirimphos-ethyl	23505-41-1	5 µg/L	90.3	70.0	130
		EP068: Bromophos-ethyl	4824-78-6	5 µg/L	91.4	70.0	130
		EP068: Prothiofos	34643-46-4	5 µg/L	74.0	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2705844)							
EP1911899-025	WR2	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	75.3	70.0	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	89.7	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2705845)							

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2705845) - continued							
EP1911899-025	WR2	EP071: C10 - C14 Fraction	----	200 µg/L	94.3	70.0	130
		EP071: C15 - C28 Fraction	----	250 µg/L	114	71.0	130
		EP071: C29 - C36 Fraction	----	200 µg/L	92.4	67.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2708918)							
EP1911885-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	123	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2705845)							
EP1911899-025	WR2	EP071: >C10 - C16 Fraction	----	250 µg/L	89.8	70.0	130
		EP071: >C16 - C34 Fraction	----	350 µg/L	98.7	75.0	130
		EP071: >C34 - C40 Fraction	----	150 µg/L	82.7	67.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2708918)							
EP1911885-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	122	70.0	130
EP080: BTEXN (QCLot: 2708918)							
EP1911885-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	119	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	102	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	104	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	103	70.0	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	104	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	101	70.0	130
EP203A: Explosives (QCLot: 2707326)							
EP1911899-024	WR1	EP203-SL: HMX	2691-41-0	200 µg/L	96.5	57.0	143
		EP203-SL: 2.4.6-TNT	118-96-7	200 µg/L	103	66.0	138
		EP203-SL: 4-Amino.2.6-DNT	19406-51-0	200 µg/L	95.1	63.0	131
		EP203-SL: 2.4-Dinitrotoluene	121-14-2	200 µg/L	92.6	69.0	133
		EP203-SL: Nitrobenzene	98-95-3	200 µg/L	79.7	57.0	127
		EP203-SL: PETN	78-11-5	200 µg/L	99.8	51.0	145

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP1911899**	Page	: 1 of 29
Client	: **RPS Australia West Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: SHAE MILLER-WHITE	Telephone	: 08 9406 1306
Project	: EEC19032.011	Date Samples Received	: 13-Nov-2019
Site	: Rottnest Army Jetty	Issue Date	: 06-Dec-2019
Sampler	: ----	No. of samples received	: 30
Order number	: ----	No. of samples analysed	: 25

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG020T: Total Metals by ICP-MS	EP1911804--007	Anonymous	**Arsenic**	7440-38-2	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG020T: Total Metals by ICP-MS	EP1911804--007	Anonymous	**Copper**	7440-50-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EK255A: Ammonia	EP1911899--001	C01S01	**Ammonia as N**	7664-41-7	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Regular Sample Surrogates

Sub-Matrix: **SEDIMENT**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP090S: Organotin Surrogate	EP1911899-016	C06S01	**Tripropyltin**	----	172 %	35.0-130 %	**Recovery greater than upper data quality objective**

Sub-Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP090S: Organotin Surrogate	EP1911899-024	WR1	**Tripropyltin**	----	133 %	24.0-116 %	**Recovery greater than upper data quality objective**
EP090S: Organotin Surrogate	EP1911899-027	WB2	**Tripropyltin**	----	126 %	24.0-116 %	**Recovery greater than upper data quality objective**

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Matrix Spikes (MS)					
TPH - Speciation	0	7	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Organotin Compounds (Soluble)	0	9	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	16	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Organotin Compounds (Soluble)	0	9	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	16	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **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
EA029-A: pH Measurements							
Snap Lock Bag - frozen on receipt at ALS (EA029-TPA)							
C01S01, C01S03, C02S01, C03S01, C06S01, C06S03, C07S01, SZ1	**12-Nov-2019**	**25-Nov-2019**	11-Nov-2020	✓	**02-Dec-2019**	23-Feb-2020	✓
Snap Lock Bag - frozen on receipt at ALS (EA029-TPA)							
C04S01, C05S01	**13-Nov-2019**	**25-Nov-2019**	12-Nov-2020	✓	**02-Dec-2019**	23-Feb-2020	✓
EA029-B: Acidity Trail							
Snap Lock Bag - frozen on receipt at ALS (EA029-TPA)							
C01S01, C01S03, C02S01, C03S01, C06S01, C06S03, C07S01, SZ1	**12-Nov-2019**	**25-Nov-2019**	11-Nov-2020	✓	**02-Dec-2019**	23-Feb-2020	✓
Snap Lock Bag - frozen on receipt at ALS (EA029-TPA)							
C04S01, C05S01	**13-Nov-2019**	**25-Nov-2019**	12-Nov-2020	✓	**02-Dec-2019**	23-Feb-2020	✓
EA033-A: Actual Acidity							
Snap Lock Bag - frozen on receipt at ALS (EA033)							
C01S01, C01S03, C02S01, C03S01, C06S01, C06S03, C07S01, SZ1	**12-Nov-2019**	**25-Nov-2019**	11-Nov-2020	✓	**05-Dec-2019**	23-Feb-2020	✓
Snap Lock Bag - frozen on receipt at ALS (EA033)							
C04S01, C05S01	**13-Nov-2019**	**25-Nov-2019**	12-Nov-2020	✓	**05-Dec-2019**	23-Feb-2020	✓
EA033-B: Potential Acidity							
Snap Lock Bag - frozen on receipt at ALS (EA033)							
C01S01, C01S03, C02S01, C03S01, C06S01, C06S03, C07S01, SZ1	**12-Nov-2019**	**25-Nov-2019**	11-Nov-2020	✓	**05-Dec-2019**	23-Feb-2020	✓
Snap Lock Bag - frozen on receipt at ALS (EA033)							
C04S01, C05S01	**13-Nov-2019**	**25-Nov-2019**	12-Nov-2020	✓	**05-Dec-2019**	23-Feb-2020	✓

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
EA033-C: Acid Neutralising Capacity							
Snap Lock Bag - frozen on receipt at ALS (EA033)							
C01S01, C01S03, C02S01, C03S01, C06S01, C06S03, C07S01, SZ1	**12-Nov-2019**	**25-Nov-2019**	11-Nov-2020	✓	**05-Dec-2019**	23-Feb-2020	✓
Snap Lock Bag - frozen on receipt at ALS (EA033)							
C04S01, C05S01	**13-Nov-2019**	**25-Nov-2019**	12-Nov-2020	✓	**05-Dec-2019**	23-Feb-2020	✓
EA033-D: Retained Acidity							
Snap Lock Bag - frozen on receipt at ALS (EA033)							
C01S01, C01S03, C02S01, C03S01, C06S01, C06S03, C07S01, SZ1	**12-Nov-2019**	**25-Nov-2019**	11-Nov-2020	✓	**05-Dec-2019**	23-Feb-2020	✓
Snap Lock Bag - frozen on receipt at ALS (EA033)							
C04S01, C05S01	**13-Nov-2019**	**25-Nov-2019**	12-Nov-2020	✓	**05-Dec-2019**	23-Feb-2020	✓
EA033-E: Acid Base Accounting							
Snap Lock Bag - frozen on receipt at ALS (EA033)							
C01S01, C01S03, C02S01, C03S01, C06S01, C06S03, C07S01, SZ1	**12-Nov-2019**	**25-Nov-2019**	11-Nov-2020	✓	**05-Dec-2019**	23-Feb-2020	✓
Snap Lock Bag - frozen on receipt at ALS (EA033)							
C04S01, C05S01	**13-Nov-2019**	**25-Nov-2019**	12-Nov-2020	✓	**05-Dec-2019**	23-Feb-2020	✓
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055)							
SZ2	**12-Nov-2019**	**----**	----	----	**18-Nov-2019**	26-Nov-2019	✓
Soil Glass Jar - Unpreserved (EA055)							
C01S01, C01S03, C02S01, C02S02, C03S01, C03S03, C06S01, C06S02, C06S03, C07S01, C07S02, C07S03, SZ1	**12-Nov-2019**	**----**	----	----	**18-Nov-2019**	26-Nov-2019	✓
Soil Glass Jar - Unpreserved (EA055)							
C04S01, C04S02, C05S01, C05S02, C05S03	**13-Nov-2019**	**----**	----	----	**18-Nov-2019**	27-Nov-2019	✓

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
EA150: Particle Sizing							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA150H)							
C01S01, C02S01, C03S01, C06S03, C07S02	**12-Nov-2019**	**----**	----	----	**27-Nov-2019**	10-May-2020	✓
Snap Lock Bag - Friable Asbestos/PSD Bag (EA150H)							
C04S01, C05S02	**13-Nov-2019**	**----**	----	----	**27-Nov-2019**	11-May-2020	✓
EA150: Soil Classification based on Particle Size							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA150H)							
C01S01, C02S01, C03S01, C06S03, C07S02	**12-Nov-2019**	**----**	----	----	**27-Nov-2019**	10-May-2020	✓
Snap Lock Bag - Friable Asbestos/PSD Bag (EA150H)							
C04S01, C05S02	**13-Nov-2019**	**----**	----	----	**27-Nov-2019**	11-May-2020	✓
EA152: Soil Particle Density							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA152)							
C01S01, C02S01, C03S01, C06S03, C07S02	**12-Nov-2019**	**----**	----	----	**27-Nov-2019**	10-May-2020	✓
Snap Lock Bag - Friable Asbestos/PSD Bag (EA152)							
C04S01, C05S02	**13-Nov-2019**	**----**	----	----	**27-Nov-2019**	11-May-2020	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200)							
C01S01, C01S03, C02S01, C03S01, C06S01, C07S01	**12-Nov-2019**	**----**	----	----	**18-Nov-2019**	10-May-2020	✓
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200)							
C04S01, C05S01	**13-Nov-2019**	**----**	----	----	**18-Nov-2019**	11-May-2020	✓
EA200N: Asbestos Quantification (non-NATA)							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200N)							
C01S01, C01S03, C02S01, C03S01, C06S01, C07S01	**12-Nov-2019**	**----**	----	----	**18-Nov-2019**	10-May-2020	✓
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200N)							
C04S01, C05S01	**13-Nov-2019**	**----**	----	----	**18-Nov-2019**	11-May-2020	✓

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
EG020-SD: Total Metals in Sediments by ICPMS							
Soil Glass Jar - Unpreserved (EG020-SD)							
C01S01, C01S03, C02S01, C02S02, C03S01, C03S03, C06S01, C06S02, C07S01, C07S03, SZ1	**12-Nov-2019**	**18-Nov-2019**	10-May-2020	✓	**19-Nov-2019**	10-May-2020	✓
Soil Glass Jar - Unpreserved (EG020-SD)							
C04S01, C04S02, C05S01, C05S03	**13-Nov-2019**	**18-Nov-2019**	11-May-2020	✓	**19-Nov-2019**	11-May-2020	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T-LL)							
C01S01, C01S03, C02S01, C02S02, C03S01, C03S03, C06S01, C06S02, C07S01, C07S03, SZ1	**12-Nov-2019**	**18-Nov-2019**	10-Dec-2019	✓	**19-Nov-2019**	10-Dec-2019	✓
Soil Glass Jar - Unpreserved (EG035T-LL)							
C04S01, C04S02, C05S01, C05S03	**13-Nov-2019**	**18-Nov-2019**	11-Dec-2019	✓	**19-Nov-2019**	11-Dec-2019	✓
EK057G: Nitrite as N by Discrete Analyser							
Soil Glass Jar - Unpreserved (EK057G)							
C01S01, C01S03, C02S01, C03S01, C06S01, C07S01, SZ1	**12-Nov-2019**	**19-Nov-2019**	10-May-2020	✓	**19-Nov-2019**	10-May-2020	✓
Soil Glass Jar - Unpreserved (EK057G)							
C04S01, C05S01	**13-Nov-2019**	**19-Nov-2019**	11-May-2020	✓	**19-Nov-2019**	11-May-2020	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Soil Glass Jar - Unpreserved (EK059G)							
C01S01, C01S03, C02S01, C03S01, C06S01, C07S01, SZ1	**12-Nov-2019**	**19-Nov-2019**	10-May-2020	✓	**19-Nov-2019**	10-May-2020	✓
Soil Glass Jar - Unpreserved (EK059G)							
C04S01, C05S01	**13-Nov-2019**	**19-Nov-2019**	11-May-2020	✓	**19-Nov-2019**	11-May-2020	✓

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
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Soil Glass Jar - Unpreserved (EK061G)							
C01S01, C01S03, C02S01, C03S01, C06S01, C07S01, SZ1	**12-Nov-2019**	**04-Dec-2019**	10-May-2020	✓	**06-Dec-2019**	10-May-2020	✓
Soil Glass Jar - Unpreserved (EK061G)							
C04S01, C05S01	**13-Nov-2019**	**04-Dec-2019**	11-May-2020	✓	**06-Dec-2019**	11-May-2020	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Soil Glass Jar - Unpreserved (EK067G)							
C01S01, C01S03, C02S01, C03S01, C06S01, C07S01, SZ1	**12-Nov-2019**	**04-Dec-2019**	10-May-2020	✓	**06-Dec-2019**	10-May-2020	✓
Soil Glass Jar - Unpreserved (EK067G)							
C04S01, C05S01	**13-Nov-2019**	**04-Dec-2019**	11-May-2020	✓	**06-Dec-2019**	11-May-2020	✓
EK071G: Reactive Phosphorus as P by discrete analyser							
Soil Glass Jar - Unpreserved (EK071G)							
C01S01, C01S03, C02S01, C03S01, C06S01, C07S01, SZ1	**12-Nov-2019**	**19-Nov-2019**	10-May-2020	✓	**19-Nov-2019**	10-May-2020	✓
Soil Glass Jar - Unpreserved (EK071G)							
C04S01, C05S01	**13-Nov-2019**	**19-Nov-2019**	11-May-2020	✓	**19-Nov-2019**	11-May-2020	✓
EK255A SD: Ammonia in Sediment							
Soil Glass Jar - Unpreserved (EK255A SD)							
C01S01, C01S03, C02S01, C03S01, C06S01, C07S01, SZ1	**12-Nov-2019**	**----**	----	----	**27-Nov-2019**	10-May-2020	✓
Soil Glass Jar - Unpreserved (EK255A SD)							
C04S01, C05S01	**13-Nov-2019**	**----**	----	----	**27-Nov-2019**	11-May-2020	✓
EN68: Seawater Elutriate Testing Procedure							
Non-Volatile Leach: 28 day HT(e.g. Hg, CrVI) (EN68a)							
C01S01, C02S01, C03S03, C06S02, C07S01	**12-Nov-2019**	**21-Nov-2019**	10-Dec-2019	✓	**----**	----	----
Non-Volatile Leach: 28 day HT(e.g. Hg, CrVI) (EN68a)							
C04S02, C05S03, EW	**13-Nov-2019**	**21-Nov-2019**	11-Dec-2019	✓	**----**	----	----

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
EP003: Total Organic Carbon (TOC) in Soil							
Soil Glass Jar - Unpreserved (EP003)							
C01S01, C01S03, C02S01, C03S01, C06S01, C07S01, SZ1	**12-Nov-2019**	**03-Dec-2019**	10-Dec-2019	✓	**03-Dec-2019**	10-Dec-2019	✓
Soil Glass Jar - Unpreserved (EP003)							
C04S01, C05S01	**13-Nov-2019**	**03-Dec-2019**	11-Dec-2019	✓	**03-Dec-2019**	11-Dec-2019	✓
EP070: Total Petroleum Hydrocarbons - Speciation							
Soil Glass Jar - Unpreserved (EP070)							
C01S01, C02S01, C03S01, C06S03, C07S02	**12-Nov-2019**	**18-Nov-2019**	26-Nov-2019	✓	**21-Nov-2019**	28-Dec-2019	✓
Soil Glass Jar - Unpreserved (EP070)							
C04S01, C05S02	**13-Nov-2019**	**18-Nov-2019**	27-Nov-2019	✓	**21-Nov-2019**	28-Dec-2019	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP071-SD)							
C01S01, C01S03, C02S01, C02S02, C03S01, C03S03, C06S01, C06S02, C07S01, C07S03, SZ1	**12-Nov-2019**	**18-Nov-2019**	26-Nov-2019	✓	**26-Nov-2019**	28-Dec-2019	✓
Soil Glass Jar - Unpreserved (EP071-SD)							
C04S01, C04S02, C05S01, C05S03	**13-Nov-2019**	**18-Nov-2019**	27-Nov-2019	✓	**26-Nov-2019**	28-Dec-2019	✓

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
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071-SD)							
C01S01, C01S03, C02S01, C02S02, C03S01, C03S03, C06S01, C06S02, C07S01, C07S03, SZ1	**12-Nov-2019**	**18-Nov-2019**	26-Nov-2019	✓	**26-Nov-2019**	28-Dec-2019	✓
Soil Glass Jar - Unpreserved (EP080-SD)							
C01S01, C01S03, C02S01, C02S02, C03S01, C03S03, C06S01, C06S02, C07S01, C07S03, SZ1	**12-Nov-2019**	**26-Nov-2019**	26-Nov-2019	✓	**26-Nov-2019**	26-Nov-2019	✓
Soil Glass Jar - Unpreserved (EP071-SD)							
C04S01, C04S02, C05S01, C05S03	**13-Nov-2019**	**18-Nov-2019**	27-Nov-2019	✓	**26-Nov-2019**	28-Dec-2019	✓
Soil Glass Jar - Unpreserved (EP080-SD)							
C04S01, C04S02, C05S01, C05S03	**13-Nov-2019**	**26-Nov-2019**	27-Nov-2019	✓	**26-Nov-2019**	27-Nov-2019	✓
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080-SD)							
C01S01, C01S03, C02S01, C02S02, C03S01, C03S03, C06S01, C06S02, C07S01, C07S03, SZ1	**12-Nov-2019**	**26-Nov-2019**	26-Nov-2019	✓	**26-Nov-2019**	26-Nov-2019	✓
Soil Glass Jar - Unpreserved (EP080-SD)							
C04S01, C04S02, C05S01, C05S03	**13-Nov-2019**	**26-Nov-2019**	27-Nov-2019	✓	**26-Nov-2019**	27-Nov-2019	✓
EP080-SD: BTEXN							
Soil Glass Jar - Unpreserved (EP080-SD)							
C01S01, C01S03, C02S01, C02S02, C03S01, C03S03, C06S01, C06S02, C07S01, C07S03, SZ1	**12-Nov-2019**	**26-Nov-2019**	26-Nov-2019	✓	**26-Nov-2019**	26-Nov-2019	✓
Soil Glass Jar - Unpreserved (EP080-SD)							
C04S01, C04S02, C05S01, C05S03	**13-Nov-2019**	**26-Nov-2019**	27-Nov-2019	✓	**26-Nov-2019**	27-Nov-2019	✓

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
EP090: Organotin Compounds							
Soil Glass Jar - Unpreserved (EP090)							
C01S01, C01S03, C02S01, C03S01, C06S01, C07S01, SZ1	**12-Nov-2019**	**18-Nov-2019**	26-Nov-2019	✓	**19-Nov-2019**	28-Dec-2019	✓
Soil Glass Jar - Unpreserved (EP090)							
C04S01, C05S01	**13-Nov-2019**	**18-Nov-2019**	27-Nov-2019	✓	**19-Nov-2019**	28-Dec-2019	✓
EP130A: Organophosphorus Pesticides (Ultra-trace)							
Soil Glass Jar - Unpreserved (EP130)							
C01S01, C01S03, C02S01, C02S02, C03S01, C03S03, C06S01, C06S02, C07S01, C07S03, SZ1	**12-Nov-2019**	**18-Nov-2019**	26-Nov-2019	✓	**20-Nov-2019**	28-Dec-2019	✓
Soil Glass Jar - Unpreserved (EP130)							
C04S01, C04S02, C05S01, C05S03	**13-Nov-2019**	**18-Nov-2019**	27-Nov-2019	✓	**20-Nov-2019**	28-Dec-2019	✓
EP131A: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP131A)							
C01S01, C01S03, C02S01, C02S02, C03S01, C03S03, C06S01, C06S02, C07S01, C07S03, SZ1	**12-Nov-2019**	**18-Nov-2019**	26-Nov-2019	✓	**20-Nov-2019**	28-Dec-2019	✓
Soil Glass Jar - Unpreserved (EP131A)							
C04S01, C04S02, C05S01, C05S03	**13-Nov-2019**	**18-Nov-2019**	27-Nov-2019	✓	**20-Nov-2019**	28-Dec-2019	✓
EP132B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP132B-SD)							
C01S01, C01S03, C02S01, C02S02, C03S01, C03S03, C06S01, C06S02, C07S01, C07S03, SZ1	**12-Nov-2019**	**18-Nov-2019**	26-Nov-2019	✓	**29-Nov-2019**	28-Dec-2019	✓
Soil Glass Jar - Unpreserved (EP132B-SD)							
C04S01, C04S02, C05S01, C05S03	**13-Nov-2019**	**18-Nov-2019**	27-Nov-2019	✓	**29-Nov-2019**	28-Dec-2019	✓

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
EP203A: Explosives							
Soil Glass Jar - Unpreserved (EP203)							
C01S01, C01S03, C02S01, C03S01, C06S01, C07S01, SZ1	**12-Nov-2019**	**19-Nov-2019**	26-Nov-2019	✓	**19-Nov-2019**	29-Dec-2019	✓
Soil Glass Jar - Unpreserved (EP203)							
C04S01, C05S01	**13-Nov-2019**	**19-Nov-2019**	27-Nov-2019	✓	**19-Nov-2019**	29-Dec-2019	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X)							
C01S01, C01S03, C02S01, C02S02, C03S01, C03S03, C06S01, C06S02, C07S01, C07S03, SZ1, SZ2	**12-Nov-2019**	**17-Nov-2019**	10-May-2020	✓	**20-Nov-2019**	27-Dec-2019	✓
HDPE Soil Jar (EP231X)							
C04S01, C04S02, C05S01, C05S03	**13-Nov-2019**	**17-Nov-2019**	11-May-2020	✓	**20-Nov-2019**	27-Dec-2019	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X)							
C01S01, C01S03, C02S01, C02S02, C03S01, C03S03, C06S01, C06S02, C07S01, C07S03, SZ1, SZ2	**12-Nov-2019**	**17-Nov-2019**	10-May-2020	✓	**20-Nov-2019**	27-Dec-2019	✓
HDPE Soil Jar (EP231X)							
C04S01, C04S02, C05S01, C05S03	**13-Nov-2019**	**17-Nov-2019**	11-May-2020	✓	**20-Nov-2019**	27-Dec-2019	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X)							
C01S01, C01S03, C02S01, C02S02, C03S01, C03S03, C06S01, C06S02, C07S01, C07S03, SZ1, SZ2	**12-Nov-2019**	**17-Nov-2019**	10-May-2020	✓	**20-Nov-2019**	27-Dec-2019	✓
HDPE Soil Jar (EP231X)							
C04S01, C04S02, C05S01, C05S03	**13-Nov-2019**	**17-Nov-2019**	11-May-2020	✓	**20-Nov-2019**	27-Dec-2019	✓

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
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X)							
C01S01, C01S03, C02S01, C02S02, C03S01, C03S03, C06S01, C06S02, C07S01, C07S03, SZ1, SZ2	**12-Nov-2019**	**17-Nov-2019**	10-May-2020	✓	**20-Nov-2019**	27-Dec-2019	✓
HDPE Soil Jar (EP231X)							
C04S01, C04S02, C05S01, C05S03	**13-Nov-2019**	**17-Nov-2019**	11-May-2020	✓	**20-Nov-2019**	27-Dec-2019	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X)							
C01S01, C01S03, C02S01, C02S02, C03S01, C03S03, C06S01, C06S02, C07S01, C07S03, SZ1, SZ2	**12-Nov-2019**	**17-Nov-2019**	10-May-2020	✓	**20-Nov-2019**	27-Dec-2019	✓
HDPE Soil Jar (EP231X)							
C04S01, C04S02, C05S01, C05S03	**13-Nov-2019**	**17-Nov-2019**	11-May-2020	✓	**20-Nov-2019**	27-Dec-2019	✓

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
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020B-T)							
WR1, WB1	**12-Nov-2019**	**15-Nov-2019**	10-May-2020	✓	**15-Nov-2019**	10-May-2020	✓
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020B-T)							
WR2, WB2	**13-Nov-2019**	**15-Nov-2019**	11-May-2020	✓	**15-Nov-2019**	11-May-2020	✓
EG035T: Total Mercury by FIMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T-LL)							
C01S01, C02S01, C03S03, C04S02, C05S03, C06S02, C07S01, EW	**21-Nov-2019**	**----**	----	----	**26-Nov-2019**	19-Dec-2019	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG035T)							
WR1, WB1	**12-Nov-2019**	**----**	----	----	**15-Nov-2019**	10-Dec-2019	✓
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG035T)							
WR2, WB2	**13-Nov-2019**	**----**	----	----	**15-Nov-2019**	11-Dec-2019	✓

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
EG093T: Total Metals in Saline Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG093A-T)							
C01S01, C02S01, C03S03, C04S02, C05S03, C06S02, C07S01, EW	**21-Nov-2019**	**23-Nov-2019**	19-May-2020	✓	**23-Nov-2019**	19-May-2020	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G)							
WR1, WB1	**12-Nov-2019**	**----**	----	----	**13-Nov-2019**	10-Dec-2019	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G)							
WR2, WB2	**13-Nov-2019**	**----**	----	----	**13-Nov-2019**	11-Dec-2019	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G)							
WR1, WB1	**12-Nov-2019**	**----**	----	----	**13-Nov-2019**	14-Nov-2019	✓
Clear Plastic Bottle - Natural (EK057G)							
WR2, WB2	**13-Nov-2019**	**----**	----	----	**13-Nov-2019**	15-Nov-2019	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G)							
WR1, WB1	**12-Nov-2019**	**----**	----	----	**13-Nov-2019**	10-Dec-2019	✓
Clear Plastic Bottle - Sulfuric Acid (EK059G)							
WR2, WB2	**13-Nov-2019**	**----**	----	----	**13-Nov-2019**	11-Dec-2019	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
WR1, WB1	**12-Nov-2019**	**20-Nov-2019**	10-Dec-2019	✓	**21-Nov-2019**	10-Dec-2019	✓
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
WR2, WB2	**13-Nov-2019**	**20-Nov-2019**	11-Dec-2019	✓	**21-Nov-2019**	11-Dec-2019	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
WR1, WB1	**12-Nov-2019**	**20-Nov-2019**	10-Dec-2019	✓	**21-Nov-2019**	10-Dec-2019	✓
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
WR2, WB2	**13-Nov-2019**	**20-Nov-2019**	11-Dec-2019	✓	**21-Nov-2019**	11-Dec-2019	✓
EK071G: Reactive Phosphorus as P by discrete analyser							
Clear Plastic Bottle - Natural (EK071G)							
WR1, WB1	**12-Nov-2019**	**----**	----	----	**13-Nov-2019**	14-Nov-2019	✓
Clear Plastic Bottle - Natural (EK071G)							
WR2, WB2	**13-Nov-2019**	**----**	----	----	**13-Nov-2019**	15-Nov-2019	✓
EK255A: Ammonia							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK255A-SW)							
C01S01, C02S01, C03S03, C04S02, C05S03, C06S02, C07S01, EW	**21-Nov-2019**	**----**	----	----	**22-Nov-2019**	19-Dec-2019	✓

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
EK257A: Nitrite							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK257A-SW)							
C01S01, C02S01, C03S03, C04S02, C05S03, C06S02, C07S01, EW	**21-Nov-2019**	**----**	----	----	**22-Nov-2019**	25-Nov-2019	✓
EK259A: Nitrite and Nitrate (NOx)							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK259A-SW)							
C01S01, C02S01, C03S03, C04S02, C05S03, C06S02, C07S01, EW	**21-Nov-2019**	**----**	----	----	**22-Nov-2019**	19-Dec-2019	✓
EK262A: Total Nitrogen							
Clear Plastic Bottle - Frozen (AS) (EK262PA-SW)							
C01S01, C02S01, C03S03, C04S02, C05S03, C06S02, C07S01, EW	**21-Nov-2019**	**22-Nov-2019**	19-Dec-2019	✓	**22-Nov-2019**	19-Dec-2019	✓
EK267A: Total Phosphorus (Persulfate Digestion)							
Clear Plastic Bottle - Frozen (AS) (EK267PA-SW)							
C01S01, C02S01, C03S03, C04S02, C05S03, C06S02, C07S01, EW	**21-Nov-2019**	**22-Nov-2019**	19-Dec-2019	✓	**22-Nov-2019**	19-Dec-2019	✓
EK271A: Reactive Phosphorus							
Clear Plastic - Filtered & Frozen (AS/ISO) - UT Nu (EK271A-SW)							
C01S01, C02S01, C03S03, C04S02, C05S03, C06S02, C07S01, EW	**21-Nov-2019**	**----**	----	----	**22-Nov-2019**	19-Dec-2019	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved (EP068)							
WR1, WB1	**12-Nov-2019**	**16-Nov-2019**	19-Nov-2019	✓	**19-Nov-2019**	26-Dec-2019	✓
Amber Glass Bottle - Unpreserved (EP068)							
WR2, WB2	**13-Nov-2019**	**16-Nov-2019**	20-Nov-2019	✓	**19-Nov-2019**	26-Dec-2019	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068)							
WR1, WB1	**12-Nov-2019**	**16-Nov-2019**	19-Nov-2019	✓	**19-Nov-2019**	26-Dec-2019	✓
Amber Glass Bottle - Unpreserved (EP068)							
WR2, WB2	**13-Nov-2019**	**16-Nov-2019**	20-Nov-2019	✓	**19-Nov-2019**	26-Dec-2019	✓

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
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
WR1,	WB1	**12-Nov-2019**	**16-Nov-2019**	19-Nov-2019	✓	**19-Nov-2019**	26-Dec-2019	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))								
WR2,	WB2	**13-Nov-2019**	**16-Nov-2019**	20-Nov-2019	✓	**19-Nov-2019**	26-Dec-2019	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)								
WR1,	WB1	**12-Nov-2019**	**16-Nov-2019**	19-Nov-2019	✓	**19-Nov-2019**	26-Dec-2019	✓
Amber Glass Bottle - Unpreserved (EP071)								
WR2,	WB2	**13-Nov-2019**	**16-Nov-2019**	20-Nov-2019	✓	**19-Nov-2019**	26-Dec-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
WR1, WTB1	WB1,	**12-Nov-2019**	**21-Nov-2019**	26-Nov-2019	✓	**21-Nov-2019**	26-Nov-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
WR2,	WB2	**13-Nov-2019**	**21-Nov-2019**	27-Nov-2019	✓	**21-Nov-2019**	27-Nov-2019	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
WR1,	WB1	**12-Nov-2019**	**16-Nov-2019**	19-Nov-2019	✓	**19-Nov-2019**	26-Dec-2019	✓
Amber Glass Bottle - Unpreserved (EP071)								
WR2,	WB2	**13-Nov-2019**	**16-Nov-2019**	20-Nov-2019	✓	**19-Nov-2019**	26-Dec-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
WR1, WTB1	WB1,	**12-Nov-2019**	**21-Nov-2019**	26-Nov-2019	✓	**21-Nov-2019**	26-Nov-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
WR2,	WB2	**13-Nov-2019**	**21-Nov-2019**	27-Nov-2019	✓	**21-Nov-2019**	27-Nov-2019	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
WR1, WTB1	WB1,	**12-Nov-2019**	**21-Nov-2019**	26-Nov-2019	✓	**21-Nov-2019**	26-Nov-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
WR2,	WB2	**13-Nov-2019**	**21-Nov-2019**	27-Nov-2019	✓	**21-Nov-2019**	27-Nov-2019	✓
EP090: Organotin Compounds (Soluble)								
Amber Glass Bottle - Unpreserved (EP090S)								
WR1,	WB1	**12-Nov-2019**	**18-Nov-2019**	19-Nov-2019	✓	**19-Nov-2019**	28-Dec-2019	✓
Amber Glass Bottle - Unpreserved (EP090S)								
WR2,	WB2	**13-Nov-2019**	**18-Nov-2019**	20-Nov-2019	✓	**19-Nov-2019**	28-Dec-2019	✓
EP203A: Explosives								
Amber Glass Bottle - Unpreserved (EP203-SL)								
WR1,	WB1	**12-Nov-2019**	**----**	----	----	**18-Nov-2019**	19-Nov-2019	✓
Amber Glass Bottle - Unpreserved (EP203-SL)								
WR2,	WB2	**13-Nov-2019**	**----**	----	----	**18-Nov-2019**	20-Nov-2019	✓

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-SUT)								
WR1,	WB1,	**12-Nov-2019**	**19-Nov-2019**	10-May-2020	✓	**22-Nov-2019**	10-May-2020	✓
WTB1								
HDPE (no PTFE) (EP231X-SUT)								
WR2,	WB2	**13-Nov-2019**	**19-Nov-2019**	11-May-2020	✓	**22-Nov-2019**	11-May-2020	✓
HDPE (no PTFE) (EP231X-SUT)								
C01S01,	C02S01,	**21-Nov-2019**	**30-Nov-2019**	19-May-2020	✓	**02-Dec-2019**	19-May-2020	✓
C03S03,	C04S02,							
C05S03,	C06S02,							
C07S01,	EW							
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X-SUT)								
WR1,	WB1,	**12-Nov-2019**	**19-Nov-2019**	10-May-2020	✓	**22-Nov-2019**	10-May-2020	✓
WTB1								
HDPE (no PTFE) (EP231X-SUT)								
WR2,	WB2	**13-Nov-2019**	**19-Nov-2019**	11-May-2020	✓	**22-Nov-2019**	11-May-2020	✓
HDPE (no PTFE) (EP231X-SUT)								
C01S01,	C02S01,	**21-Nov-2019**	**30-Nov-2019**	19-May-2020	✓	**02-Dec-2019**	19-May-2020	✓
C03S03,	C04S02,							
C05S03,	C06S02,							
C07S01,	EW							
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X-SUT)								
WR1,	WB1,	**12-Nov-2019**	**19-Nov-2019**	10-May-2020	✓	**22-Nov-2019**	10-May-2020	✓
WTB1								
HDPE (no PTFE) (EP231X-SUT)								
WR2,	WB2	**13-Nov-2019**	**19-Nov-2019**	11-May-2020	✓	**22-Nov-2019**	11-May-2020	✓
HDPE (no PTFE) (EP231X-SUT)								
C01S01,	C02S01,	**21-Nov-2019**	**30-Nov-2019**	19-May-2020	✓	**02-Dec-2019**	19-May-2020	✓
C03S03,	C04S02,							
C05S03,	C06S02,							
C07S01,	EW							

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-SUT) WR1, WB1, WTB1	**12-Nov-2019**	**19-Nov-2019**	10-May-2020	✓	**22-Nov-2019**	10-May-2020	✓
HDPE (no PTFE) (EP231X-SUT) WR2, WB2	**13-Nov-2019**	**19-Nov-2019**	11-May-2020	✓	**22-Nov-2019**	11-May-2020	✓
HDPE (no PTFE) (EP231X-SUT) C01S01, C02S01, C03S03, C04S02, C05S03, C06S02, C07S01, EW	**21-Nov-2019**	**30-Nov-2019**	19-May-2020	✓	**02-Dec-2019**	19-May-2020	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X-SUT) WR1, WB1, WTB1	**12-Nov-2019**	**19-Nov-2019**	10-May-2020	✓	**22-Nov-2019**	10-May-2020	✓
HDPE (no PTFE) (EP231X-SUT) WR2, WB2	**13-Nov-2019**	**19-Nov-2019**	11-May-2020	✓	**22-Nov-2019**	11-May-2020	✓
HDPE (no PTFE) (EP231X-SUT) C01S01, C02S01, C03S03, C04S02, C05S03, C06S02, C07S01, EW	**21-Nov-2019**	**30-Nov-2019**	19-May-2020	✓	**02-Dec-2019**	19-May-2020	✓

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)							
Ammonia in Sediments	EK255A SD	2	11	**18.18**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chromium Suite for Acid Sulphate Soils	EA033	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Explosives	EP203	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	4	34	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organophosphorus Pesticides (Ultra-trace)	EP130	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Analysis	EP090	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAHs in Sediments by GCMS(SIM)	EP132B-SD	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-Soluble By Discrete Analyser	EK071G	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029-TPA	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Sediments by ICPMS	EG020-SD	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP003	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosporus By Discrete Analyser	EK067G	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Semivolatile Fraction	EP071-SD	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Speciation	EP070	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia in Sediments	EK255A SD	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chromium Suite for Acid Sulphate Soils	EA033	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Explosives	EP203	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organophosphorus Pesticides (Ultra-trace)	EP130	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Analysis	EP090	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAHs in Sediments by GCMS(SIM)	EP132B-SD	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-Soluble By Discrete Analyser	EK071G	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

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 Control Samples (LCS) - Continued							
TKN as N By Discrete Analyser	EK061G	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Sediments by ICPMS	EG020-SD	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP003	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosporus By Discrete Analyser	EK067G	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Semivolatile Fraction	EP071-SD	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Speciation	EP070	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia in Sediments	EK255A SD	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chromium Suite for Acid Sulphate Soils	EA033	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Explosives	EP203	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organophosphorus Pesticides (Ultra-trace)	EP130	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Analysis	EP090	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAHs in Sediments by GCMS(SIM)	EP132B-SD	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-Soluble By Discrete Analyser	EK071G	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029-TPA	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Sediments by ICPMS	EG020-SD	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP003	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosporus By Discrete Analyser	EK067G	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Semivolatile Fraction	EP071-SD	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Speciation	EP070	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia in Sediments	EK255A SD	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Explosives	EP203	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organophosphorus Pesticides (Ultra-trace)	EP130	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Analysis	EP090	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

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	
Matrix Spikes (MS) - Continued							
PAHs in Sediments by GCMS(SIM)	EP132B-SD	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-Soluble By Discrete Analyser	EK071G	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Sediments by ICPMS	EG020-SD	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosporus By Discrete Analyser	EK067G	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Semivolatile Fraction	EP071-SD	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Speciation	EP070	0	7	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	1	15	**6.67**	**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)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Explosives (Standard Level)	EP203-SL	2	10	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	11	**18.18**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Compounds (Soluble)	EP090S	0	9	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	0	16	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	4	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	10	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	22	**13.64**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	1	4	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	2	21	**9.52**	**9.52**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Saline Water -Suite B by ORC-ICPMS	EG093B-T	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	**10.53**	**10.00**	✓	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 Control Samples (LCS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Explosives (Standard Level)	EP203-SL	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Compounds (Soluble)	EP090S	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	2	16	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	1	21	**4.76**	**4.76**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Saline Water -Suite B by ORC-ICPMS	EG093B-T	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Explosives (Standard Level)	EP203-SL	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Compounds (Soluble)	EP090S	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	2	16	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	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*	
Method Blanks (MB) - Continued							
Total Mercury by FIMS	EG035T	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	1	21	**4.76**	**4.76**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Saline Water -Suite B by ORC-ICPMS	EG093B-T	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Explosives (Standard Level)	EP203-SL	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Compounds (Soluble)	EP090S	0	9	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	0	16	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	1	21	**4.76**	**4.76**	✓	NEPM 2013 B3 & ALS QC Standard
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	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
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029-TPA	SOIL	In house: Referenced to Ahern et al 2004 - a suspension peroxide oxidation method following the 'sulfur trail' by determining the level of 1M KCL extractable sulfur and the sulfur level after oxidation of soil sulphides. The 'acidity trail' is followed by measurement of TAA, TPA and TSA. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	In house: Referenced to Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
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 (2013) Schedule B(3) Section 6.1 and Table 1 (14 day holding time).
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Soil Particle Density	EA152	SOIL	Soil Particle Density by AS 1289.3.5.1-2006 : Methods of testing soils for engineering purposes - Soil classification tests - Determination of the soil particle density of a soil - Standard method
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Asbestos Classification and Quantitation per NEPM 2013	* EA200N	SOIL	Asbestos Classification and Quantitation per NEPM 2013 with Confirmation of Identification by AS 4964 - 2004 Gravimetric determination of Asbestos Containing Material, Fibrous Asbestos, Asbestos Fines and sample weight and calculation of percentage concentrations per NEPM protocols. Asbestos (Fines and Fibrous FA+AF) is reported as the equivalent weight in the sample received after accounting for sub-sampling (where applicable for the <7mm and/or <2mm fractions).
Total Metals in Sediments by ICPMS	EG020-SD	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector. Analyte list and LORs per NODG.
Total Mercury by FIMS (Low Level)	EG035T-LL	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals in Saline Water -Suite B by ORC-ICPMS	EG093B-T	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N - Soluble by Discrete Analyser	EK057G	SOIL	In house: Referenced to APHA 4500-NO3- B. Nitrite in a water extract is determined by direct colourimetry by Discrete Analyser.
Nitrate as N - Soluble by Discrete Analyser	EK058G	SOIL	In house: Referenced to APHA 4500-NO3- F. Nitrate in the 1:5 soil:water extract is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	SOIL	In house: Thermo Scientific Method D08727 and NEMI (National Environmental Method Index) Method ID: 9171. This method covers the determination of total oxidised nitrogen (NOx-N) and nitrate (NO3-N) by calculation, Combined oxidised Nitrogen (NO2+NO3) in a water extract is determined by direct colourimetry by Discrete Analyser.
TKN as N By Discrete Analyser	EK061G	SOIL	In house: Referenced to APHA 4500-Norg-D Soil samples are digested using Kjeldahl digestion followed by determination by Discrete Analyser.
Total Nitrogen as N (TKN + NOx) By Discrete Analyser	EK062G	SOIL	In house: Referenced to APHA 4500 Norg/NO3- Total Nitrogen is determined as the sum of TKN and Oxidised Nitrrogen, each determined seperately as N.
Total Phosporus By Discrete Analyser	EK067G	SOIL	In house: Referenced to APHA 4500 P-B&F This procedure involves sulfuric acid digestion and quantification using Discrete Analyser.
Reactive Phosphorus as P-Soluble By Discrete Analyser	EK071G	SOIL	In house: Referenced to APHA 4500 P-F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3) (
Ammonia in Sediments	EK255A SD	SOIL	In house: Referenced to Rayment and Higginson (1992) Method 7C1 and 7C2. This method measures exchangeable ammonium which is defined by the amount of ammonium released by shaking sediment with an un-buffered 2M potassium chloride solution.
Ammonia as N - Ultra-Trace in Saline Waters	EK255A-SW	SOIL	In house: Referenced to APHA 4500-NH3 H. Ammonia is determined by direct colorimetry by FIA. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N - Ultra-Trace in Saline Waters	EK257A-SW	SOIL	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by FIA.
Nitrate as N - Ultra-Trace in Saline Waters	EK258A-SW	SOIL	In house: Referenced to APHA 4500-NO3- I. Nitrate is reduced to nitrite by way of a cadmium reduction column followed by quantification by FIA. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N - Ultra-Trace in Saline Waters	EK259A-SW	SOIL	In house: Referenced to APHA 4500-NO3- I. Combined oxidised Nitrogen (NO2+NO3) is determined by Cadmium Reduction and direct colourimetry by FIA.
TKN (Total N - NOx-N). (FIA - UT) in Saline Waters	EK261PA-SW	SOIL	In house: Referenced to APHA 4500-P J. & 4500-NO3- I. Calculated by difference from total Nitrogen and NOx. Contributing method parameters are determined by FIA. This method is compliant with NEPM (2013) Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Total Nitrogen/Persulfate Digestion/Ultra-Trace/Saline	EK262PA-SW	SOIL	In house: Referenced to APHA 4500-P J. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus/Persulfate Digestion/ Ultra Trace /Saline	EK267PA-SW	SOIL	In house: Referenced to APHA 4500-P J. Persulfate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus. As sample is digested with persulfate under alkaline conditions yielding orthophosphate and nitrate. Following digestion, analytes are determined by flow injection analysis. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P - Ultra-Trace in Saline Water	EK271A-SW	SOIL	In house: Referenced to APHA 4500-P E Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by FIA. This method is compliant with NEPM (2013) Schedule B(3)
Total Organic Carbon	EP003	SOIL	In house C-IR17. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automatically measured by infra-red detector.
TPH - Speciation	EP070	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3) (Method 506.1)
TPH - Semivolatile Fraction	EP071-SD	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH Volatiles/BTEX in Sediments	EP080-SD	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
Organotin Analysis	EP090	SOIL	In house: Referenced to USEPA SW 846 - 8270D Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.
Organophosphorus Pesticides (Ultra-trace)	EP130	SOIL	In house: Referenced to USEPA Method 3640 (GPC cleanup), 8141 (GC/FPD - Capillary Column) This technique is compliant with NEPM (2013) Schedule B(3).
Organochlorine Pesticides (Ultra-trace)	EP131A	SOIL	In house: Referenced to USEPA Method 3640 (GPC cleanup),3620 (Florisil), 8081/8082 (GC/µECD/µECD) This technique is compliant with NEPM (2013) Schedule B(3)
PAHs in Sediments by GCMS(SIM)	EP132B-SD	SOIL	In house: Referenced to USEPA 8270D GCMS Capillary column, SIM mode using large volume programmed temperature vaporisation injection.
Explosives	EP203	SOIL	In house: Referenced to USEPA 8330 UV-DAD, LCMS (APCI in negative mode). Residues of explosives are extracted from air-dried soil samples with acetonitrile. An aliquot of the organic phase is taken and diluted with water for LC/MS determination.
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.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	SOIL	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 concentrated, combined with an equal volume of reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Organotin Compounds (Soluble)	EP090S	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by GC/MS coupled with high volume injection and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Explosives (Standard Level)	EP203-SL	WATER	In house: Referenced to USEPA 8330, Modified In-House, UV-DAD, LCMS (APCI in negative mode). Samples are diluted with acetonitrile and subjected to LC/MS for quantification.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	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 concentrated, combined with an equal volume of reagent water and 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
TKN/TP Digestion	EK061/EK067	SOIL	In house: Referenced to APHA 4500 Norg- D; APHA 4500 P - H. Macro Kjeldahl digestion.
Persulfate Digestion for UT Dissolved TN and TP for FIA fin	EK262/267PA-SW Prep	SOIL	In house: Referenced to APHA 4500 P - J. This method is compliant with NEPM (2013) Schedule B(3)
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Digestion for Total Recoverable Metals - ORC	EN25-ORC	SOIL	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of reagent grade water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.

Preparation Methods	Method	Matrix	Method Descriptions
Seawater Elutriate Testing Procedure	EN68a	SOIL	USEPA Evaluation of Dredged Material Proposed for Ocean Disposal - Testing Guide, 1991, EPA-503/8-91/001, USEPA and US Army Corps of Engineers. ANZECC Interim Ocean Disposal Guidelines, December, 1998 This Procedure outlines the preparation of leachate designed to simulate release of contaminants from sediment during the disposal of dredged material. Release can occur by physical processes or a variety of chemical changes such as oxidation of metal sulphides and release of contaminants adsorbed to particles or organic matter.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Tumbler Extraction for Explosives.	EP203-PR	SOIL	In house: Referenced to USEPA8330. Sample extractions are performed using end over end tumbling in place of sonic bath extraction.
Dry and Pulverise (up to 100g)	GEO30	SOIL	#
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids/ Sample Cleanup	ORG17A-UTP	SOIL	In house: Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. Samples are extracted, concentrated (by KD) and exchanged into an appropriate solvent for GPC and florisil cleanup as required.
Tumbler Extraction of Solids for LVI (Non-concentrating)	ORG17D	SOIL	In house: 10g of sample, Na2SO4 and surrogate are extracted with 50mL 1:1 DCM/Acetone by end over end tumbling. An aliquot is concentrated by nitrogen blowdown to a reduced volume for analysis if required.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17-SP	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Organotin Sample Preparation	ORG35	SOIL	In house: 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.
SPE preparation for PFAS	ORG72	SOIL	In house
Sample Extraction for PFAS	ORG73	SOIL	In house
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

Preparation Methods	Method	Matrix	Method Descriptions
Organotin Sample Preparation	ORG34	WATER	In house. A specified volume of sample is spiked with surrogate, acidified and vacuum filtered. Reagents and solvent are added and the mixture tumbled. The butyltin compounds is derivitisated, extracted and the subtitution reaction completed. The extract is transferred to a separatory funnel and further extracted two times with petroleum ether. The resultant extracts are combined and concentrated for analysis.
SPE preparation for PFAS	ORG72	WATER	In house

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EP1911899**

Client	: **RPS Australia West Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: SHAE MILLER-WHITE	Contact	: Rhiannon Steere
Address	: PO BOX 170 WEST PERTH WA 6872	Address	: 26 Rigali Way Wangara WA Australia 6065
E-mail	: miller-whites@rpsgroup.com.au	E-mail	: rhiannon.steere@alsglobal.com
Telephone	: 9211 1111	Telephone	: 08 9406 1306
Facsimile	: 9211 1122	Facsimile	: +61-8-9406 1399
Project	: EEC19032.011	Page	: 1 of 6
Order number	: ----	Quote number	: EP2019AQUTER0003 (EP/705/19)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Rottnest Army Jetty		
Sampler	:		

Dates

Date Samples Received	: 13-Nov-2019 14:45	Issue Date	: 13-Nov-2019
Client Requested Due Date	: 06-Dec-2019	Scheduled Reporting Date	: **06-Dec-2019**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 8	Temperature	: 27.8 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 30 / 26

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
- TOC and TBT conducted by ALS Brisbane, NATA Site No. 818.
- Asbestos conducted by ALS Melbourne, NATA accreditation no. 825, site no 13778
- PSD conducted by ALS Newcastle, NATA accreditation no. 825, site no 1656.
- Elutriate, UT Organics and UT nutrients conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- Please see scanned COC for sample discrepencies: extra samples , samples not received etc.
- Please direct any queries related to sample condition / numbering / breakages to Sample Receipt (Samples.Perth@alsglobal.com)
- Analytical work for this work order will be conducted at ALS Environmental Perth.
- **PSD analysis will be conducted by ALS Environmental, Newcastle, NATA accreditation no. 825, Site No. 1656.**
- Please direct any turnaround / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **TOC and TBT analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818.**
- **Asbestos analysis will be conducted by ALS Environmental, Melbourne, NATA accreditation No. 825, Site No. 13778.**
- **Elutriate, UT Organics and UT nutrients analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911.**
- **pH analysis should be conducted within 6 hours of sampling.**
- 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	Client sampling date / time	Client sample ID	SOIL - EP070 (solids) TRH Speciation - Aliphatic & Aromatic	SOIL - EP090 (solids) Organotins	SOIL - EP203 (solids) Explosives	SOIL - NT-11S Total N + Total P	SOIL - NT-3S Minor Anions (NO2, NO3, Reactive P)	SOIL - TPH-SD Low Level TRH/BTEXN for Sediments	SOIL - UTO-1S Ultratrace OP / OC Pesticides
EP1911899-001	12-Nov-2019 00:00	C01S01	✓	✓	✓	✓	✓	✓	✓
EP1911899-003	12-Nov-2019 00:00	C01S03		✓	✓	✓	✓	✓	✓
EP1911899-004	12-Nov-2019 00:00	C02S01	✓	✓	✓	✓	✓	✓	✓
EP1911899-005	12-Nov-2019 00:00	C02S02						✓	✓
EP1911899-007	12-Nov-2019 00:00	C03S01	✓	✓	✓	✓	✓	✓	✓
EP1911899-009	12-Nov-2019 00:00	C03S03						✓	✓
EP1911899-010	13-Nov-2019 00:00	C04S01	✓	✓	✓	✓	✓	✓	✓
EP1911899-011	13-Nov-2019 00:00	C04S02						✓	✓
EP1911899-013	13-Nov-2019 00:00	C05S01		✓	✓	✓	✓	✓	✓
EP1911899-014	13-Nov-2019 00:00	C05S02	✓						
EP1911899-015	13-Nov-2019 00:00	C05S03						✓	✓
EP1911899-016	12-Nov-2019 00:00	C06S01		✓	✓	✓	✓	✓	✓
EP1911899-017	12-Nov-2019 00:00	C06S02						✓	✓
EP1911899-018	12-Nov-2019 00:00	C06S03	✓						
EP1911899-019	12-Nov-2019 00:00	C07S01		✓	✓	✓	✓	✓	✓
EP1911899-020	12-Nov-2019 00:00	C07S02	✓						
EP1911899-021	12-Nov-2019 00:00	C07S03						✓	✓
EP1911899-022	12-Nov-2019 00:00	SZ1		✓	✓	✓	✓	✓	✓

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA029b TPA TPA	SOIL - EA033-WA WA - Chromium Suite for Acid Sulphate Soils	SOIL - EA055-103 Moisture Content	SOIL - EA200F Asbestos Quantitation (FA+AF) in Soil by	SOIL - EG020-SD Total Metals in Sediments by ICPMS (NODG)	SOIL - EG035-SD Mercury in Sediments by FIMS (NODG-required	SOIL - EP132B-SD Ultra-trace PAHs in Sediments
EP1911899-001	12-Nov-2019 00:00	C01S01	✓	✓	✓	✓	✓	✓	✓
EP1911899-003	12-Nov-2019 00:00	C01S03	✓	✓	✓	✓	✓	✓	✓
EP1911899-004	12-Nov-2019 00:00	C02S01	✓	✓	✓	✓	✓	✓	✓
EP1911899-005	12-Nov-2019 00:00	C02S02			✓		✓	✓	✓
EP1911899-007	12-Nov-2019 00:00	C03S01	✓	✓	✓	✓	✓	✓	✓
EP1911899-009	12-Nov-2019 00:00	C03S03			✓		✓	✓	✓

			SOIL - EA029b TPA TPA	SOIL - EA033-WA WA - Chromium Suite for Acid Sulphate Soils	SOIL - EA055-103 Moisture Content	SOIL - EA200F Asbestos Quantitation (FA+AF) in Soil by	SOIL - EG020-SD Total Metals in Sediments by ICPMS (NODG)	SOIL - EG035-SD Mercury in Sediments by FIMS (NODG-required	SOIL - EP132B-SD Ultra-trace PAHs in Sediments
EP1911899-010	13-Nov-2019 00:00	C04S01	✓	✓	✓	✓	✓	✓	✓
EP1911899-011	13-Nov-2019 00:00	C04S02			✓		✓	✓	✓
EP1911899-013	13-Nov-2019 00:00	C05S01	✓	✓	✓	✓	✓	✓	✓
EP1911899-014	13-Nov-2019 00:00	C05S02			✓				
EP1911899-015	13-Nov-2019 00:00	C05S03			✓		✓	✓	✓
EP1911899-016	12-Nov-2019 00:00	C06S01	✓	✓	✓	✓	✓	✓	✓
EP1911899-017	12-Nov-2019 00:00	C06S02			✓		✓	✓	✓
EP1911899-018	12-Nov-2019 00:00	C06S03	✓	✓	✓				
EP1911899-019	12-Nov-2019 00:00	C07S01	✓	✓	✓	✓	✓	✓	✓
EP1911899-020	12-Nov-2019 00:00	C07S02			✓				
EP1911899-021	12-Nov-2019 00:00	C07S03			✓		✓	✓	✓
EP1911899-022	12-Nov-2019 00:00	SZ1	✓	✓	✓		✓	✓	✓
EP1911899-023	12-Nov-2019 00:00	SZ2			✓				

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EA150H/EA152 Particle Sizing with Hydrometer + Soil Particle	SOIL - EG035T-LL Total Mercury - Low Level	SOIL - EK255A SD Ammonia in Sediment by FIA	SOIL - EN68-2/3 Preparation of Elutriates for 2-3 analysis	SOIL - EP003 Total Organic Carbon (TOC) in Soil	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)	SOIL - UTN-4 SW Ultratrace NO2, NO3, NH3, Nitrogen,
EP1911899-001	12-Nov-2019 00:00	C01S01	✓	✓	✓	✓	✓	✓	✓
EP1911899-003	12-Nov-2019 00:00	C01S03			✓		✓	✓	
EP1911899-004	12-Nov-2019 00:00	C02S01	✓	✓	✓	✓	✓	✓	✓
EP1911899-005	12-Nov-2019 00:00	C02S02						✓	
EP1911899-007	12-Nov-2019 00:00	C03S01	✓		✓		✓	✓	
EP1911899-009	12-Nov-2019 00:00	C03S03		✓		✓		✓	✓
EP1911899-010	13-Nov-2019 00:00	C04S01	✓		✓		✓	✓	
EP1911899-011	13-Nov-2019 00:00	C04S02		✓		✓		✓	✓
EP1911899-013	13-Nov-2019 00:00	C05S01			✓		✓	✓	
EP1911899-014	13-Nov-2019 00:00	C05S02	✓						
EP1911899-015	13-Nov-2019 00:00	C05S03		✓		✓		✓	✓
EP1911899-016	12-Nov-2019 00:00	C06S01			✓		✓	✓	
EP1911899-017	12-Nov-2019 00:00	C06S02		✓		✓		✓	✓
EP1911899-018	12-Nov-2019 00:00	C06S03	✓						
EP1911899-019	12-Nov-2019 00:00	C07S01		✓	✓	✓	✓	✓	✓
EP1911899-020	12-Nov-2019 00:00	C07S02	✓						
EP1911899-021	12-Nov-2019 00:00	C07S03						✓	

			SOIL - EA150H/EA152 Particle Sizing with Hydrometer + Soil Particle	SOIL - EG035T-LL Total Mercury - Low Level	SOIL - EK255A SD Ammonia in Sediment by FIA	SOIL - EN68-2/3 Preparation of Elutriates for 2-3 analysis	SOIL - EP003 Total Organic Carbon (TOC) in Soil	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)	SOIL - UTN-4 SW Ultratrace NO2, NO3, NH3, Nitrogen,
EP1911899-022	12-Nov-2019 00:00	SZ1			✓		✓	✓	
EP1911899-023	12-Nov-2019 00:00	SZ2						✓	
EP1911899-030	13-Nov-2019 00:00	EW		✓		✓			✓

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	(On Hold) SOIL No analysis requested	SOIL - EG093-T Total Metals by ORC - Ultra Trace in Saline	SOIL - EP231X-SUT PFAS - Super Ultra Trace Waters Long Suite (28
EP1911899-001	12-Nov-2019 00:00	C01S01		✓	✓
EP1911899-002	12-Nov-2019 00:00	C01S02	✓		
EP1911899-004	12-Nov-2019 00:00	C02S01		✓	✓
EP1911899-006	12-Nov-2019 00:00	C02S03	✓		
EP1911899-008	12-Nov-2019 00:00	C03S02	✓		
EP1911899-009	12-Nov-2019 00:00	C03S03		✓	✓
EP1911899-011	13-Nov-2019 00:00	C04S02		✓	✓
EP1911899-012	13-Nov-2019 00:00	C04S03	✓		
EP1911899-015	13-Nov-2019 00:00	C05S03		✓	✓
EP1911899-017	12-Nov-2019 00:00	C06S02		✓	✓
EP1911899-019	12-Nov-2019 00:00	C07S01		✓	✓
EP1911899-030	13-Nov-2019 00:00	EW		✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG035T Total Mercury	WATER - EP203SL Explosives - Standard Level	WATER - W-07 TRH/BTEXN/PAH	WATER - W-12 OC/OP Pesticides
EP1911899-024	12-Nov-2019 00:00	WR1	✓	✓	✓	✓
EP1911899-025	13-Nov-2019 00:00	WR2	✓	✓	✓	✓
EP1911899-026	12-Nov-2019 00:00	WB1	✓	✓	✓	✓
EP1911899-027	13-Nov-2019 00:00	WB2	✓	✓	✓	✓
EP1911899-029	13-Nov-2019 00:00	ES-01	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020F Dissolved Metals by ICP/MS	WATER - EG020T Total Metals by ICP/MS (including digestion)	WATER - EG035F Dissolved Mercury	WATER - EP090S Organotins (TBT) Brisbane	WATER - EP231X-SUT PFAS - Super Ultra Trace Waters Long Suite (28	WATER - NT-08A Total Nitrogen + NO2 + NO3 + NH3 + Total P +	WATER - W-18 TRH(C6 - C9)/BTEXN
EP1911899-024	12-Nov-2019 00:00	WR1		✓		✓	✓	✓	
EP1911899-025	13-Nov-2019 00:00	WR2		✓		✓	✓	✓	
EP1911899-026	12-Nov-2019 00:00	WB1		✓		✓	✓	✓	
EP1911899-027	13-Nov-2019 00:00	WB2		✓		✓	✓	✓	
EP1911899-028	12-Nov-2019 00:00	WTB1					✓		✓
EP1911899-029	13-Nov-2019 00:00	ES-01	✓		✓	✓	✓	✓	

Proactive Holding Time Report

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

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	West.AccountsPayable@rpsgroup.com.au

ALAN FOLEY

- *AU Certificate of Analysis - NATA (COA)	Email	Alan.Foley@rpsgroup.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	Alan.Foley@rpsgroup.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	Alan.Foley@rpsgroup.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	Alan.Foley@rpsgroup.com.au
- Attachment - Report (SUBCO)	Email	Alan.Foley@rpsgroup.com.au
- Chain of Custody (CoC) (COC)	Email	Alan.Foley@rpsgroup.com.au
- EDI Format - ENMRG (ENMRG)	Email	Alan.Foley@rpsgroup.com.au
- EDI Format - ESDAT (ESDAT)	Email	Alan.Foley@rpsgroup.com.au
- EDI Format - XTab (XTAB)	Email	Alan.Foley@rpsgroup.com.au

SHAE MILLER-WHITE

- *AU Certificate of Analysis - NATA (COA)	Email	miller-whites@rpsgroup.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	miller-whites@rpsgroup.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	miller-whites@rpsgroup.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	miller-whites@rpsgroup.com.au
- Attachment - Report (SUBCO)	Email	miller-whites@rpsgroup.com.au
- Chain of Custody (CoC) (COC)	Email	miller-whites@rpsgroup.com.au
- EDI Format - ENMRG (ENMRG)	Email	miller-whites@rpsgroup.com.au
- EDI Format - ESDAT (ESDAT)	Email	miller-whites@rpsgroup.com.au
- EDI Format - XTab (XTAB)	Email	miller-whites@rpsgroup.com.au

CHAIN OF CUSTODY

Asbestos quantation.

Site:	Rottnest Army Jetty
Project reference:	EEC19032.011
Scientist(s)	SMW
Sample type(s):	Sediment and Water
Report to:	Alan Foley / Shae Miller-White
Invoice to:	west.accountspayable@rpsgroup.com

Level 2, 27-31 Troode Street
West Perth WA 6005
Tel: (618) 9211 1111
Fax: (618) 9211 1122

Page number: 1 of 2.
Turnaround time: Standard
Quote number: EP/705/19

Sample I.D.		Date collected	Number of jars / bottles / bags	Sediment Suite (1)	Sediment Suite (2)	Sediment Suite (3)	ASLP Suite (1)	Eluriate Suite (1)	Water Suite (1)	PFAS - Full Suite (28 Compounds)	Storage	CES Suite + TBA	Remarks
C01S01	1	12.11.19	Refer to quote	✗	✗	✗		✗					
C01S02	2		Refer to quote										
C01S03	3		Refer to quote	✗	✗								
C02S01	4		Refer to quote	✗	✗	✗		✗					
C02S02	5		Refer to quote	✗									
C02S03	6		Refer to quote										
C03S01	7		Refer to quote	✗	✗	✗							
C03S02	8		Refer to quote										
C03S03	9		Refer to quote	✗				✗					
C04S01	10	13.11.19	Refer to quote	✗	✗	✗							
C04S02	11	"	Refer to quote	✗				✗					
C04S03	12	"	Refer to quote										
C05S01	13	"	Refer to quote	✗	✗								
C05S02	14	"	Refer to quote			✗							
C05S03	15	"	Refer to quote	✗				✗					
C06S01	16	12.11.19	Refer to quote	✗	✗								
C06S02	17		Refer to quote	✗				✗					
C06S03	18		Refer to quote			✗						✗	
C07S01	19		Refer to quote	✗	✗			✗					
C07S02	20		Refer to quote			✗							
C07S03	21		Refer to quote	✗									
Total number of bottles/bags/jars													

Environmental Division
Perth
Work Order Reference
EP1911899

Telephone : + 61-8-9406 1301

Primary destination:	ALS	Received by:	ND	Secondary destination:	Received by:
Relinquished by:	Shae Miller-White	Organisation:	ALS	Relinquished by:	Organisation:
Organisation:	RPS	Date:	13.11.19	Organisation:	Date:
Date:	13.11.19	Time:	14:25	Date:	Time:
Time:				Time:	

P.T.O.

CHAIN OF CUSTODY

No Asbestos.

As per quote.

RPS MAKING COMPLEX EASY

Level 2, 27-31 Troode Street
West Perth WA 6005
Tel: (618) 9211 1111
Fax: (618) 9211 1122

Site:	Rottnest Army Jetty
Project reference:	EEC19032.011
Scientist(s)	SMW
Sample type(s):	Sediment and Water
Report to:	Alan Foley / Shae Miller-White
Invoice to:	west.accountspayable@rpsgroup.com

Page number: 2 of 2.
Turnaround time: Standard
Quote number: EP/705/19

Sample I.D.	Date collected	Number of jars / bottles / bags	Sediment Suite (1)	Sediment Suite (2)	Sediment Suite (3)	ASLP Suite (1)	Elutriate Suite (1)	Water Suite (1)	PFAS - Full Suite (28 Compounds)	Storage		BTEX															Remarks
SDZ1 22	12.11.19		X	X																							
SDZ2 23	↓								X																		
WR1 24	↓							X																			
WR2 25	13.11.19							X																			
WB1 26	12.11.19							X																			
WB2 27	13.11.19							X																			
WTB1 28	12.11.19								X			X															
ES-01 29	13.11.19.						X																				* Please lab filter dissolved metals bottle *
EW 30 (SP)																											
Total number of bottles/bags/jars																											

Primary destination:	ALS	Received by:	ND	Secondary destination:	Received by:
Relinquished by:	Shae Miller-White	Organisation:	ALS	Relinquished by:	Organisation:
Organisation:	RPS	Date:	13.11.19	Organisation:	Date:
Date:		Time:		Date:	Time:
Time:				Time:	

Certificate of Analysis

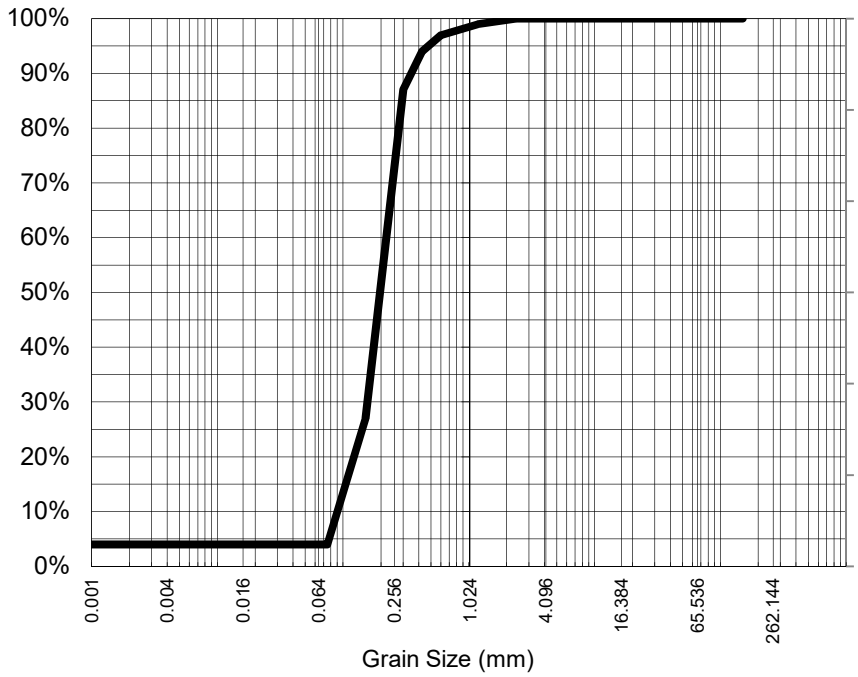
ALS Laboratory Group Pty Ltd
5/585 Maitland Road
Mayfield West, NSW 2304
pH 02 4014 2500
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental

Newcastle, NSW

CLIENT:	SHAE MILLER-WHITE	**DATE REPORTED:**	27-Nov-2019
COMPANY:	RPS Australia West Pty Ltd	**DATE RECEIVED:**	13-Nov-2019
ADDRESS:	PO Box 170 West Perth WA	**REPORT NO:**	EP1911899-001 / PSD
PROJECT:	EEC19032.011	**SAMPLE ID:**	C01S01

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	99%
0.600	97%
0.425	94%
0.300	87%
0.150	27%
0.075	4%
Particle Size (microns)	
55	4%
39	4%
28	4%
20	4%
14	4%
10	4%
7	4%
5	4%
1	4%

Analysis Notes

Samples analysed as received.

Median Particle Size (mm)*	0.208

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:	AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly	**Analysed:**	22-Nov-19
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	SAND,VEG	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.2/AS1289.3.6.3		
Soil Particle Density (<2.36mm)	2.7		

NATA Accreditation: 825 Site: Newcastle
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NATA
WORLD RECOGNISED ACCREDITATION

Dianne Blane
Laboratory Coordinator
Authorised Signatory

Certificate of Analysis

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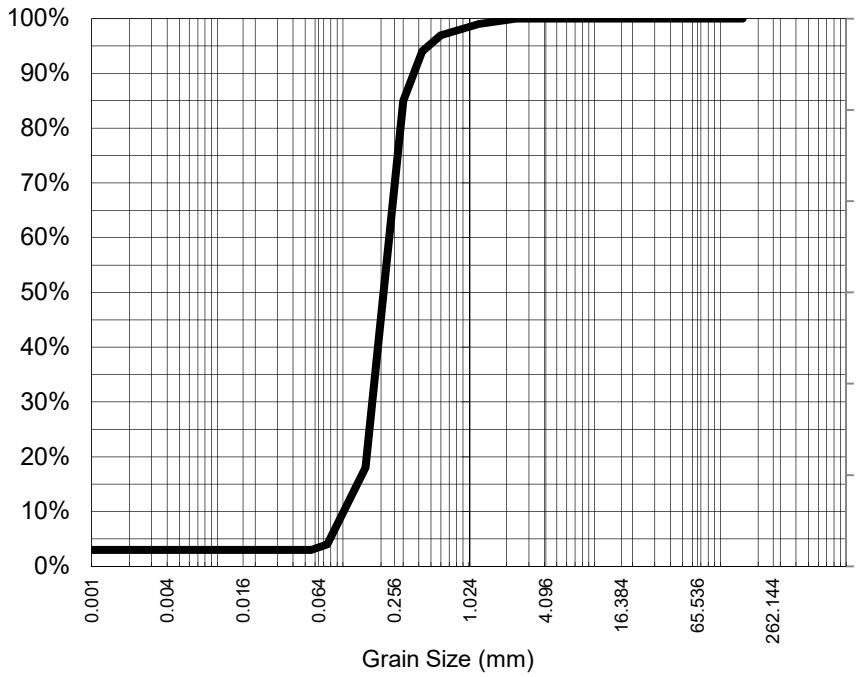
pH 02 4014 2500
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental

Newcastle, NSW

CLIENT:	SHAE MILLER-WHITE	**DATE REPORTED:**	27-Nov-2019
COMPANY:	RPS Australia West Pty Ltd	**DATE RECEIVED:**	13-Nov-2019
ADDRESS:	PO Box 170 West Perth WA	**REPORT NO:**	EP1911899-004 / PSD
PROJECT:	EEC19032.011	**SAMPLE ID:**	C02S01

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	99%
0.600	97%
0.425	94%
0.300	85%
0.150	18%
0.075	4%
Particle Size (microns)	
56	3%
40	3%
28	3%
20	3%
14	3%
10	3%
7	3%
5	3%
1	3%

Analysis Notes

Samples analysed as received.

Median Particle Size (mm)*	0.222

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:	AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly	**Analysed:**	22-Nov-19
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	SAND,VEG	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.2/AS1289.3.6.3		
Soil Particle Density (<2.36mm)	2.68		

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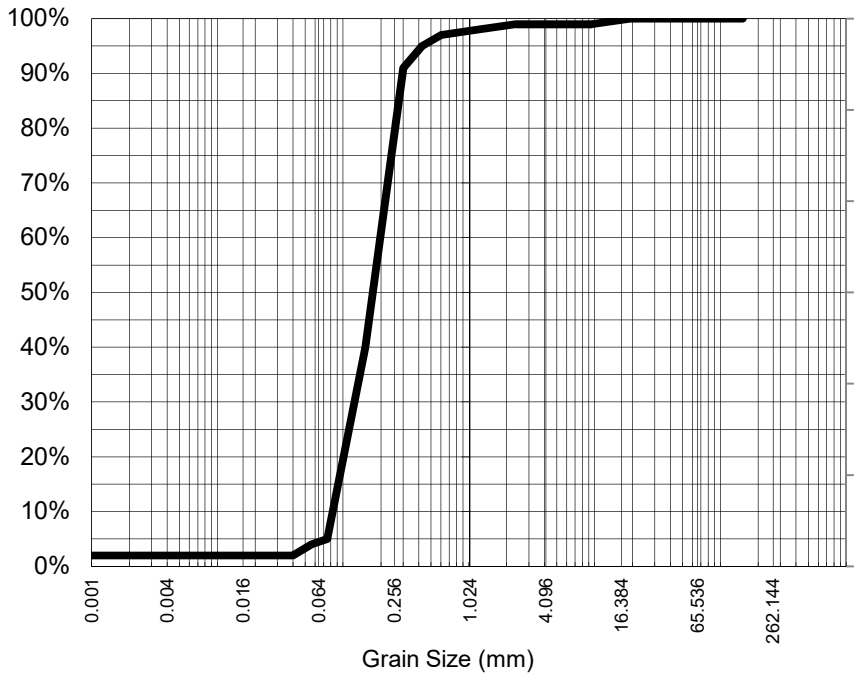
ALS Environmental

Newcastle, NSW

CLIENT:	SHAE MILLER-WHITE	**DATE REPORTED:**	27-Nov-2019
COMPANY:	RPS Australia West Pty Ltd	**DATE RECEIVED:**	13-Nov-2019
ADDRESS:	PO Box 170 West Perth WA	**REPORT NO:**	EP1911899-007 / PSD
PROJECT:	EEC19032.011	**SAMPLE ID:**	C03S01

Particle Size Distribution



Particle Size (mm)	% Passing
19.0	100%
9.50	99%
4.75	99%
2.36	99%
1.18	98%
0.600	97%
0.425	95%
0.300	91%
0.150	40%
0.075	5%
Particle Size (microns)	
56	4%
40	2%
28	2%
20	2%
14	2%
10	2%
7	2%
5	2%
1	2%

Analysis Notes

Samples analysed as received.

Median Particle Size (mm)*	0.179

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:	AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly	**Analysed:**	22-Nov-19
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	SAND,VEG	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.2/AS1289.3.6.3		
Soil Particle Density (<2.36mm)	2.69		

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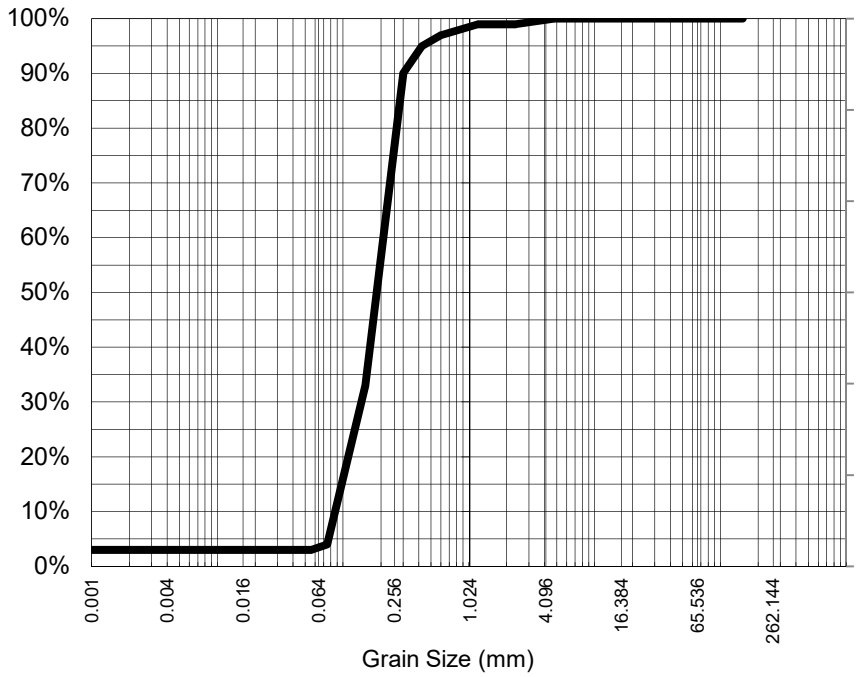
ALS Environmental

Newcastle, NSW

CLIENT:	SHAE MILLER-WHITE	**DATE REPORTED:**	27-Nov-2019
COMPANY:	RPS Australia West Pty Ltd	**DATE RECEIVED:**	13-Nov-2019
ADDRESS:	PO Box 170 West Perth WA	**REPORT NO:**	EP1911899-010 / PSD
PROJECT:	EEC19032.011	**SAMPLE ID:**	C04S01

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	99%
1.18	99%
0.600	97%
0.425	95%
0.300	90%
0.150	33%
0.075	4%
Particle Size (microns)	
56	3%
40	3%
28	3%
20	3%
14	3%
10	3%
7	3%
5	3%
1	3%

Analysis Notes

Samples analysed as received.

Median Particle Size (mm)*	0.195

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:	AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly	**Analysed:**	22-Nov-19
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	SAND,VEG	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.2/AS1289.3.6.3		
Soil Particle Density (<2.36mm)	2.68		

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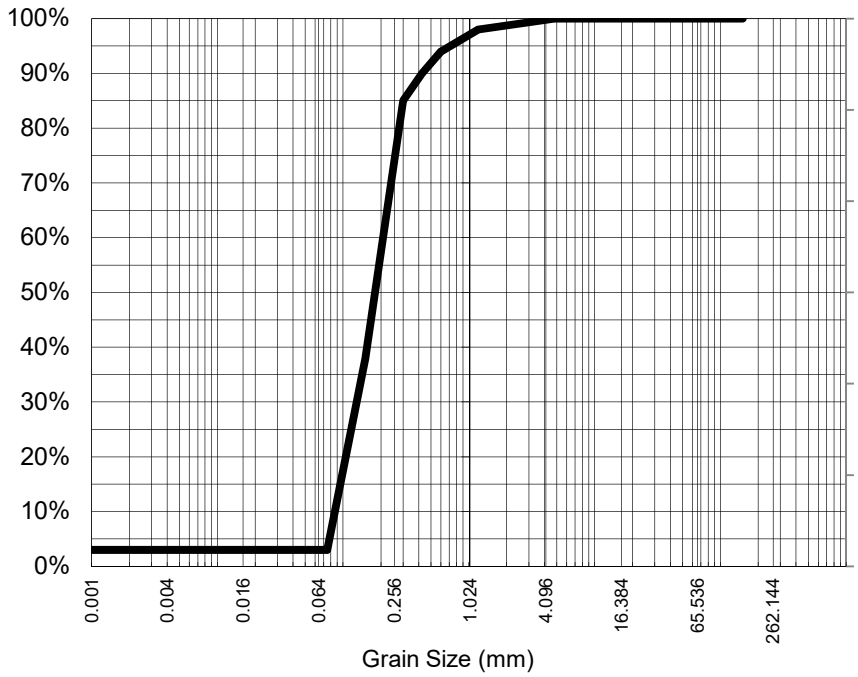
samples.newcastle@alsenviro.com

ALS Environmental

Newcastle, NSW

CLIENT:	SHAE MILLER-WHITE	**DATE REPORTED:**	27-Nov-2019
COMPANY:	RPS Australia West Pty Ltd	**DATE RECEIVED:**	13-Nov-2019
ADDRESS:	PO Box 170 West Perth WA	**REPORT NO:**	EP1911899-014 / PSD
PROJECT:	EEC19032.011	**SAMPLE ID:**	C05S02

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	99%
1.18	98%
0.600	94%
0.425	90%
0.300	85%
0.150	38%
0.075	3%
Particle Size (microns)	
56	3%
40	3%
28	3%
20	3%
14	3%
10	3%
7	3%
5	3%
1	3%

Analysis Notes

Samples analysed as received.

Median Particle Size (mm)*	0.188

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:	AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly	**Analysed:**	22-Nov-19
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	SAND,VEG	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.2/AS1289.3.6.3		
Soil Particle Density (<2.36mm)	2.67		

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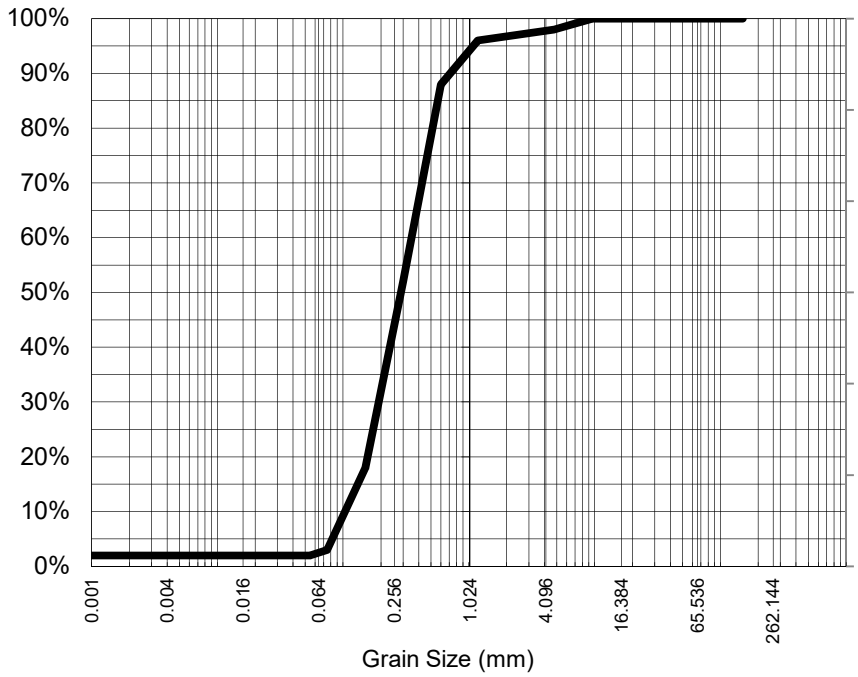
ALS Environmental

Newcastle, NSW

CLIENT:	SHAE MILLER-WHITE	**DATE REPORTED:**	27-Nov-2019
COMPANY:	RPS Australia West Pty Ltd	**DATE RECEIVED:**	13-Nov-2019
ADDRESS:	PO Box 170 West Perth WA	**REPORT NO:**	EP1911899-018 / PSD
PROJECT:	EEC19032.011	**SAMPLE ID:**	C06S03

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	98%
2.36	97%
1.18	96%
0.600	88%
0.425	70%
0.300	52%
0.150	18%
0.075	3%
Particle Size (microns)	
55	2%
39	2%
28	2%
20	2%
14	2%
10	2%
7	2%
5	2%
1	2%

Analysis Notes

Samples analysed as received.

Median Particle Size (mm)*	0.291

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:	AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly	**Analysed:**	22-Nov-19
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	SAND,VEG	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.2/AS1289.3.6.3		
Soil Particle Density (<2.36mm)	2.7		

NATA Accreditation: 825 Site: Newcastle
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Authorised Signatory

Certificate of Analysis

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Mayfield West, NSW 2304
pH 02 4014 2500
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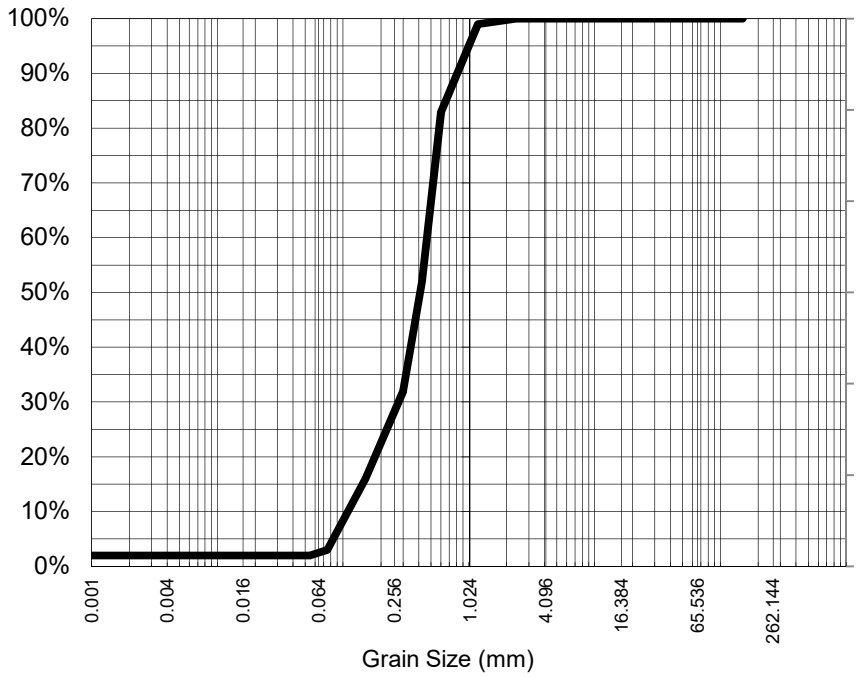
samples.newcastle@alsenviro.com

ALS Environmental

Newcastle, NSW

CLIENT:	SHAE MILLER-WHITE	**DATE REPORTED:**	27-Nov-2019
COMPANY:	RPS Australia West Pty Ltd	**DATE RECEIVED:**	13-Nov-2019
ADDRESS:	PO Box 170 West Perth WA	**REPORT NO:**	EP1911899-020 / PSD
PROJECT:	EEC19032.011	**SAMPLE ID:**	C07S02

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	99%
0.600	83%
0.425	52%
0.300	32%
0.150	16%
0.075	3%
Particle Size (microns)	
55	2%
39	2%
28	2%
20	2%
14	2%
10	2%
7	2%
5	2%
1	2%

Analysis Notes

Samples analysed as received.

Median Particle Size (mm)*	0.413

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:	AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly	**Analysed:**	22-Nov-19
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	SAND,VEG	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.2/AS1289.3.6.3		
Soil Particle Density (<2.36mm)	2.7		

NATA Accreditation: 825 Site: Newcastle
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Dianne Blane
Laboratory Coordinator
Authorised Signatory

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EP1913217**	Page	: 1 of 6
Client	: **RPS Australia West Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: SHAE MILLER-WHITE	Contact	: Rhiannon Steere
Address	: PO BOX 170 WEST PERTH WA 6872	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: 9211 1111	Telephone	: 08 9406 1306
Project	: EEC19032.011	Date Samples Received	: 13-Nov-2019 14:25
Order number	: ----	Date Analysis Commenced	: 16-Dec-2019
C-O-C number	: ----	Issue Date	: 20-Dec-2019 15:25
Sampler	: SHAE MILLER-WHITE		
Site	: Rottnest Army Jetty		
Quote number	: EP/705/19		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. 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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA
Gaston Allende	R&D Chemist	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

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

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

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

- PFAS conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- ALS is not NATA accredited for the analysis of EA033 (ANC) on an unpulverised sample.
- 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: SOIL (Matrix: SOIL)				Client sample ID	C01S01 EP1911899-001	C06S03 EP1911899-018	----	----	----
				Client sampling date / time	12-Dec-2019 00:00	12-Dec-2019 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EP1913217-002	EP1913217-003	--------	--------	--------
					Result	Result	----	----	----
EA033-C: Acid Neutralising Capacity									
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3		**80.9**	**77.8**	**----**	**----**	**----**
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t		**16200**	**15600**	**----**	**----**	**----**
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S		**25.9**	**24.9**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	ES-01	----	----	----	----
				Client sampling date / time	13-Nov-2019 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EP1913217-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	ES-01	----	----	----	----
				Client sampling date / time	13-Nov-2019 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EP1913217-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	----	----	----	----
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	----	----	----	----
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		<0.0002	----	----	----	----
^ Sum of PFAS	----	0.0002	µg/L		<0.0002	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**86.3**	----	----	----	----
13C8-PFOA	----	0.0005	%		**106**	----	----	----	----

Surrogate Control Limits

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

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EP1913217**	Page	: 1 of 5
Client	: **RPS Australia West Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: SHAE MILLER-WHITE	Contact	: Rhiannon Steere
Address	: PO BOX 170 WEST PERTH WA 6872	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: 9211 1111	Telephone	: 08 9406 1306
Project	: EEC19032.011	Date Samples Received	: 13-Nov-2019
Order number	: ----	Date Analysis Commenced	: 16-Dec-2019
C-O-C number	: ----	Issue Date	: 20-Dec-2019
Sampler	: SHAE MILLER-WHITE		
Site	: Rottnest Army Jetty		
Quote number	: EP/705/19		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. 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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA
Gaston Allende	R&D Chemist	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-C: Acid Neutralising Capacity (QC Lot: 2767224)									
EP1913217-002	C01S01 EP1911899-001	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	80.9	80.8	0.223	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	25.9	25.9	0.193	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	16200	16100	0.219	0% - 20%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2772182)									
EM1921331-001	Anonymous	EP231X-SUT: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	0.335	0.400	17.7	0% - 20%
		EP231X-SUT: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	0.0118	0.0131	10.2	No Limit
		EP231X-SUT: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	0.0131	0.0162	20.8	0% - 50%
		EP231X-SUT: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.160	0.183	13.5	0% - 20%
		EP231X-SUT: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	0.0067	0.0107	45.9	No Limit
		EP231X-SUT: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0016	<0.0016	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2772182)									
EM1921331-001	Anonymous	EP231X-SUT: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	0.0808	0.0949	16.0	0% - 20%
		EP231X-SUT: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	0.0872	0.100	14.2	0% - 20%
		EP231X-SUT: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	0.0608	0.0706	14.8	0% - 20%
		EP231X-SUT: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	0.0456	0.0538	16.4	0% - 20%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2772182) - continued									
EM1921331-001	Anonymous	EP231X-SUT: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	0.0128	0.0141	9.52	No Limit
		EP231X-SUT: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	0.0018	0.0024	30.8	No Limit
		EP231X-SUT: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0016	<0.0016	0.00	No Limit
		EP231X-SUT: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0016	<0.0016	0.00	No Limit
		EP231X-SUT: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0016	<0.0016	0.00	No Limit
		EP231X-SUT: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0040	<0.0040	0.00	No Limit
		EP231X-SUT: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.0020	<0.0020	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 2772182)									
EM1921331-001	Anonymous	EP231X-SUT: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0016	<0.0016	0.00	No Limit
		EP231X-SUT: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0016	<0.0016	0.00	No Limit
		EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0016	<0.0016	0.00	No Limit
		EP231X-SUT: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.004	<0.004	0.00	No Limit
		EP231X-SUT: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.004	<0.004	0.00	No Limit
		EP231X-SUT: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.004	<0.004	0.00	No Limit
		EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.004	<0.004	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 2772182)									
EM1921331-001	Anonymous	EP231X-SUT: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-SUT: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	0.051	0.062	18.8	0% - 20%
		EP231X-SUT: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	0.004	0.005	0.00	No Limit
		EP231X-SUT: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.002	<0.002	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 2772182)									
EM1921331-001	Anonymous	EP231X-SUT: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L	0.495	0.583	16.3	0% - 20%
		EP231X-SUT: Sum of PFAS (WA DER List)	----	0.0002	µg/L	0.836	0.982	16.1	0% - 20%
		EP231X-SUT: Sum of PFAS	----	0.0002	µg/L	0.871	1.02	16.4	0% - 20%

Method Blank (MB) and Laboratory Control Spike (LCS) Report

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-C: Acid Neutralising Capacity (QCLot: 2767224)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	4.9 % CaCO3	104	98.1	108
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2772182)								
EP231X-SUT: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.004 µg/L	102	50.0	130
EP231X-SUT: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.004 µg/L	101	50.0	130
EP231X-SUT: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.004 µg/L	112	50.0	130
EP231X-SUT: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.004 µg/L	112	50.0	130
EP231X-SUT: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	0.004 µg/L	76.8	50.0	130
EP231X-SUT: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.004 µg/L	84.0	50.0	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2772182)								
EP231X-SUT: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.0020	0.02 µg/L	98.8	30.0	130
EP231X-SUT: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	102	50.0	130
EP231X-SUT: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	115	50.0	130
EP231X-SUT: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	92.4	50.0	130
EP231X-SUT: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	102	50.0	130
EP231X-SUT: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	98.4	50.0	130
EP231X-SUT: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	94.8	50.0	130
EP231X-SUT: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	95.6	40.0	130
EP231X-SUT: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	115	40.0	130
EP231X-SUT: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	86.4	40.0	130
EP231X-SUT: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	89.9	40.0	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2772182)								
EP231X-SUT: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	89.6	40.0	130
EP231X-SUT: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	101	40.0	130
EP231X-SUT: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	97.9	40.0	130
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	101	40.0	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2772182) - continued								
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	86.7	40.0	130
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	90.8	40.0	130
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	82.8	40.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2772182)								
EP231X-SUT: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.004 µg/L	91.6	50.0	130
EP231X-SUT: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.004 µg/L	112	50.0	130
EP231X-SUT: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.004 µg/L	99.6	50.0	130
EP231X-SUT: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.004 µg/L	121	50.0	130
EP231P: PFAS Sums (QCLot: 2772182)								
EP231X-SUT: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS (WA DER List)	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS	----	0.0002	µg/L	<0.0002	----	----	----	----

Matrix Spike (MS) Report

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

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

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP1913217**	Page	: 1 of 4
Client	: **RPS Australia West Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: SHAE MILLER-WHITE	Telephone	: 08 9406 1306
Project	: EEC19032.011	Date Samples Received	: 13-Nov-2019
Site	: Rottnest Army Jetty	Issue Date	: 20-Dec-2019
Sampler	: SHAE MILLER-WHITE	No. of samples received	: 3
Order number	: ----	No. of samples analysed	: 3

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	7	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **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
EA033-C: Acid Neutralising Capacity							
Snap Lock Bag - frozen (EA033)							
C01S01 - EP1911899-001, C06S03 - EP1911899-018	**12-Dec-2019**	**16-Dec-2019**	11-Dec-2020	✓	**20-Dec-2019**	15-Mar-2020	✓

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-SUT)							
ES-01	**13-Nov-2019**	**19-Dec-2019**	11-May-2020	✓	**19-Dec-2019**	11-May-2020	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X-SUT)							
ES-01	**13-Nov-2019**	**19-Dec-2019**	11-May-2020	✓	**19-Dec-2019**	11-May-2020	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X-SUT)							
ES-01	**13-Nov-2019**	**19-Dec-2019**	11-May-2020	✓	**19-Dec-2019**	11-May-2020	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X-SUT)							
ES-01	**13-Nov-2019**	**19-Dec-2019**	11-May-2020	✓	**19-Dec-2019**	11-May-2020	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X-SUT)							
ES-01	**13-Nov-2019**	**19-Dec-2019**	11-May-2020	✓	**19-Dec-2019**	11-May-2020	✓

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)							
Chromium Suite for Acid Sulphate Soils	EA033	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chromium Suite for Acid Sulphate Soils	EA033	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	2	**50.00**	**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-SUT	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	0	7	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	In house: Referenced to Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	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 concentrated, combined with an equal volume of reagent water and 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
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
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.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EP1913217**

Client	: **RPS Australia West Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: SHAE MILLER-WHITE	Contact	: Rhiannon Steere
Address	: PO BOX 170 WEST PERTH WA 6872	Address	: 26 Rigali Way Wangara WA Australia 6065
E-mail	: miller-whites@rpsgroup.com.au	E-mail	: rhiannon.steere@alsglobal.com
Telephone	: 9211 1111	Telephone	: 08 9406 1306
Facsimile	: 9211 1122	Facsimile	: +61-8-9406 1399
Project	: EEC19032.011	Page	: 1 of 3
Order number	: ----	Quote number	: EP2019AQUTER0003 (EP/705/19)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Rottnest Army Jetty		
Sampler	: SHAE MILLER-WHITE		

Dates

Date Samples Received	: 13-Nov-2019 14:25	Issue Date	: 12-Dec-2019
Client Requested Due Date	: 20-Dec-2019	Scheduled Reporting Date	: **20-Dec-2019**

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 3 / 3

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- PFAS conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- Please see scanned COC for sample discrepencies: extra samples , samples not received etc.
- ALS is not NATA accredited for the analysis of EA033 (ANC) on an unpulverised sample.
- Please direct any queries related to sample condition / numbering / breakages to Sample Receipt (Samples.Perth@alsglobal.com)
- Analytical work for this work order will be conducted at ALS Environmental Perth.
- Please direct any turnaround / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **PFAS analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911.**
- **pH analysis should be conducted within 6 hours of sampling.**
- 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	Client sampling date / time	Client sample ID	SOIL - EA033-C ANC ANC only from Chromium Suite Method
EP1913217-002	12-Dec-2019 00:00	C01S01	✓
EP1913217-003	12-Dec-2019 00:00	C06S03	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EP231X-SUT PFAS - Super Ultra Trace Waters Long Suite (28
EP1913217-001	13-Nov-2019 00:00	ES-01	✓

Proactive Holding Time Report

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

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	West.AccountsPayable@rpsgroup.com.au

ALAN FOLEY

- *AU Certificate of Analysis - NATA (COA)	Email	Alan.Foley@rpsgroup.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	Alan.Foley@rpsgroup.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	Alan.Foley@rpsgroup.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	Alan.Foley@rpsgroup.com.au
- Chain of Custody (CoC) (COC)	Email	Alan.Foley@rpsgroup.com.au
- EDI Format - ENMRG (ENMRG)	Email	Alan.Foley@rpsgroup.com.au
- EDI Format - ESDAT (ESDAT)	Email	Alan.Foley@rpsgroup.com.au
- EDI Format - XTab (XTAB)	Email	Alan.Foley@rpsgroup.com.au

SHAE MILLER-WHITE

- *AU Certificate of Analysis - NATA (COA)	Email	miller-whites@rpsgroup.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	miller-whites@rpsgroup.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	miller-whites@rpsgroup.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	miller-whites@rpsgroup.com.au
- A4 - AU Tax Invoice (INV)	Email	miller-whites@rpsgroup.com.au
- Chain of Custody (CoC) (COC)	Email	miller-whites@rpsgroup.com.au
- EDI Format - ENMRG (ENMRG)	Email	miller-whites@rpsgroup.com.au
- EDI Format - ESDAT (ESDAT)	Email	miller-whites@rpsgroup.com.au
- EDI Format - XTab (XTAB)	Email	miller-whites@rpsgroup.com.au

Natalie Duncan

From: Alan Foley <Alan.Foley@rpsgroup.com.au>
Sent: Wednesday, 11 December 2019 6:02 AM
To: Samples Perth
Cc: Brandon Ovens
Subject: [EXTERNAL] - RE: RESULTS & EDD for ALS Workorder : EP1911899 | Your Reference: EEC19032.011

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Natalie

Good morning

There was a sample ES-01 submitted with this batch; could I please get it run for PFAS – super ultra-trace (EP231X-SUT) per quote EP-705-19

Regards

Alan

Alan Foley
Principal Scientist - Contamination and Acid Sulfate Soils
RPS | Australia Asia Pacific
M +61 457 554 432
E alan.foley@rpsgroup.com.au

From: angel-no-reply@alsglobal.com <angel-no-reply@alsglobal.com>
Sent: Friday, 6 December 2019 5:10 PM
To: Alan Foley <Alan.Foley@rpsgroup.com.au>
Subject: RESULTS & EDD for ALS Workorder : EP1911899 | Your Reference: EEC19032.011

Environmental Division
Perth
Work Order Reference
EP1913217

Deliverables for ALS Workorder EP1911899

Project: EEC19032.011

Telephone : +61-8-9406 1301

Dear ALAN FOLEY,

Natalie Duncan

From: Alan Foley <Alan.Foley@rpsgroup.com.au>
Sent: Thursday, 12 December 2019 8:32 AM
To: Samples Perth
Cc: Brandon Ovens
Subject: [EXTERNAL] - RE: RESULTS & EDD for ALS Workorder : EP1911899 | Your Reference: EEC19032.011

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Natalie

Good morning

Can you please see if there is any dried uncrushed/pulverised sample remaining of the following samples:

C01S01
C06S03

If so can I please get the ANC (EA033) only run on a dried uncrushed/unpulverised sample, sieved to 0.6 mm

Regards

Alan

Alan Foley
Principal Scientist - Contamination and Acid Sulfate Soils
RPS | Australia Asia Pacific
M +61 457 554 432
E alan.foley@rpsgroup.com.au

From: angel-no-reply@alsglobal.com <angel-no-reply@alsglobal.com>
Sent: Friday, 6 December 2019 5:10 PM
To: Alan Foley <Alan.Foley@rpsgroup.com.au>
Subject: RESULTS & EDD for ALS Workorder : EP1911899 | Your Reference: EEC19032.011

Deliverables for ALS Workorder EP1911899

Please find enclosed the following deliverables for **EP1911899**:

- EP1911899_0_COA.pdf
- EP1911899_0_ENMRG.CSV
- EEC19032 011.ESDAT_EP1911899_0.Chemistry2e.CSV
- EEC19032 011.ESDAT_EP1911899_0.Header.XML
- EEC19032 011.ESDAT_EP1911899_0.Sample2e.CSV
- EP1911899_0_XTAB.XLS
- EP1911899_0_QC.pdf
- EP1911899_0_QCI.pdf
- EP1911899_PSD.pdf
- EP1911899_COC.pdf

Report Recipients

- SHAE MILLER-WHITE
  - EP1911899_0_COA.pdf (Email)
  - EP1911899_0_ENMRG.CSV (Email)
  - EEC19032 011.ESDAT_EP1911899_0.Chemistry2e.CSV (Email)
  - EEC19032 011.ESDAT_EP1911899_0.Header.XML (Email)
  - EEC19032 011.ESDAT_EP1911899_0.Sample2e.CSV (Email)
  - EP1911899_0_XTAB.XLS (Email)
  - EP1911899_0_QC.pdf (Email)
  - EP1911899_0_QCI.pdf (Email)
  - EP1911899_PSD.pdf (Email)
  - EP1911899_COC.pdf (Email)
- ACCOUNTS PAYABLE
  - EP1911899_COC.pdf (Email)
- ALAN FOLEY
  - EP1911899_0_COA.pdf (Email)
  - EP1911899_0_ENMRG.CSV (Email)
  - EEC19032 011.ESDAT_EP1911899_0.Chemistry2e.CSV (Email)
  - EEC19032 011.ESDAT_EP1911899_0.Header.XML (Email)
  - EEC19032 011.ESDAT_EP1911899_0.Sample2e.CSV (Email)
  - EP1911899_0_XTAB.XLS (Email)
  - EP1911899_0_QC.pdf (Email)
  - EP1911899_0_QCI.pdf (Email)
  - EP1911899_PSD.pdf (Email)
  - EP1911899_COC.pdf (Email)

CHAIN OF CUSTODY

Asbestos quantation.

rps MAKING COMPLEX EASY

Level 2, 27-31 Troode Street
West Perth WA 6005
Tel: (618) 9211 1111
Fax: (618) 9211 1122

Site:	Rottnest Army Jetty
Project reference:	EEC19032.011
Scientist(s)	SMW
Sample type(s):	Sediment and Water
Report to:	Alan Foley / Shae Miller-White
Invoice to:	west.accountspayable@rpsgroup.com

Page number:	1 of 2.
Turnaround time:	Standard
Quote number:	EP/705/19
Remarks:	

Analytical suites

Sample ID		Date collected	Number of jars / bottles / bags	Sediment Suite (1)	Sediment Suite (2)	Sediment Suite (3)	ASLP Suite	[illegible] Suite	Water Suite	[illegible]	[illegible]	CEC [illegible]														
C01S01	1	12.11.19	Refer to quote	x	x	x		x																		
C01S02	2	↓	Refer to quote																							
C01S03	3	↓	Refer to quote	x	x																					
C02S01	4	↓	Refer to quote	x	x	x		x																		
C02S02	5	↓	Refer to quote	x																						
C02S03	6	↓	Refer to quote																							
C03S01	7	↓	Refer to quote	x	x	x																				
C03S02	8	↓	Refer to quote																							
C03S03	9	↓	Refer to quote	x				x																		
C04S01	10	13.11.19	Refer to quote	x	x	x																				
C04S02	11	"	Refer to quote	x				x																		
C04S03	12	"	Refer to quote																							
C05S01	13	"	Refer to quote	x	x																					
C05S02	14	"	Refer to quote			x																				
C05S03	15	"	Refer to quote	x				x																		
C06S01	16	12.11.19	Refer to quote	x	x																					
C06S02	17	↓	Refer to quote	x				x																		
C06S03	18	↓	Refer to quote			x						x														
C07S01	19	↓	Refer to quote	x	x			x																		
C07S02	20	↓	Refer to quote			x																				
C07S03	21	↓	Refer to quote	x																						
Total number of bottles/bags/jars																										

Environmental Division
Perth
Work Order Reference
EP1911899

Primary destination:	ALS	Received by:	NO	Secondary destination:		Received by:	
Relinquished by:	Shae Miller-White	Organisation:	ALS	Relinquished by:		Organisation	
Organisation:	RPS	Date:	13.11.19	Organisation:		Date:	
Date:	13.11.19	Time:	14:25	Date:		Time:	
Time:				Time:			

P.T.O.

CHAIN OF CUSTODY

rps MAKING COMPLEX EASY

Level 2, 27-31 Troode Street
West Perth WA 6005
Tel: (618) 9211 1111
Fax: (618) 9211 1122

Site:	Rottnest Army Jetty
Project reference:	EEC19032.011
Scientist(s)	SMW
Sample type(s):	Sediment and Water
Report to:	Alan Foley / Shae Miller-White
Invoice to:	west.accountspayable@rpsgroup.com

Page number: 2 of 2
Turnaround time: Standard
Quote number: EP/705/19
Remarks:

No Asbestos.

As per quote.

Sample ID		Date collected	Number of containers / bottles / bags	Sediment Suite	Sediment Suite (Filtered)	Water Suite	Water Suite (Filtered)	Hg	Sn	Remarks
SW1	22	12.11.19		X	X					
SW2	23	↓						X		
WR1	24	↓				✓				
WR2	25	13.11.19				✓				
WB1	26	12.11.19				✓				
WB2	27	13.11.19				✓				
WTB1	28	12.11.19						X	X	* Please lab filter dissolved metals bottle *
(1) ES-01	29	13.11.19.			✓					
EW (SP)	30									

Total number of bottles/bags/jars					
Primary destination:	ALS	Received by:	ND	Secondary destination:	Received by:
Relinquished by:	Shae Miller-White	Organisation:	ALS	Relinquished by:	Organisation:
Organisation:	RPS	Date:	13-11-19	Organisation:	Date:
Date:		Time:		Date:	Time:
Time:				Time:	

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EP2003111**	Page	: 1 of 21
Client	: **RPS Australia West Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: ALAN FOLEY	Contact	: Lauren Biagioni
Address	: PO BOX 170 WEST PERTH WA 6872	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: 08 9406 1307
Project	: EEC19032.012	Date Samples Received	: 24-Mar-2020 11:40
Order number	: ----	Date Analysis Commenced	: 27-Mar-2020
C-O-C number	: ----	Issue Date	: 17-Apr-2020 11:14
Sampler	: SMW		
Site	: Rottnest Army Jetty		
Quote number	: EP/705/19		
No. of samples received	: 36		
No. of samples analysed	: 28		

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. 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*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
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 Contact for details.

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

- PFAS conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EP231X: PFAS results for sample #35 confirmed by re-extraction and re-analysis.
- EN68: This analysis in accordance with National Ocean Disposal Guidelines, Commonwealth of Australia, 2002 - (modified). Results reported are those determined on a 1:4 sediment/seawater elutriate without blank correction.
- 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: ELUTRIATE (Matrix: WATER)				Client sample ID	C01S01	C02S01	C03S03	C04S02	C05S03
				Client sampling date / time	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00
Compound	CAS Number	LOR	Unit		EP2003111-001	EP2003111-004	EP2003111-009	EP2003111-011	EP2003111-015
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: ELUTRIATE (Matrix: WATER)				Client sample ID	C01S01	C02S01	C03S03	C04S02	C05S03
				Client sampling date / time	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00
Compound	CAS Number	LOR	Unit		EP2003111-001	EP2003111-004	EP2003111-009	EP2003111-011	EP2003111-015
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
^ Sum of PFAS	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**74.5**	**76.1**	**73.5**	**76.2**	**77.0**
13C8-PFOA	----	0.0005	%		**102**	**97.6**	**98.6**	**99.7**	**99.4**

Analytical Results

Sub-Matrix: ELUTRIATE (Matrix: WATER)				Client sample ID	C06S02	C07S01	EW	----	----
				Client sampling date / time	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	----	----
Compound	CAS Number	LOR	Unit		EP2003111-017	EP2003111-019	EP2003111-035	--------	--------
					Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	----	----

Analytical Results

Sub-Matrix: ELUTRIATE (Matrix: WATER)				Client sample ID	C06S02	C07S01	EW	----	----
				Client sampling date / time	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	----	----
Compound	CAS Number	LOR	Unit		EP2003111-017	EP2003111-019	EP2003111-035	--------	--------
					Result	Result	Result	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	----	----
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	----	----
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	----	----
^ Sum of PFAS	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**74.8**	**73.3**	**71.2**	----	----
13C8-PFOA	----	0.0005	%		**98.9**	**103**	**103**	----	----

Analytical Results

Sub-Matrix: SEAWATER (Matrix: WATER)				Client sample ID	Matrix Blank	----	----	----	----
				Client sampling date / time	23-Mar-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EP2003111-036	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	----	----	----	----

Analytical Results

Sub-Matrix: SEAWATER (Matrix: WATER)				Client sample ID	Matrix Blank	----	----	----	----
				Client sampling date / time	23-Mar-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EP2003111-036	--------	--------	--------	--------
					Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	----	----	----	----
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	----	----	----	----
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		<0.0002	----	----	----	----
^ Sum of PFAS	----	0.0002	µg/L		<0.0002	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**75.6**	----	----	----	----
13C8-PFOA	----	0.0005	%		**108**	----	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	C01S01	C01S03	C02S01	C02S02	C03S01
			Client sampling date / time	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00
Compound	CAS Number	LOR	Unit	EP2003111-001	EP2003111-003	EP2003111-004	EP2003111-005	EP2003111-007
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	33.3	33.6	45.7	32.6	25.8
EN68: Seawater Elutriate Testing Procedure								
Seawater Sampling Date	----	-	-	28/03/2020	----	28/03/2020	----	----
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	<0.0002	<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	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
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)				Client sample ID	C01S01	C01S03	C02S01	C02S02	C03S01
				Client sampling date / time	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00
Compound	CAS Number	LOR	Unit		EP2003111-001	EP2003111-003	EP2003111-004	EP2003111-005	EP2003111-007
					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		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**91.5**	**108**	**102**	**108**	**112**
13C8-PFOA	----	0.0002	%		**96.5**	**104**	**99.0**	**94.0**	**100**

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	C03S03	C04S01	C04S02	C05S01	C05S03
			Client sampling date / time	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00
Compound	CAS Number	LOR	Unit	EP2003111-009	EP2003111-010	EP2003111-011	EP2003111-013	EP2003111-015
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	36.3	36.4	34.7	24.5	27.4
EN68: Seawater Elutriate Testing Procedure								
Seawater Sampling Date	----	-	-	28/03/2020	----	28/03/2020	----	28/03/2020
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	<0.0002	<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	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
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)				Client sample ID	C03S03	C04S01	C04S02	C05S01	C05S03
				Client sampling date / time	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00
Compound	CAS Number	LOR	Unit		EP2003111-009	EP2003111-010	EP2003111-011	EP2003111-013	EP2003111-015
					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		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**102**	**108**	**98.5**	**98.5**	**114**
13C8-PFOA	----	0.0002	%		**98.5**	**100**	**97.0**	**95.0**	**100**

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	C06S01	C06S02	C07S01	C07S03	SZ1
			Client sampling date / time	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00
Compound	CAS Number	LOR	Unit	EP2003111-016	EP2003111-017	EP2003111-019	EP2003111-021	EP2003111-022
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	29.5	28.2	16.9	20.4	31.7
EN68: Seawater Elutriate Testing Procedure								
Seawater Sampling Date	----	-	-	----	28/03/2020	28/03/2020	----	----
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	<0.0002	<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	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
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)				Client sample ID	C06S01	C06S02	C07S01	C07S03	SZ1
				Client sampling date / time	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00
Compound	CAS Number	LOR	Unit		EP2003111-016	EP2003111-017	EP2003111-019	EP2003111-021	EP2003111-022
					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		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**111**	**102**	**98.0**	**108**	**93.5**
13C8-PFOA	----	0.0002	%		**99.0**	**99.5**	**102**	**108**	**94.5**

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	SZ2	EW	----	----	----
				Client sampling date / time	23-Mar-2020 00:00	23-Mar-2020 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EP2003111-023	EP2003111-035	--------	--------	--------
					Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**31.0**	----	----	----	----
EN68: Seawater Elutriate Testing Procedure									
Seawater Sampling Date	----	-	-		----	**28/03/2020**	----	----	----
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		<0.0002	----	----	----	----
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	----	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	SZ2	EW	----	----	----
				Client sampling date / time	23-Mar-2020 00:00	23-Mar-2020 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EP2003111-023	EP2003111-035	--------	--------	--------
					Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	----	----	----	----
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		<0.0002	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**94.0**	----	----	----	----
13C8-PFOA	----	0.0002	%		**96.0**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	WZ1	WZ2	WR1	WR2	WB1
				Client sampling date / time	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00
Compound	CAS Number	LOR	Unit		EP2003111-024	EP2003111-025	EP2003111-026	EP2003111-027	EP2003111-028
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		**0.0006**	**0.0003**	<0.0002	**0.0003**	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	WZ1	WZ2	WR1	WR2	WB1
				Client sampling date / time	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00
Compound	CAS Number	LOR	Unit		EP2003111-024	EP2003111-025	EP2003111-026	EP2003111-027	EP2003111-028
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		**0.0006**	**0.0003**	<0.0002	**0.0003**	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.0006**	**0.0003**	<0.0002	**0.0003**	<0.0002
^ Sum of PFAS	----	0.0002	µg/L		**0.0006**	**0.0003**	<0.0002	**0.0003**	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**95.8**	**110**	**96.5**	**96.3**	**96.2**
13C8-PFOA	----	0.0005	%		**86.1**	**82.7**	**86.3**	**82.5**	**86.2**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW 197	TBW 168	C01-SW	C04-SW	C06-SW
				Client sampling date / time	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00
Compound	CAS Number	LOR	Unit		EP2003111-029	EP2003111-030	EP2003111-032	EP2003111-033	EP2003111-034
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	**0.0002**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW 197	TBW 168	C01-SW	C04-SW	C06-SW
				Client sampling date / time	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00	23-Mar-2020 00:00
Compound	CAS Number	LOR	Unit		EP2003111-029	EP2003111-030	EP2003111-032	EP2003111-033	EP2003111-034
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	**0.0002**
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	**0.0002**
^ Sum of PFAS	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	**0.0002**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**93.0**	**91.8**	**99.6**	**91.9**	**82.7**
13C8-PFOA	----	0.0005	%		**86.6**	**84.5**	**89.1**	**81.3**	**77.6**

Surrogate Control Limits

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

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

Sub-Matrix: SEDIMENT		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

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EP2003111**	Page	: 1 of 9
Client	: **RPS Australia West Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: ALAN FOLEY	Contact	: Lauren Biagioni
Address	: PO BOX 170 WEST PERTH WA 6872	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: 08 9406 1307
Project	: EEC19032.012	Date Samples Received	: 24-Mar-2020
Order number	: ----	Date Analysis Commenced	: 27-Mar-2020
C-O-C number	: ----	Issue Date	: 17-Apr-2020
Sampler	: SMW		
Site	: Rottnest Army Jetty		
Quote number	: EP/705/19		
No. of samples received	: 36		
No. of samples analysed	: 28		

ilac-MRA NATA
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. 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*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
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

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	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2942102)									
EP2003067-003	Anonymous	EA055: Moisture Content	----	0.1	%	3.3	3.5	7.91	0% - 20%
EP2003111-013	C05S01	EA055: Moisture Content	----	0.1	%	24.5	25.2	2.98	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2942103)									
EP2003126-002	Anonymous	EA055: Moisture Content	----	0.1	%	10.6	11.7	9.68	0% - 20%
EP2003126-014	Anonymous	EA055: Moisture Content	----	0.1	%	9.8	9.8	0.00	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2951026)									
EP2003111-001	C01S01	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EP2003111-017	C06S02	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2951026)									
EP2003111-001	C01S01	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2951026) - continued									
EP2003111-001	C01S01	EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP2003111-017	C06S02	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 2951026)									
EP2003111-001	C01S01	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EP2003111-017	C06S02	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 2951026) - continued									
EP2003111-017	C06S02	EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 2951026)									
EP2003111-001	C01S01	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EP2003111-017	C06S02	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2951026)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	70.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	125	70.0	130
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	111	70.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	122	70.0	130
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	70.0	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	114	70.0	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2951026)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	108	70.0	130
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	122	70.0	130
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	109	70.0	130
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	70.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	70.0	130
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	123	70.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	107	70.0	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	111	70.0	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.2	70.0	130
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.6	70.0	130
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	118	70.0	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2951026)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	103	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	115	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	96.0	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	127	70.0	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	126	70.0	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	111	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2951026)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	103	70.0	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	104	70.0	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	110	70.0	130

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2951026) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	126	70.0	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2944249)								
EP231X-SUT: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.004 µg/L	86.8	50.0	130
EP231X-SUT: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.004 µg/L	93.6	50.0	130
EP231X-SUT: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.004 µg/L	86.0	50.0	130
EP231X-SUT: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.004 µg/L	111	50.0	130
EP231X-SUT: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	0.004 µg/L	92.8	50.0	130
EP231X-SUT: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.004 µg/L	82.0	50.0	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2945083)								
EP231X-SUT: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.004 µg/L	76.0	50.0	130
EP231X-SUT: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.004 µg/L	75.2	50.0	130
EP231X-SUT: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.004 µg/L	90.0	50.0	130
EP231X-SUT: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.004 µg/L	86.4	50.0	130
EP231X-SUT: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	0.004 µg/L	63.2	50.0	130
EP231X-SUT: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.004 µg/L	70.4	50.0	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2944249)								
EP231X-SUT: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.0020	0.02 µg/L	94.6	30.0	130
EP231X-SUT: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	97.2	50.0	130
EP231X-SUT: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	94.0	50.0	130
EP231X-SUT: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	102	50.0	130
EP231X-SUT: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	87.6	50.0	130
EP231X-SUT: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	91.2	50.0	130
EP231X-SUT: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	92.4	50.0	130
EP231X-SUT: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	79.2	40.0	130
EP231X-SUT: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	118	40.0	130
EP231X-SUT: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	75.2	40.0	130
EP231X-SUT: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	101	40.0	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2945083)								
EP231X-SUT: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.0020	0.02 µg/L	100	30.0	130
EP231X-SUT: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	96.0	50.0	130
EP231X-SUT: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	98.0	50.0	130
EP231X-SUT: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	88.4	50.0	130
EP231X-SUT: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	90.4	50.0	130
EP231X-SUT: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	96.0	50.0	130
EP231X-SUT: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	78.8	50.0	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2945083) - continued								
EP231X-SUT: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	88.0	40.0	130
EP231X-SUT: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	114	40.0	130
EP231X-SUT: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	73.2	40.0	130
EP231X-SUT: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	94.1	40.0	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2944249)								
EP231X-SUT: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	89.2	40.0	130
EP231X-SUT: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	73.8	40.0	130
EP231X-SUT: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	72.2	40.0	130
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	104	40.0	130
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	106	40.0	130
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	112	40.0	130
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	80.8	40.0	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2945083)								
EP231X-SUT: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	90.0	40.0	130
EP231X-SUT: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	99.7	40.0	130
EP231X-SUT: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	87.2	40.0	130
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	93.6	40.0	130
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	96.0	40.0	130
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	89.2	40.0	130
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	79.2	40.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2944249)								
EP231X-SUT: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.004 µg/L	76.4	50.0	130
EP231X-SUT: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.004 µg/L	86.0	50.0	130
EP231X-SUT: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.004 µg/L	98.8	50.0	130
EP231X-SUT: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.004 µg/L	114	50.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2945083)								
EP231X-SUT: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.004 µg/L	74.8	50.0	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2945083) - continued								
EP231X-SUT: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.004 µg/L	82.8	50.0	130
EP231X-SUT: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.004 µg/L	86.8	50.0	130
EP231X-SUT: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.004 µg/L	68.8	50.0	130
EP231P: PFAS Sums (QCLot: 2944249)								
EP231X-SUT: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS (WA DER List)	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231P: PFAS Sums (QCLot: 2945083)								
EP231X-SUT: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS (WA DER List)	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS	----	0.0002	µg/L	<0.0002	----	----	----	----

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	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2951026)							
EP2003111-001	C01S01	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	100	50.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	122	50.0	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	110	50.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	111	50.0	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	106	50.0	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	123	50.0	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2951026)							
EP2003111-001	C01S01	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	110	30.0	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	123	50.0	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	117	50.0	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	116	50.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	111	50.0	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	116	50.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	107	50.0	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	112	50.0	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	123	50.0	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2951026) - continued							
EP2003111-001	C01S01	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	99.2	30.0	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	123	30.0	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2951026)							
EP2003111-001	C01S01	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	110	50.0	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	99.7	30.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	111	30.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	103	30.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	123	30.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	121	30.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	107	30.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2951026)							
EP2003111-001	C01S01	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	103	50.0	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	96.0	50.0	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	93.2	50.0	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	123	50.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2003111**	Page	: 1 of 8
Client	: **RPS Australia West Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: ALAN FOLEY	Telephone	: 08 9406 1307
Project	: EEC19032.012	Date Samples Received	: 24-Mar-2020
Site	: Rottnest Army Jetty	Issue Date	: 17-Apr-2020
Sampler	: SMW	No. of samples received	: 36
Order number	: ----	No. of samples analysed	: 28

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

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

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055)							
C01S01, C01S03, C02S01, C02S02, C03S01, C03S03, C04S01, C04S02, C05S01, C05S03, C06S01, C06S02, C07S01, C07S03, SZ1, SZ2	**23-Mar-2020**	**----**	----	----	**27-Mar-2020**	06-Apr-2020	✓
EN68: Seawater Elutriate Testing Procedure							
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN68a)							
C01S01, C02S01, C03S03, C04S02, C05S03, C06S02, C07S01, EW	**23-Mar-2020**	**28-Mar-2020**	19-Sep-2020	✓	**----**	----	----

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
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X)							
C01S01, C01S03, C02S01, C02S02, C03S01, C03S03, C04S01, C04S02, C05S01, C05S03, C06S01, C06S02, C07S01, C07S03, SZ1, SZ2	**23-Mar-2020**	**03-Apr-2020**	19-Sep-2020	✓	**06-Apr-2020**	13-May-2020	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X)							
C01S01, C01S03, C02S01, C02S02, C03S01, C03S03, C04S01, C04S02, C05S01, C05S03, C06S01, C06S02, C07S01, C07S03, SZ1, SZ2	**23-Mar-2020**	**03-Apr-2020**	19-Sep-2020	✓	**06-Apr-2020**	13-May-2020	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X)							
C01S01, C01S03, C02S01, C02S02, C03S01, C03S03, C04S01, C04S02, C05S01, C05S03, C06S01, C06S02, C07S01, C07S03, SZ1, SZ2	**23-Mar-2020**	**03-Apr-2020**	19-Sep-2020	✓	**06-Apr-2020**	13-May-2020	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X)							
C01S01, C01S03, C02S01, C02S02, C03S01, C03S03, C04S01, C04S02, C05S01, C05S03, C06S01, C06S02, C07S01, C07S03, SZ1, SZ2	**23-Mar-2020**	**03-Apr-2020**	19-Sep-2020	✓	**06-Apr-2020**	13-May-2020	✓

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)							
C01S01, C01S03, C02S01, C02S02, C03S01, C03S03, C04S01, C04S02, C05S01, C05S03, C06S01, C06S02, C07S01, C07S03, SZ1, SZ2	**23-Mar-2020**	**03-Apr-2020**	19-Sep-2020	✓	**06-Apr-2020**	13-May-2020	✓

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							
Clear Plastic Bottle - Natural (EP231X-SUT)							
Matrix Blank	**23-Mar-2020**	**03-Apr-2020**	19-Sep-2020	✓	**06-Apr-2020**	19-Sep-2020	✓
HDPE (no PTFE) (EP231X-SUT)							
WZ1, WZ2, WR1, WR2, WB1, TBW 197, TBW 168, C01-SW, C04-SW, C06-SW	**23-Mar-2020**	**03-Apr-2020**	19-Sep-2020	✓	**06-Apr-2020**	19-Sep-2020	✓
HDPE (no PTFE) (EP231X-SUT)							
C01S01, C02S01, C03S03, C04S02, C05S03, C06S02, C07S01, EW	**28-Mar-2020**	**03-Apr-2020**	24-Sep-2020	✓	**06-Apr-2020**	24-Sep-2020	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
Clear Plastic Bottle - Natural (EP231X-SUT)							
Matrix Blank	**23-Mar-2020**	**03-Apr-2020**	19-Sep-2020	✓	**06-Apr-2020**	19-Sep-2020	✓
HDPE (no PTFE) (EP231X-SUT)							
WZ1, WZ2, WR1, WR2, WB1, TBW 197, TBW 168, C01-SW, C04-SW, C06-SW	**23-Mar-2020**	**03-Apr-2020**	19-Sep-2020	✓	**06-Apr-2020**	19-Sep-2020	✓
HDPE (no PTFE) (EP231X-SUT)							
C01S01, C02S01, C03S03, C04S02, C05S03, C06S02, C07S01, EW	**28-Mar-2020**	**03-Apr-2020**	24-Sep-2020	✓	**06-Apr-2020**	24-Sep-2020	✓

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							
Clear Plastic Bottle - Natural (EP231X-SUT)							
Matrix Blank	**23-Mar-2020**	**03-Apr-2020**	19-Sep-2020	✓	**06-Apr-2020**	19-Sep-2020	✓
HDPE (no PTFE) (EP231X-SUT)							
WZ1, WZ2, WR1, WR2, WB1, TBW 197, TBW 168, C01-SW, C04-SW, C06-SW	**23-Mar-2020**	**03-Apr-2020**	19-Sep-2020	✓	**06-Apr-2020**	19-Sep-2020	✓
HDPE (no PTFE) (EP231X-SUT)							
C01S01, C02S01, C03S03, C04S02, C05S03, C06S02, C07S01, EW	**28-Mar-2020**	**03-Apr-2020**	24-Sep-2020	✓	**06-Apr-2020**	24-Sep-2020	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
Clear Plastic Bottle - Natural (EP231X-SUT)							
Matrix Blank	**23-Mar-2020**	**03-Apr-2020**	19-Sep-2020	✓	**06-Apr-2020**	19-Sep-2020	✓
HDPE (no PTFE) (EP231X-SUT)							
WZ1, WZ2, WR1, WR2, WB1, TBW 197, TBW 168, C01-SW, C04-SW, C06-SW	**23-Mar-2020**	**03-Apr-2020**	19-Sep-2020	✓	**06-Apr-2020**	19-Sep-2020	✓
HDPE (no PTFE) (EP231X-SUT)							
C01S01, C02S01, C03S03, C04S02, C05S03, C06S02, C07S01, EW	**28-Mar-2020**	**03-Apr-2020**	24-Sep-2020	✓	**06-Apr-2020**	24-Sep-2020	✓
EP231P: PFAS Sums							
Clear Plastic Bottle - Natural (EP231X-SUT)							
Matrix Blank	**23-Mar-2020**	**03-Apr-2020**	19-Sep-2020	✓	**06-Apr-2020**	19-Sep-2020	✓
HDPE (no PTFE) (EP231X-SUT)							
WZ1, WZ2, WR1, WR2, WB1, TBW 197, TBW 168, C01-SW, C04-SW, C06-SW	**23-Mar-2020**	**03-Apr-2020**	19-Sep-2020	✓	**06-Apr-2020**	19-Sep-2020	✓
HDPE (no PTFE) (EP231X-SUT)							
C01S01, C02S01, C03S03, C04S02, C05S03, C06S02, C07S01, EW	**28-Mar-2020**	**03-Apr-2020**	24-Sep-2020	✓	**06-Apr-2020**	24-Sep-2020	✓

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	4	32	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**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-SUT	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	2	19	**10.53**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	2	19	**10.53**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

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 (2013) Schedule B(3) Section 6.1 and Table 1 (14 day holding time).
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-SUT	SOIL	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 concentrated, combined with an equal volume of 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-SUT	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 concentrated, combined with an equal volume of reagent water and 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
Seawater Elutriate Testing Procedure	EN68a	SOIL	USEPA Evaluation of Dredged Material Proposed for Ocean Disposal - Testing Guide, 1991, EPA-503/8-91/001, USEPA and US Army Corps of Engineers. ANZECC Interim Ocean Disposal Guidelines, December, 1998 This Procedure outlines the preparation of leachate designed to simulate release of contaminants from sediment during the disposal of dredged material. Release can occur by physical processes or a variety of chemical changes such as oxidation of metal sulphides and release of contaminants adsorbed to particles or organic matter.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	SOIL	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.

Preparation Methods	Method	Matrix	Method Descriptions
Sample Extraction for PFAS in solid matrices	ORG73	SOIL	In-house: 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 conform to US DoD QSM 5.3, table B-15 requirements.
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.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EP2003111**

Client	: **RPS Australia West Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: ALAN FOLEY	Contact	: Lauren Biagioni
Address	: PO BOX 170 WEST PERTH WA 6872	Address	: 26 Rigali Way Wangara WA Australia 6065
E-mail	: Alan.Foley@rpsgroup.com.au	E-mail	: Lauren.biagioni@alsglobal.com
Telephone	: ----	Telephone	: 08 9406 1307
Facsimile	: ----	Facsimile	: +61-8-9406 1399
Project	: EEC19032.012	Page	: 1 of 3
Order number	: ----	Quote number	: EP2019AQUTER0003 (EP/705/19)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Rottnest Army Jetty		
Sampler	: SMW		

Dates

Date Samples Received	: 24-Mar-2020 11:40	Issue Date	: 25-Mar-2020
Client Requested Due Date	: 09-Apr-2020	Scheduled Reporting Date	: **09-Apr-2020**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 5	Temperature	: 15.9/25.0 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 36 / 28

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- PFAS conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- Please see scanned COC for sample discrepencies: extra samples , samples not received etc.
- **PFAS analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911.**
- Please direct any queries related to sample condition / numbering / breakages to Sample Receipt (Samples.Perth@alsglobal.com)
- Please direct any turnaround / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **pH analysis should be conducted within 6 hours of sampling.**
- 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	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EN68-1 Preparation of Elutriates for a single analysis	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)	SOIL - EP231X-SUT PFAS - Super Ultra Trace Waters Long Suite (28
EP2003111-001	23-Mar-2020 00:00	C01S01		✓	✓	✓	✓
EP2003111-002	23-Mar-2020 00:00	C01S02	✓				
EP2003111-003	23-Mar-2020 00:00	C01S03		✓		✓	
EP2003111-004	23-Mar-2020 00:00	C02S01		✓	✓	✓	✓
EP2003111-005	23-Mar-2020 00:00	C02S02		✓		✓	
EP2003111-006	23-Mar-2020 00:00	C02S03	✓				
EP2003111-007	23-Mar-2020 00:00	C03S01		✓		✓	
EP2003111-008	23-Mar-2020 00:00	C03S02	✓				
EP2003111-009	23-Mar-2020 00:00	C03S03		✓	✓	✓	✓
EP2003111-010	23-Mar-2020 00:00	C04S01		✓		✓	
EP2003111-011	23-Mar-2020 00:00	C04S02		✓	✓	✓	✓
EP2003111-012	23-Mar-2020 00:00	C04S03	✓				
EP2003111-013	23-Mar-2020 00:00	C05S01		✓		✓	
EP2003111-014	23-Mar-2020 00:00	C05S02	✓				
EP2003111-015	23-Mar-2020 00:00	C05S03		✓	✓	✓	✓
EP2003111-016	23-Mar-2020 00:00	C06S01		✓		✓	
EP2003111-017	23-Mar-2020 00:00	C06S02		✓	✓	✓	✓
EP2003111-018	23-Mar-2020 00:00	C06S03	✓				
EP2003111-019	23-Mar-2020 00:00	C07S01		✓	✓	✓	✓
EP2003111-020	23-Mar-2020 00:00	C07S02	✓				
EP2003111-021	23-Mar-2020 00:00	C07S03		✓		✓	
EP2003111-022	23-Mar-2020 00:00	SZ1		✓		✓	
EP2003111-023	23-Mar-2020 00:00	SZ2		✓		✓	
EP2003111-031	23-Mar-2020 00:00	C07S04	✓				
EP2003111-035	23-Mar-2020 00:00	EW			✓		✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EP231X-SUT PFAS - Super Ultra Trace Waters Long Suite (28
EP2003111-024	23-Mar-2020 00:00	WZ1	✓
EP2003111-025	23-Mar-2020 00:00	WZ2	✓
EP2003111-026	23-Mar-2020 00:00	WR1	✓
EP2003111-027	23-Mar-2020 00:00	WR2	✓
EP2003111-028	23-Mar-2020 00:00	WB1	✓
EP2003111-029	23-Mar-2020 00:00	TBW 197	✓
EP2003111-030	23-Mar-2020 00:00	TBW 168	✓
EP2003111-032	23-Mar-2020 00:00	C01-SW	✓
EP2003111-033	23-Mar-2020 00:00	C04-SW	✓
EP2003111-034	23-Mar-2020 00:00	C06-SW	✓
EP2003111-036	23-Mar-2020 00:00	Matrix Blank	✓

Proactive Holding Time Report

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

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	West.AccountsPayable@rpsgroup.com.au

ALAN FOLEY

- *AU Certificate of Analysis - NATA (COA)	Email	Alan.Foley@rpsgroup.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	Alan.Foley@rpsgroup.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	Alan.Foley@rpsgroup.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	Alan.Foley@rpsgroup.com.au
- A4 - AU Tax Invoice (INV)	Email	Alan.Foley@rpsgroup.com.au
- Chain of Custody (CoC) (COC)	Email	Alan.Foley@rpsgroup.com.au
- EDI Format - ENMRG (ENMRG)	Email	Alan.Foley@rpsgroup.com.au
- EDI Format - ESDAT (ESDAT)	Email	Alan.Foley@rpsgroup.com.au
- EDI Format - XTab (XTAB)	Email	Alan.Foley@rpsgroup.com.au

SHAE MILLER-WHITE

- *AU Certificate of Analysis - NATA (COA)	Email	miller-whites@rpsgroup.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	miller-whites@rpsgroup.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	miller-whites@rpsgroup.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	miller-whites@rpsgroup.com.au
- Chain of Custody (CoC) (COC)	Email	miller-whites@rpsgroup.com.au
- EDI Format - ENMRG (ENMRG)	Email	miller-whites@rpsgroup.com.au
- EDI Format - ESDAT (ESDAT)	Email	miller-whites@rpsgroup.com.au
- EDI Format - XTab (XTAB)	Email	miller-whites@rpsgroup.com.au

CHAIN OF CUSTODY

Level 2, 27-31 Troode Street
West Perth WA 6005
Tel: (618) 9211 1111
Fax: (618) 9211 1122

Site:	Rottnest Army Jetty
Project reference:	EEC19032.012
Scientist(s)	SMW
Sample type(s):	Sediment and Water
Report to:	Alan Foley / Shae Miller-White
Invoice to:	west.accountspayable@rpsgroup.com

Page number:
Turnaround time: Standard
Quote number: EP170519.
Remarks

Sample I.D.		Date collected	Number of jars / bottles / bags	Analytical suites: PFAS (Standard) - Sediment	PFAS (Trace levels) - Elutriate	PFAS (Trace levels) - Water	Storage
C01S01	1	23.3.20	Refer to quote	x	x		
C01S02	2		Refer to quote				x
C01S03	3		Refer to quote	x			
C02S01	4		Refer to quote	x	x		
C02S02	5		Refer to quote	x			
C02S03	6		Refer to quote				x
C03S01	7		Refer to quote	x			
C03S02	8		Refer to quote				x
C03S03	9		Refer to quote	x	x		
C04S01	10		Refer to quote	x			
C04S02	11		Refer to quote	x	x		
C04S03	12		Refer to quote				x
C05S01	13		Refer to quote	x			
C05S02	14		Refer to quote				x
C05S03	15		Refer to quote	x	x		
C06S01	16		Refer to quote	x			
C06S02	17		Refer to quote	x	x		
C06S03	18		Refer to quote				x
C07S01	19		Refer to quote	x	x		
C07S02	20		Refer to quote				x
C07S03	21		Refer to quote	x			
Total number of bottles/bags/jars							

Environmental Division
Perth
Work Order Reference
EP2003111

Telephone : +61-8-9406 1301

Primary destination:	ALS	**Received by:**	NO	**Secondary destination:**	**Received by:**
Relinquished by:	Shae Miller-White	**Organisation:**	als	**Relinquished by:**	**Organisation:**
Organisation:	RPS	**Date:**	24/3/2020	**Organisation:**	**Date:**
Date:	24.3.20	**Time:**	1140	**Date:**	**Time:**
Time:	9am			**Time:**	

CHAIN OF CUSTODY

Level 2, 27-31 Troode Street
West Perth WA 6005
Tel: (618) 9211 1111
Fax: (618) 9211 1122

Site:	Rottnest Army Jetty
Project reference:	EEC19032.012
Scientist(s)	SMW
Sample type(s):	Sediment and Water
Report to:	Alan Foley / Shae Miller-White
Invoice to:	west.accountspayable@rpsgroup.com

Page number:
Turnaround time: Standard
Quote number: EP1705 LQ
Remarks

Sample I.D.	Date collected	Number of jars / bottles / bags	Analytical suites: PFAS (Standard) - Sediment	PFAS (Trace levels) - Elutriate	PFAS (Trace levels) - Water	Storage
SZ1	22 23.3.20.	Refer to quote	x			
SZ2	23		x			
WZ1	24				x	
WZ2	25				x	
WR1	26				x	
WR2	27				x	
WB1	28				x	
TBW	29/30 19.3.20.				x	
C07S04	31 23.3.20.					x
C01-SW	32				x	
C04-SW	33				x	
C06-SW	34				x	

Total number of bottles/bags/jars

Primary destination:	ALS	**Received by:**	NM	**Secondary destination:**	**Received by:**
Relinquished by:	Shae Miller-White	**Organisation:**	ALS	**Relinquished by:**	**Organisation:**
Organisation:	RPS	**Date:**	24/3/2020	**Organisation:**	**Date:**
Date:	24.3.20	**Time:**	1140	**Date:**	**Time:**
Time:	9am			**Time:**	

Envirolab Services (WA) Pty Ltd trading as MPL Laboratories
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16-18 Hayden Court Myaree WA 6154
ph 08 9317 2505 fax 08 9317 4163
lab@mpl.com.au
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CERTIFICATE OF ANALYSIS 236228

Client Details

Client	RPS Australia West Pty Ltd
Attention	Alan Foley
Address	Level 2, 27-31 Troode St, WEST PERTH, WA, 6005

Sample Details

Your Reference	**EEC19032.011 - Rottnest Army Jetty**
Number of Samples	2 soils
Date samples received	13/11/2019
Date completed instructions received	13/11/2019

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	28/11/2019
Date of Issue	28/11/2019

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Heram Halim, Operations Manager
Michael Kubiak, Laboratory Manager
Stacey Hawkins, Acid Soils Supervisor

Authorised By

Michael Kubiak, Laboratory Manager

External Testing		
Our Reference		236228-1
Your Reference	UNITS	SZZ1
Date Sampled		12/11/2019
Type of sample		Soil
Total Organic Carbon by Combustion	mg/kg	1,500

Nutrients in Soil		
Our Reference		236228-1
Your Reference	UNITS	SZZ1
Date Sampled		12/11/2019
Type of sample		Soil
Date prepared	-	19/11/2019
Date analysed	-	19/11/2019
Total Nitrogen	mg/kg	140
Nitrate-N	mg/kg	<0.1
Nitrite-N	mg/kg	<0.1
Ammonia as N (1:5 KCl extract)	mg/kg	2.9
Total Phosphorus	mg/kg	280
Phosphate as P	mg/kg	<0.5

Metals - soil		
Our Reference		236228-1
Your Reference	UNITS	SZZ1
Date Sampled		12/11/2019
Type of sample		Soil
Date digested	-	18/11/2019
Date analysed	-	19/11/2019
Silver	mg/kg	<0.1
Arsenic	mg/kg	0.7
Cadmium	mg/kg	0.1
Cobalt	mg/kg	<0.5
Copper	mg/kg	<0.5
Mercury	mg/kg	<0.01
Manganese	mg/kg	6
Nickel	mg/kg	0.7
Lead	mg/kg	<0.5
Antimony	mg/kg	<0.5
Selenium	mg/kg	0.2
Vanadium	mg/kg	6.8
Zinc	mg/kg	0.5

TRH in Sediment (C6-C9) + BTEX		
Our Reference		236228-1
Your Reference	UNITS	SZZ1
Date Sampled		12/11/2019
Type of sample		Soil
Date extracted	-	18/11/2019
Date analysed	-	18/11/2019
TRH C_6 - C_9	mg/kg	<25
TRH C_6 - C_{10}	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.2
Ethylbenzene	mg/kg	<0.2
m+p-xylene	mg/kg	<0.4
o-xylene	mg/kg	<0.2
Surrogate aaa-Trifluorotoluene	%	93

sTRH in Sediment (C10-C36)		
Our Reference	UNITS	236228-1
Your Reference		SZZ1
Date Sampled		12/11/2019
Type of sample		Soil
Date extracted	-	18/11/2019
Date analysed	-	18/11/2019
TRH C_{10} - C_{14}	mg/kg	<25
TRH C_{15} - C_{28}	mg/kg	<25
TRH C_{29} - C_{36}	mg/kg	<25
TRH >C_{10} - C_{16}	mg/kg	<25
TRH >C_{16} - C_{34}	mg/kg	<25
TRH >C_{34} - C_{40}	mg/kg	<25

PAHs in Sediment (NAGD)		
Our Reference	UNITS	236228-1
Your Reference		SZZ1
Date Sampled		12/11/2019
Type of sample		Soil
Date extracted	-	18/11/2019
Date analysed	-	26/11/2019
Naphthalene	µg/kg	<5
2-Methylnaphthalene	µg/kg	<5
Acenaphthylene	µg/kg	<5
Acenaphthene	µg/kg	<5
Fluorene	µg/kg	<5
Phenanthrene	µg/kg	<5
Anthracene	µg/kg	<5
Fluoranthene	µg/kg	<5
Pyrene	µg/kg	<5
Benzo(a)anthracene	µg/kg	<5
Chrysene	µg/kg	<5
Benzo(b,j+k)fluoranthene	µg/kg	<10
Benzo(e)pyrene	µg/kg	<5
Benzo(a)pyrene	µg/kg	<5
Perylene	µg/kg	<5
Indeno(1,2,3-c,d)pyrene	µg/kg	<5
Dibenzo(a,h)anthracene	µg/kg	<5
Benzo(g,h,i)perylene	µg/kg	<5
Coronene	µg/kg	<5
Surrogate p-Terphenyl-D_{14}	%	116

OCP in Sediment (ANZECC)		
Our Reference	UNITS	236228-1
Your Reference		SZZ1
Date Sampled		12/11/2019
Type of sample		Soil
Date extracted	-	18/11/2019
Date analysed	-	26/11/2019
Hexachlorobenzene (HCB)	µg/kg	<1
a-BHC	µg/kg	<1
b-BHC	µg/kg	<1
Lindane (g-BHC)	µg/kg	<0.3
d-BHC	µg/kg	<1
Heptachlor	µg/kg	<1
Aldrin	µg/kg	<1
Heptachlor Epoxide	µg/kg	<1
a-chlordane	µg/kg	<0.5
g-Chlordane	µg/kg	<0.5
a-endosulphan	µg/kg	<1
p,p'-DDE	µg/kg	<1
Dieldrin	µg/kg	<0.2
Endrin	µg/kg	<0.2
p,p'-DDD	µg/kg	<1
b-endosulphan	µg/kg	<1
Endosulfan Sulphate	µg/kg	<1
p,p'-DDT	µg/kg	<1
Methoxychlor	µg/kg	<1
Oxychlordane	µg/kg	<1

Low Level OPP in soil		
Our Reference		236228-1
Your Reference	UNITS	SZZ1
Date Sampled		12/11/2019
Type of sample		Soil
Date extracted	-	18/11/2019
Date analysed	-	26/11/2019
Dichlorovos	mg/kg	<0.05
Diazinon	mg/kg	<0.05
Chlorpyrifos methyl	mg/kg	<0.05
Ronnel	mg/kg	<0.05
Fenitrothion	mg/kg	<0.05
Malathion	mg/kg	<0.05
Chlorpyrifos	mg/kg	<0.05
Parathion-ethyl	mg/kg	<0.05
Ethion	mg/kg	<0.05
Bromophos ethyl	mg/kg	<0.05
Dimethoate	mg/kg	<0.05
Azinphos methyl (Guthion)	mg/kg	<0.05
Surrogate p-Terphenyl-D_{14}	%	116

PFAS in Soil Extended			
Our Reference		236228-1	236228-2
Your Reference	UNITS	SZZ1	SZZ2
Date Sampled		12/11/2019	12/11/2019
Type of sample		Soil	Soil
Date prepared	-	19/11/2019	19/11/2019
Date analysed	-	19/11/2019	19/11/2019
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1
Perfluorohexanesulfonic acid	µg/kg	<0.1	<0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.2	<0.2
Perfluorooctanesulfonic acid PFOS	µg/kg	<0.1	<0.1
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	<0.1	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1	<0.1
Perfluorononanoic acid	µg/kg	<0.1	<0.1
Perfluorodecanoic acid	µg/kg	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	<0.1
8:2 FTS	µg/kg	<0.1	<0.1
10:2 FTS	µg/kg	<0.1	<0.1
Perfluorooctane sulfonamide	µg/kg	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1
N-Ethyl perfluorooctanesulfon -amide	µg/kg	<1	<1
N-Me perfluorooctanesulfonamid -oethanol	µg/kg	<1	<1
N-Et perfluorooctanesulfonamid -oethanol	µg/kg	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2
EtPerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2
Surrogate $^{13}C_8$ PFOS	%	86	92
Surrogate $^{13}C_2$ PFOA	%	83	82
Extracted ISTD $^{13}C_3$ *PFBS*	%	76	73
Extracted ISTD $^{18}O_2$ *PFHxS*	%	67	68
Extracted ISTD $^{13}C_4$ *PFOS*	%	77	71
Extracted ISTD 13C4 PFBA	%	64	62

PFAS in Soil Extended			
Our Reference		236228-1	236228-2
Your Reference	UNITS	SZZ1	SZZ2
Date Sampled		12/11/2019	12/11/2019
Type of sample		Soil	Soil
Extracted ISTD $^{13}C_3$ *PFPeA*	%	74	73
Extracted ISTD $^{13}C_2$ *PFHxA*	%	73	73
Extracted ISTD $^{13}C_4$ *PFHpA*	%	78	76
Extracted ISTD $^{13}C_4$ *PFOA*	%	78	78
Extracted ISTD $^{13}C_5$ *PFNA*	%	74	74
Extracted ISTD $^{13}C_2$ *PFDA*	%	72	75
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	76	76
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	72	69
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	61	57
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	82	80
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	72	77
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	77	72
Extracted ISTD $^{13}C_8$ *FOSA*	%	73	75
Extracted ISTD d_3 *N MeFOSA*	%	65	68
Extracted ISTD d_5 *N EtFOSA*	%	70	67
Extracted ISTD d_7 *N MeFOSE*	%	70	70
Extracted ISTD d_9 *N EtFOSE*	%	73	68
Extracted ISTD d_3 *N MeFOSAA*	%	85	81
Extracted ISTD d_5 *N EtFOSAA*	%	78	74
Total Positive PFHxS & PFOS	µg/kg	<0.1	<0.1
Total Positive PFOS & PFOA	µg/kg	<0.1	<0.1
Total Positive PFAS	µg/kg	<0.1	<0.1

Organotin Compounds in Soil		
Our Reference		236228-1
Your Reference	UNITS	SZZ1
Date Sampled		12/11/2019
Type of sample		Soil
Date extracted	-	19/11/2019
Date analysed	-	19/11/2019
Tributyltin as Sn	µg Sn/kg	<0.5
Surrogate Triphenyltin	%	97

Explosives in Soil		
Our Reference		236228-1
Your Reference	UNITS	SZZ1
Date Sampled		12/11/2019
Type of sample		Soil
Date prepared	-	19/11/2019
Date analysed	-	27/11/2019
2,4,6-TNT	mg/kg	<0.1
1,3-Dinitrobenzene	mg/kg	<0.1
2,4-dinitrotoluene	mg/kg	<0.1
2,6-dinitrotoluene	mg/kg	<0.1
2-Amino.4.6-DNT	mg/kg	<0.1
4-Amino.2.6-DNT	mg/kg	<0.1
HMX	mg/kg	<0.1
2-nitrotoluene	mg/kg	<0.1
3-nitrotoluene	mg/kg	<0.1
4-nitrotoluene	mg/kg	<0.1
Nitrobenzene	mg/kg	<0.1
Nitroglycerine	mg/kg	<0.1
PETN	mg/kg	<0.1
RDX	mg/kg	<0.1
Tetryl	mg/kg	<0.1
1,3,5-Trinitrobenzene	mg/kg	<0.1

Aromatic & Aliphatic TPH		
Our Reference	UNITS	236228-1
Your Reference		SZZ1
Date Sampled		12/11/2019
Type of sample		Soil
Date extracted	-	18/11/2019
Date analysed	-	18/11/2019
>C10-C16 Aliphatic	mg/kg	<100
>C16-C35 Aliphatic	mg/kg	<100
>C35 Aliphatic	mg/kg	<100
>C10-C16 Aromatic	mg/kg	<50
>C16-C35 Aromatic	mg/kg	<50
Surrogate 1-chlorooctadecane	%	93

Moisture			
Our Reference		236228-1	236228-2
Your Reference	UNITS	SZZ1	SZZ2
Date Sampled		12/11/2019	12/11/2019
Type of sample		Soil	Soil
Date prepared	-	18/11/2019	18/11/2019
Date analysed	-	19/11/2019	19/11/2019
Moisture	%	30	12

Chromium Suite		
Our Reference	UNITS	236228-1
Your Reference		SZZ1
Date Sampled		12/11/2019
Type of sample		Soil
Date analysed	-	19/11/2019
pH $_{kcl}$	pH units	10.0
TAA	moles H^+ /t	<5
S_{KCl}	%w/w S	NT
Chromium Reducible Sulfur	%w/w	<0.005
ANC_{BT}	% $CaCO_3$	90
S_{HCl}	%w/w S	NT
s-TAA	%w/w S	<0.01
a-Chromium Reducible Sulfur	moles H^+ /t	<5
a-ANC_{BT}	moles H^+ /t	18,000
s-ANC_{BT}	%w/w S	29
Fineness Factor		1.50
S_{NAS}	%w/w S	NT
a-S_{NAS}	moles H^+ /t	NT
s-SNAS	%w/w S	NT
s-Net Acidity	%w/w S	<0.005
a-Net Acidity	moles H^+ /t	<5
Liming rate	kg $CaCO_3$ /t	<0.75
s-Net Acidity without ANCE	% w/w S	<0.005
a-Net Acidity without ANCE	moles H^+ /t	<5
Liming rate without ANCE	kg $CaCO_3$ /t	<0.75

sPOCAS		
Our Reference	UNITS	236228-1
Your Reference		SZZ1
Date Sampled		12/11/2019
Type of sample		Soil
Date prepared	-	13/11/2019
Date analysed	-	19/11/2019
pH $_{Ox}$	pH units	8.1
TPA	moles H^+ /t	<5

Method ID	Methodology Summary
Ext-011	Subcontracted to ALS.
Ext-054	Analysed by Envirolab Services Sydney, accreditation number 2901
INORG-008	Moisture content determined by heating at 105 deg C for a minimum of 12 hours.
INORG-055	Nitrite - determined colourimetrically. Soils are analysed from a water extract.
INORG-055	Nitrate - determined colourimetrically. Soils are analysed from a water extract.
INORG-057	Ammonia by colourimetric analysis based on APHA latest edition 4500-NH3 F.
INORG-060	Phosphate- determined colourimetrically. Soils are analysed from a water extract.
INORG-062	TKN - determined colourimetrically based on APHA latest edition Norg C.
INORG-064	Suspension Peroxide Oxidation Combined Acidity and Sulphate (SPOCAS) using ASSMAC guidelines.
INORG-068	Chromium Reducible Sulfur - Hydrogen Sulfide is quantified by iodometric titration after distillation to determine potential acidity. Based on Acid Sulfate Soils Laboratory Methods Guidelines, Version 2.1 - June 2004.
METALS-020	Determination of various metals by ICP-AES.
METALS-021	Determination of Mercury by Cold Vapour AAS. For urine samples total Mercury is determined, however, mercury in urine is almost entirely in the inorganic form (CDC).
METALS-022	Determination of various metals by ICP-MS.
ORG-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
ORG-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. Fractionation with hexane through a silica gel column for aliphatics and DCM for aromatics.
ORG-008/015	Organophosphorus Pesticides in soil by DCM:Acetone extraction and water by DCM extraction with determination by GC-ECD/GC-MS.
ORG-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
ORG-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM draft B1 Guideline on Investigation Levels for Soil and Groundwater.
ORG-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
ORG-015	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS or GC-MS/MS.
ORG-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

Method ID	Methodology Summary
ORG-018	Based on SFS-EN ISO 17353, ISO/DIS 23161 and NIOSH 5504. Air samples are extracted with acetonitrile containing 0.1% acetic acid using sonication. Extracts are then derivatised and extracted. Soils are extracted with a mix of water and methanolic KOH solution, neutralised and then derivatised and extracted. Water samples are pH adjusted, salt added and then derivatised, extracted into hexane and concentrated to a small volume. The extracts are analysed by GC/MSMS.
Org-035	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated after SPE. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: External Testing						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Total Organic Carbon by Combustion	mg/kg	100	Ext-054	<100	[NT]	[NT]	[NT]	[NT]	91	[NT]

QUALITY CONTROL: Nutrients in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			19/11/2019	1	19/11/2019	19/11/2019		19/11/2019	[NT]
Date analysed	-			19/11/2019	1	19/11/2019	19/11/2019		19/11/2019	[NT]
Total Nitrogen	mg/kg	10	INORG-062	<10	1	140	[NT]		104	[NT]
Nitrate-N	mg/kg	0.1	INORG-055	<0.1	1	<0.1	[NT]		101	[NT]
Nitrite-N	mg/kg	0.1	INORG-055	<0.1	1	<0.1	[NT]		106	[NT]
Ammonia as N (1:5 KCl extract)	mg/kg	0.5	INORG-057	<0.5	1	2.9	2.9	0	101	[NT]
Total Phosphorus	mg/kg	10	METALS-020	<10	1	280	[NT]		112	[NT]

QUALITY CONTROL: Metals - soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date digested	-			18/11/2019	[NT]	[NT]	[NT]	[NT]	18/11/2019	[NT]
Date analysed	-			19/11/2019	[NT]	[NT]	[NT]	[NT]	19/11/2019	[NT]
Silver	mg/kg	0.1	METALS-022	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Arsenic	mg/kg	0.5	METALS-022	<0.5	[NT]	[NT]	[NT]	[NT]	102	[NT]
Cadmium	mg/kg	0.1	METALS-022	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Cobalt	mg/kg	0.5	METALS-022	<0.5	[NT]	[NT]	[NT]	[NT]	98	[NT]
Copper	mg/kg	0.5	METALS-022	<0.5	[NT]	[NT]	[NT]	[NT]	98	[NT]
Mercury	mg/kg	0.01	METALS-021	<0.01	[NT]	[NT]	[NT]	[NT]	106	[NT]
Manganese	mg/kg	1	METALS-022	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Nickel	mg/kg	0.5	METALS-022	<0.5	[NT]	[NT]	[NT]	[NT]	99	[NT]
Lead	mg/kg	0.5	METALS-022	<0.5	[NT]	[NT]	[NT]	[NT]	96	[NT]
Antimony	mg/kg	0.5	METALS-022	<0.5	[NT]	[NT]	[NT]	[NT]	115	[NT]
Selenium	mg/kg	0.1	METALS-022	<0.1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Vanadium	mg/kg	0.5	METALS-022	<0.5	[NT]	[NT]	[NT]	[NT]	102	[NT]
Zinc	mg/kg	0.5	METALS-022	<0.5	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: TRH in Sediment (C6-C9) + BTEX						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			18/11/2019	[NT]	[NT]	[NT]	[NT]	18/11/2019	[NT]
Date analysed	-			18/11/2019	[NT]	[NT]	[NT]	[NT]	18/11/2019	[NT]
TRH C_6 - C_9	mg/kg	25	ORG-016	<25	[NT]	[NT]	[NT]	[NT]	89	[NT]
TRH C_6 - C_{10}	mg/kg	25	ORG-016	<25	[NT]	[NT]	[NT]	[NT]	89	[NT]
Benzene	mg/kg	0.2	ORG-016	<0.2	[NT]	[NT]	[NT]	[NT]	102	[NT]
Toluene	mg/kg	0.2	ORG-016	<0.2	[NT]	[NT]	[NT]	[NT]	86	[NT]
Ethylbenzene	mg/kg	0.2	ORG-016	<0.2	[NT]	[NT]	[NT]	[NT]	89	[NT]
m+p-xylene	mg/kg	0.4	ORG-016	<0.4	[NT]	[NT]	[NT]	[NT]	85	[NT]
o-xylene	mg/kg	0.2	ORG-016	<0.2	[NT]	[NT]	[NT]	[NT]	85	[NT]
Surrogate aaa-Trifluorotoluene	%		ORG-014	102	[NT]	[NT]	[NT]	[NT]	105	[NT]

QUALITY CONTROL: sTRH in Sediment (C10-C36)					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			18/11/2019	[NT]	[NT]	[NT]	[NT]	18/11/2019	[NT]
Date analysed	-			18/11/2019	[NT]	[NT]	[NT]	[NT]	18/11/2019	[NT]
TRH C_{10} - C_{14}	mg/kg	25	ORG-003	<25	[NT]	[NT]	[NT]	[NT]	112	[NT]
TRH C_{15} - C_{28}	mg/kg	25	ORG-003	<25	[NT]	[NT]	[NT]	[NT]	101	[NT]
TRH C_{29} - C_{36}	mg/kg	25	ORG-003	<25	[NT]	[NT]	[NT]	[NT]	97	[NT]
TRH >C_{10} - C_{16}	mg/kg	25	ORG-003	<25	[NT]	[NT]	[NT]	[NT]	112	[NT]
TRH >C_{16} - C_{34}	mg/kg	25	ORG-003	<25	[NT]	[NT]	[NT]	[NT]	99	[NT]
TRH >C_{34} - C_{40}	mg/kg	25	ORG-003	<25	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: PAHs in Sediment (NAGD)						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			18/11/2019	1	18/11/2019	18/11/2019		18/11/2019	[NT]
Date analysed	-			26/11/2019	1	26/11/2019	26/11/2019		26/11/2019	[NT]
Naphthalene	µg/kg	5	ORG-012	<5	1	<5	<5	0	117	[NT]
2-Methylnaphthalene	µg/kg	5	ORG-012	<5	1	<5	<5	0	[NT]	[NT]
Acenaphthylene	µg/kg	5	ORG-012	<5	1	<5	<5	0	[NT]	[NT]
Acenaphthene	µg/kg	5	ORG-012	<5	1	<5	<5	0	[NT]	[NT]
Fluorene	µg/kg	5	ORG-012	<5	1	<5	<5	0	116	[NT]
Phenanthrene	µg/kg	5	ORG-012	<5	1	<5	<5	0	115	[NT]
Anthracene	µg/kg	5	ORG-012	<5	1	<5	<5	0	[NT]	[NT]
Fluoranthene	µg/kg	5	ORG-012	<5	1	<5	<5	0	118	[NT]
Pyrene	µg/kg	5	ORG-012	<5	1	<5	<5	0	119	[NT]
Benzo(a)anthracene	µg/kg	5	ORG-012	<5	1	<5	<5	0	[NT]	[NT]
Chrysene	µg/kg	5	ORG-012	<5	1	<5	<5	0	122	[NT]
Benzo(b,j+k)fluoranthene	µg/kg	10	ORG-012	<10	1	<10	<10	0	[NT]	[NT]
Benzo(e)pyrene	µg/kg	5	ORG-012	<5	1	<5	<5	0	[NT]	[NT]
Benzo(a)pyrene	µg/kg	5	ORG-012	<5	1	<5	<5	0	124	[NT]
Perylene	µg/kg	5	ORG-012	<5	1	<5	<5	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	µg/kg	5	ORG-012	<5	1	<5	<5	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/kg	5	ORG-012	<5	1	<5	<5	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/kg	5	ORG-012	<5	1	<5	<5	0	[NT]	[NT]
Coronene	µg/kg	5	ORG-012	<5	1	<5	<5	0	[NT]	[NT]
Surrogate p-Terphenyl-D_{14}	%		ORG-012	90	1	116	109	6	115	[NT]

QUALITY CONTROL: OCP in Sediment (ANZECC)						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			18/11/2019	1	18/11/2019	18/11/2019		18/11/2019	[NT]
Date analysed	-			26/11/2019	1	26/11/2019	26/11/2019		26/11/2019	[NT]
Hexachlorobenzene (HCB)	µg/kg	1	ORG-012	<1	1	<1	<1	0	[NT]	[NT]
a-BHC	µg/kg	1	ORG-012	<1	1	<1	<1	0	121	[NT]
b-BHC	µg/kg	1	ORG-012	<1	1	<1	<1	0	119	[NT]
Lindane (g-BHC)	µg/kg	0.3	ORG-012	<0.3	1	<0.3	<0.3	0	[NT]	[NT]
d-BHC	µg/kg	1	ORG-012	<1	1	<1	<1	0	[NT]	[NT]
Heptachlor	µg/kg	1	ORG-012	<1	1	<1	<1	0	112	[NT]
Aldrin	µg/kg	1	ORG-012	<1	1	<1	<1	0	114	[NT]
Heptachlor Epoxide	µg/kg	1	ORG-012	<1	1	<1	<1	0	115	[NT]
a-chlordane	µg/kg	0.5	ORG-012	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
g-Chlordane	µg/kg	0.5	ORG-012	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
a-endosulphan	µg/kg	1	ORG-012	<1	1	<1	<1	0	[NT]	[NT]
p,p'-DDE	µg/kg	1	ORG-012	<1	1	<1	<1	0	129	[NT]
Dieldrin	µg/kg	0.2	ORG-012	<0.2	1	<0.2	<0.2	0	116	[NT]
Endrin	µg/kg	0.2	ORG-012	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
p,p'-DDD	µg/kg	1	ORG-012	<1	1	<1	<1	0	128	[NT]
b-endosulphan	µg/kg	1	ORG-012	<1	1	<1	<1	0	[NT]	[NT]
Endosulfan Sulphate	µg/kg	1	ORG-012	<1	1	<1	<1	0	120	[NT]
p,p'-DDT	µg/kg	1	ORG-012	<1	1	<1	<1	0	[NT]	[NT]
Methoxychlor	µg/kg	1	ORG-012	<1	1	<1	<1	0	[NT]	[NT]
Oxychlordane	µg/kg	1	ORG-012	<1	1	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: Low Level OPP in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			18/11/2019	1	18/11/2019	18/11/2019		18/11/2019	[NT]
Date analysed	-			26/11/2019	1	26/11/2019	26/11/2019		26/11/2019	[NT]
Dichlorovos	mg/kg	0.05	ORG-015	<0.05	1	<0.05	<0.05	0	[NT]	[NT]
Diazinon	mg/kg	0.05	ORG-015	<0.05	1	<0.05	<0.05	0	[NT]	[NT]
Chlorpyrifos methyl	mg/kg	0.05	ORG-015	<0.05	1	<0.05	<0.05	0	117	[NT]
Ronnel	mg/kg	0.05	ORG-015	<0.05	1	<0.05	<0.05	0	[NT]	[NT]
Fenitrothion	mg/kg	0.05	ORG-015	<0.05	1	<0.05	<0.05	0	130	[NT]
Malathion	mg/kg	0.05	ORG-015	<0.05	1	<0.05	<0.05	0	[NT]	[NT]
Chlorpyrifos	mg/kg	0.05	ORG-015	<0.05	1	<0.05	<0.05	0	121	[NT]
Parathion-ethyl	mg/kg	0.05	ORG-008/015	<0.05	1	<0.05	<0.05	0	[NT]	[NT]
Ethion	mg/kg	0.05	ORG-015	<0.05	1	<0.05	<0.05	0	115	[NT]
Bromophos ethyl	mg/kg	0.05	ORG-015	<0.05	1	<0.05	<0.05	0	[NT]	[NT]
Dimethoate	mg/kg	0.05	ORG-015	<0.05	1	<0.05	<0.05	0	[NT]	[NT]
Azinphos methyl (Guthion)	mg/kg	0.05	ORG-015	<0.05	1	<0.05	<0.05	0	[NT]	[NT]
Surrogate p-Terphenyl-D_{14}	%		ORG-008/015	90	1	116	109	6	115	[NT]

QUALITY CONTROL: PFAS in Soil Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			19/11/2019	[NT]	[NT]	[NT]	[NT]	19/11/2019	[NT]
Date analysed	-			19/11/2019	[NT]	[NT]	[NT]	[NT]	19/11/2019	[NT]
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-035	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-035	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluorohexanesulfonic acid	µg/kg	0.1	Org-035	<0.1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluoroheptanesulfonic acid	µg/kg	0.2	Org-035	<0.2	[NT]	[NT]	[NT]	[NT]	112	[NT]
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-035	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-035	<0.2	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluorobutanoic acid	µg/kg	0.2	Org-035	<0.2	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluoropentanoic acid	µg/kg	0.2	Org-035	<0.2	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluorohexanoic acid	µg/kg	0.1	Org-035	<0.1	[NT]	[NT]	[NT]	[NT]	111	[NT]
Perfluoroheptanoic acid	µg/kg	0.1	Org-035	<0.1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-035	<0.1	[NT]	[NT]	[NT]	[NT]	111	[NT]
Perfluorononanoic acid	µg/kg	0.1	Org-035	<0.1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Perfluorodecanoic acid	µg/kg	0.5	Org-035	<0.5	[NT]	[NT]	[NT]	[NT]	114	[NT]
Perfluoroundecanoic acid	µg/kg	0.5	Org-035	<0.5	[NT]	[NT]	[NT]	[NT]	115	[NT]
Perfluorododecanoic acid	µg/kg	0.5	Org-035	<0.5	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluorotridecanoic acid	µg/kg	0.5	Org-035	<0.5	[NT]	[NT]	[NT]	[NT]	100	[NT]
Perfluorotetradecanoic acid	µg/kg	5	Org-035	<5	[NT]	[NT]	[NT]	[NT]	108	[NT]
4:2 FTS	µg/kg	0.1	Org-035	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
6:2 FTS	µg/kg	0.1	Org-035	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
8:2 FTS	µg/kg	0.1	Org-035	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
10:2 FTS	µg/kg	0.1	Org-035	<0.1	[NT]	[NT]	[NT]	[NT]	114	[NT]
Perfluorooctane sulfonamide	µg/kg	1	Org-035	<1	[NT]	[NT]	[NT]	[NT]	111	[NT]
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-035	<1	[NT]	[NT]	[NT]	[NT]	111	[NT]
N-Ethyl perfluorooctanesulfon -amide	µg/kg	1	Org-035	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
N-Me perfluorooctanesulfonamid -oethanol	µg/kg	1	Org-035	<1	[NT]	[NT]	[NT]	[NT]	117	[NT]
N-Et perfluorooctanesulfonamid -oethanol	µg/kg	5	Org-035	<5	[NT]	[NT]	[NT]	[NT]	115	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-035	<0.2	[NT]	[NT]	[NT]	[NT]	106	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-035	<0.2	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate $^{13}C_8$ PFOS	%		Org-035	91	[NT]	[NT]	[NT]	[NT]	90	[NT]
Surrogate $^{13}C_2$ PFOA	%		Org-035	87	[NT]	[NT]	[NT]	[NT]	84	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-035	88	[NT]	[NT]	[NT]	[NT]	90	[NT]

QUALITY CONTROL: PFAS in Soil Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-035	83	[NT]	[NT]	[NT]	[NT]	85	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-035	86	[NT]	[NT]	[NT]	[NT]	90	[NT]
Extracted ISTD 13C4 PFBA	%		Org-035	91	[NT]	[NT]	[NT]	[NT]	89	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-035	94	[NT]	[NT]	[NT]	[NT]	90	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-035	93	[NT]	[NT]	[NT]	[NT]	91	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-035	93	[NT]	[NT]	[NT]	[NT]	95	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-035	94	[NT]	[NT]	[NT]	[NT]	91	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-035	89	[NT]	[NT]	[NT]	[NT]	89	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-035	91	[NT]	[NT]	[NT]	[NT]	92	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-035	94	[NT]	[NT]	[NT]	[NT]	99	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-035	94	[NT]	[NT]	[NT]	[NT]	92	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-035	80	[NT]	[NT]	[NT]	[NT]	85	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-035	105	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-035	102	[NT]	[NT]	[NT]	[NT]	96	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-035	105	[NT]	[NT]	[NT]	[NT]	110	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-035	89	[NT]	[NT]	[NT]	[NT]	90	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-035	87	[NT]	[NT]	[NT]	[NT]	82	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-035	87	[NT]	[NT]	[NT]	[NT]	87	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-035	90	[NT]	[NT]	[NT]	[NT]	83	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-035	91	[NT]	[NT]	[NT]	[NT]	91	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-035	93	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: PFAS in Soil Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-035	82	[NT]	[NT]	[NT]	[NT]	82	[NT]

QUALITY CONTROL: Organotin Compounds in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			19/11/2019	[NT]	[NT]	[NT]	[NT]	19/11/2019	[NT]
Date analysed	-			19/11/2019	[NT]	[NT]	[NT]	[NT]	19/11/2019	[NT]
Tributyltin as Sn	µg Sn/kg	0.5	ORG-018	<0.5	[NT]	[NT]	[NT]	[NT]	90	[NT]
Surrogate Triphenyltin	%		ORG-018	100	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: Explosives in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			19/11/2019	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Date analysed	-			27/11/2019	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,6-TNT	mg/kg	0.1	Ext-011	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-Dinitrobenzene	mg/kg	0.1	Ext-011	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4-dinitrotoluene	mg/kg	0.1	Ext-011	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,6-dinitrotoluene	mg/kg	0.1	Ext-011	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-Amino.4.6-DNT	mg/kg	0.1	Ext-011	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-Amino.2.6-DNT	mg/kg	0.1	Ext-011	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
HMX	mg/kg	0.1	Ext-011	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-nitrotoluene	mg/kg	0.1	Ext-011	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
3-nitrotoluene	mg/kg	0.1	Ext-011	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-nitrotoluene	mg/kg	0.1	Ext-011	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Nitrobenzene	mg/kg	0.1	Ext-011	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Nitroglycerine	mg/kg	0.1	Ext-011	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
PETN	mg/kg	0.1	Ext-011	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
RDX	mg/kg	0.1	Ext-011	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tetryl	mg/kg	0.1	Ext-011	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3,5-Trinitrobenzene	mg/kg	0.1	Ext-011	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: Aromatic & Aliphatic TPH						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			18/11/2019	[NT]	[NT]	[NT]	[NT]	18/11/2019	[NT]
Date analysed	-			18/11/2019	[NT]	[NT]	[NT]	[NT]	18/11/2019	[NT]
>C10-C16 Aliphatic	mg/kg	100	ORG-003	<100	[NT]	[NT]	[NT]	[NT]	112	[NT]
>C16-C35 Aliphatic	mg/kg	100	ORG-003	<100	[NT]	[NT]	[NT]	[NT]	101	[NT]
>C35 Aliphatic	mg/kg	100	ORG-003	<100	[NT]	[NT]	[NT]	[NT]	97	[NT]
>C10-C16 Aromatic	mg/kg	50	ORG-003	<50	[NT]	[NT]	[NT]	[NT]	112	[NT]
>C16-C35 Aromatic	mg/kg	50	ORG-003	<50	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate 1-chlorooctadecane	%		ORG-003	104	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: Moisture					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			18/11/2019	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Date analysed	-			19/11/2019	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Moisture	%	0.1	INORG-008	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: Chromium Suite						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date analysed	-			19/11/2019	1	19/11/2019	19/11/2019		19/11/2019	[NT]
pH $_{kcl}$	pH units		INORG-064	[NT]	1	10.0	10.0	0	99	[NT]
TAA	moles H^+/t	5	INORG-064	[NT]	1	<5	<5	0	102	[NT]
S_{KCl}	%w/w S	0.005	INORG-064	[NT]	1	NT	NT		[NT]	[NT]
Chromium Reducible Sulfur	%w/w	0.005	INORG-068	[NT]	1	<0.005	<0.005	0	101	[NT]
ANC_{BT}	% $CaCO_3$	0.01	INORG-068	[NT]	1	90	90	0	101	[NT]
S_{HCl}	%w/w S	0.005	INORG-068	[NT]	1	NT	NT		[NT]	[NT]
s-TAA	%w/w S	0.01	INORG-068	[NT]	1	<0.01	<0.01	0	[NT]	[NT]
a-Chromium Reducible Sulfur	moles H^+/t	5	INORG-068	[NT]	1	<5	<5	0	[NT]	[NT]
a-ANC_{BT}	moles H^+/t	5	INORG-068	[NT]	1	18000	18000	0	[NT]	[NT]
s-ANC_{BT}	%w/w S	0.01	INORG-068	[NT]	1	29	29	0	[NT]	[NT]
Fineness Factor			INORG-064	[NT]	1	1.50	1.50	0	[NT]	[NT]
S_{NAS}	%w/w S	0.005	INORG-068	[NT]	1	NT	NT		[NT]	[NT]
a-S_{NAS}	moles H^+/t	5	INORG-064	[NT]	1	NT	NT		[NT]	[NT]
s-SNAS	%w/w S	0.01	INORG-064	[NT]	1	NT	NT		[NT]	[NT]
s-Net Acidity	%w/w S	0.005	INORG-064	[NT]	1	<0.005	<0.005	0	[NT]	[NT]
a-Net Acidity	moles H^+/t	5	INORG-064	[NT]	1	<5	<5	0	[NT]	[NT]
Liming rate	kg $CaCO_3$/t	0.75	INORG-068	[NT]	1	<0.75	<0.75	0	[NT]	[NT]
s-Net Acidity without ANCE	% w/w S	0.005	INORG-064	[NT]	1	<0.005	<0.005	0	[NT]	[NT]
a-Net Acidity without ANCE	moles H^+/t	5	INORG-064	[NT]	1	<5	<5	0	[NT]	[NT]
Liming rate without ANCE	kg $CaCO_3$/t	0.75	INORG-064	[NT]	1	<0.75	<0.75	0	[NT]	[NT]

QUALITY CONTROL: sPOCAS						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			13/11/2019	1	13/11/2019	13/11/2019		13/11/2019	[NT]
Date analysed	-			19/11/2019	1	19/11/2019	19/11/2019		19/11/2019	[NT]
pH $_{Ox}$	pH units		INORG-064	[NT]	1	8.1	8.1	0	101	[NT]
TPA	moles H^+ /t	5	INORG-064	[NT]	1	<5	<5	0	[NT]	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available).

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

TOC and PFAS analysis in soil conducted by Envirolab Services. Report 230884.

Explosives analysis conducted by ALS. Report 794039.

CHAIN OF CUSTODY

rps MAKING COMPLEX EASY

Level 2, 27-31 Troode Street
West Perth WA 6005
Tel: (618) 9211 1111
Fax: (618) 9211 1122

Site:	Rottnest Army Jetty
Project reference:	EEC19032.011
Scientist(s)	SMW
Sample type(s):	Sediment ~~and Water~~
Report to:	Alan Foley / Shae Miller-White
Invoice to:	west.accountspayable@rpsgroup.com

Analytical suites

Sample I.D.	Date collected	Number of jars / bottles / bags	Sediment Suite (1)	Sediment Suite (2)	Sediment Suite (3)	ASLP Suite (1)	Elutriate Suite (1)	Water Suite (1)	PFAS - Full Suite (28 Compounds) (Extended Suite)	Storage	Sediment Suite – No Particle size (Quote: 19P387). No Asbestos
SZZ1 1	12/11/19										x
SZZ2 2	12/11/19								x		

Page number:	
Turnaround time:	Standard
Quote number:	~~ER/705/19~~ 19P387
Remarks	

MPL Laboratories / ENVIROLAB GROUP
Job No.- 236228
Date Rec - 13-11-19
Time Rec - 1645
Rec By - mc
TAT Req - SAME 1 / 2 / 3 / (STD)
Temp - (cool) / ambient
Cooling - (Ice) / Ice pack / None
Security Seal - Yes / (No)

Total number of bottles/bags/jars:

Primary destination:	MPL	Received by:	mc	Secondary destination:		Received by:	
Relinquished by:	Shae Miller-White	Organisation:	MPL	Relinquished by:		Organisation:	
Organisation:	RPS	Date:	13-11-19	Organisation:		Date:	
Date:	13/11/19	Time:	1645	Date:		Time:	
Time:	1645			Time:			

Envirolab Services (WA) Pty Ltd trading as MPL Laboratories
ABN 53 140 099 207
16-18 Hayden Court Myaree WA 6154
ph 08 9317 2505 fax 08 9317 4163
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DATA QUALITY ASSESSMENT SUMMARY

Report Details

Envirolab Report Reference	**236228**
Client ID	RPS Australia West Pty Ltd
Project Reference	EEC19032.011 - Rottnest Army Jetty
Date Issued	28/11/2019

QC DATA

All laboratory QC data was within the Envirolab Group's specifications.

HOLDING TIME COMPLIANCE EVALUATION

All preservation / holding times (based on AS/ASPHA/ISO/NEPM/USEPA reference documents and standards) are compliant except:

Holding Time Exceedances

Analysis	Sample No	Date Sampled	Date Extracted	Date Analysed	Accepted
External Testing					
	236228-1	12/11/2019			**##**

Holding Table Comments

No Extract or Analysed Dates were provided. Holding Times cannot be calculated.

Certain analyses have had their recommended technical holding times elongated by filtering and/or freezing on receipt at the laboratory (e.g. BOD, chlorophyll/Pheophytin, nutrients and acid sulphate soil tests).

COMPLIANCE TO QC FREQUENCY (NEPM)

Internal laboratory QC rate complies with NEPM requirements (LCS/MB/MS 1 in 20, Duplicates 1 in 10 samples). Note, samples are batched together with other sample consignments in order to assign QC sample frequency.

QC Evaluation

Duplicate(s) was performed as per NEPM frequency	✓
Laboratory Control Sample(s) were analysed with the samples received	✓
A Method Blank was performed with the samples received	✓
Matrix spike(s) was performed as per NEPM frequency	✓

Refer to Certificate of Analysis for all Quality Control data.

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SAMPLE RECEIPT ADVICE

Client Details

Client	RPS Australia West Pty Ltd
Attention	Alan Foley

Sample Login Details

Your reference	EEC19032.011 - Rottnest Army Jetty
MPL Reference	236228
Date Sample Received	13/11/2019
Date Instructions Received	13/11/2019
Date Results Expected to be Reported	28/11/2019

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	2 soils
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	Cool
Cooling Method	Ice
Sampling Date Provided	Yes

Comments

Nil

Please direct any queries to:

Heram Halim	Meredith Conroy
Phone: 08 9317 2505	**Phone: 08 9317 2505**
Fax: 08 9317 4163	**Fax: 08 9317 4163**
Email: hhalim@mpl.com.au	**Email: mconroy@mpl.com.au**

Analysis Underway, details on the following page:

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Sample ID	External Testing	Nutrients in Soil	Metals - soil	TRH in Sediment (C6-C9) + BTEX	sTRH in Sediment (C10-C36)	PAHs in Sediment (NAGD)	OCP in Sediment (ANZECC)	Low Level OPP in soil	PFAS in Soil Extended	Organotin Compounds in Soil	Explosives in Soil	Aromatic & Aliphatic TPH	Chromium Suite	sPOCAS
SZZ1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SZZ2									✓					

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.

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CERTIFICATE OF ANALYSIS 242245

Client Details

Client	RPS Australia West Pty Ltd
Attention	Alan Foley
Address	Level 2, 27-31 Troode St, WEST PERTH, WA, 6005

Sample Details

Your Reference	**EEC19032.012 Rottnest Army Jetty**
Number of Samples	2 Soil, 5 Water
Date samples received	24/03/2020
Date completed instructions received	24/03/2020

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	02/04/2020
Date of Issue	02/04/2020

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Heram Halim, Operations Manager

Authorised By

Michael Kubiak, Laboratory Manager

PFAS in Soil Extended				
Our Reference	UNITS	PQL	242245-1	242245-2
Your Reference			SZZ1	SZZ2
Date Sampled			23/03/2020	23/03/2020
Type of sample			Soil	Soil
Date prepared	-		26/03/2020	26/03/2020
Date analysed	-		01/04/2020	01/04/2020
Perfluorobutanesulfonic acid	µg/kg	0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	0.1	<0.1	<0.1
Perfluorohexanesulfonic acid	µg/kg	0.1	<0.1	<0.1
Perfluoroheptanesulfonic acid	µg/kg	0.2	<0.2	<0.2
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	<0.1	0.5
Perfluorodecanesulfonic acid	µg/kg	0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	0.2	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	0.2	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	0.1	<0.1	<0.1
Perfluoroheptanoic acid	µg/kg	0.1	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	0.1	<0.1	<0.1
Perfluorononanoic acid	µg/kg	0.1	<0.1	<0.1
Perfluorodecanoic acid	µg/kg	0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	0.5	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	0.5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	5	<5	<5
4:2 FTS	µg/kg	0.1	<0.1	<0.1
6:2 FTS	µg/kg	0.1	<0.1	<0.1
8:2 FTS	µg/kg	0.1	<0.1	<0.1
10:2 FTS	µg/kg	0.1	<0.1	<0.1
Perfluorooctane sulfonamide	µg/kg	1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	1	<1	<1
N-Ethyl perfluorooctanesulfon -amide	µg/kg	1	<1	<1
N-Me perfluorooctanesulfonamid -oethanol	µg/kg	1	<1	<1
N-Et perfluorooctanesulfonamid -oethanol	µg/kg	5	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	<0.2	<0.2
EtPerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	<0.2	<0.2
Surrogate $^{13}C_8$ PFOS	%		103	98
Surrogate $^{13}C_2$ PFOA	%		83	99
Extracted ISTD $^{13}C_3$ *PFBS*	%		96	84
Extracted ISTD $^{18}O_2$ *PFHxS*	%		108	81
Extracted ISTD $^{13}C_4$ *PFOS*	%		110	85
Extracted ISTD 13C4 PFBA	%		55	43

PFAS in Soil Extended				
Our Reference	UNITS	PQL	242245-1	242245-2
Your Reference			SZZ1	SZZ2
Date Sampled			23/03/2020	23/03/2020
Type of sample			Soil	Soil
Extracted ISTD $^{13}C_3$ *PFPeA*	%		80	69
Extracted ISTD $^{13}C_2$ *PFHxA*	%		93	68
Extracted ISTD $^{13}C_4$ *PFHpA*	%		104	73
Extracted ISTD $^{13}C_4$ *PFOA*	%		114	75
Extracted ISTD $^{13}C_5$ *PFNA*	%		106	81
Extracted ISTD $^{13}C_2$ *PFDA*	%		108	79
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		97	90
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		128	80
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		87	66
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		91	84
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		98	94
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		116	93
Extracted ISTD $^{13}C_8$ *FOSA*	%		109	81
Extracted ISTD d_3 *N MeFOSA*	%		86	75
Extracted ISTD d_5 *N EtFOSA*	%		93	76
Extracted ISTD d_7 *N MeFOSE*	%		133	87
Extracted ISTD d_9 *N EtFOSE*	%		126	84
Extracted ISTD d_3 *N MeFOSAA*	%		104	71
Extracted ISTD d_5 *N EtFOSAA*	%		103	81
Total Positive PFHxS & PFOS	µg/kg	0.1	<0.1	0.5
Total Positive PFOS & PFOA	µg/kg	0.1	<0.1	0.5
Total Positive PFAS	µg/kg	0.1	<0.1	0.5

Moisture				
Our Reference			242245-1	242245-2
Your Reference	UNITS	PQL	SZZ1	SZZ2
Date Sampled			23/03/2020	23/03/2020
Type of sample			Soil	Soil
Date prepared	-		26/03/2020	26/03/2020
Date analysed	-		27/03/2020	27/03/2020
Moisture	%	0.1	32	37

PFAS in water TRACE Extended							
Our Reference			242245-3	242245-4	242245-5	242245-6	242245-7
Your Reference	UNITS	PQL	WZZ1	WZZ2	WRR1	WRR2	WBB1
Date Sampled			23/03/2020	23/03/2020	23/03/2020	23/03/2020	23/03/2020
Type of sample			Water	Water	Water	Water	Water
Date prepared	-		27/03/2020	27/03/2020	27/03/2020	27/03/2020	27/03/2020
Date analysed	-		27/03/2020	27/03/2020	27/03/2020	27/03/2020	27/03/2020
Perfluorobutanesulfonic acid	µg/L	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Perfluoropentanesulfonic acid	µg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorohexanesulfonic acid	µg/L	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanesulfonic acid	µg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorooctanesulfonate PFOS	µg/L	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanesulfonic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorobutanoic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorohexanoic acid	µg/L	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Perfluoroheptanoic acid	µg/L	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Perfluorooctanoic acid PFOA	µg/L	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid	µg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorodecanoic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid	µg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Perfluorotridecanoic acid	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorotetradecanoic acid	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
4:2 FTS	µg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 FTS	µg/L	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
8:2 FTS	µg/L	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
10:2 FTS	µg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorooctane sulfonamide	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
N-Methyl perfluorooctane sulfonamide	µg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctanesulfon -amide	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
N-Me perfluorooctanesulfonamid -oethanol	µg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
N-Et perfluorooctanesulfonamid -oethanol	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Surrogate $^{13}C_8$ PFOS	%		96	95	98	96	100
Surrogate $^{13}C_2$ PFOA	%		107	100	98	96	98
Extracted ISTD $^{13}C_3$ *PFBS*	%		100	105	99	115	110
Extracted ISTD $^{18}O_2$ *PFHxS*	%		85	91	92	100	97
Extracted ISTD $^{13}C_4$ *PFOS*	%		61	68	82	87	87
Extracted ISTD $^{13}C_4$ *PFBA*	%		56	59	93	100	103

PFAS in water TRACE Extended							
Our Reference	UNITS	PQL	242245-3	242245-4	242245-5	242245-6	242245-7
Your Reference			WZZ1	WZZ2	WRR1	WRR2	WBB1
Date Sampled			23/03/2020	23/03/2020	23/03/2020	23/03/2020	23/03/2020
Type of sample			Water	Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%		96	104	107	118	113
Extracted ISTD $^{13}C_2$ *PFHxA*	%		87	92	93	101	100
Extracted ISTD $^{13}C_4$ *PFHpA*	%		93	98	101	104	102
Extracted ISTD $^{13}C_4$ *PFOA*	%		100	110	111	120	115
Extracted ISTD $^{13}C_5$ *PFNA*	%		86	103	105	111	106
Extracted ISTD $^{13}C_2$ *PFDA*	%		60	72	89	100	90
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		50	65	81	93	88
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		67	64	100	58	56
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		57	65	100	59	57
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		160	173	#	#	162
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		170	174	#	#	#
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		92	109	165	158	146
Extracted ISTD $^{13}C_8$ *FOSA*	%		52	60	64	75	72
Extracted ISTD d_3 *N MeFOSA*	%		43	61	55	70	73
Extracted ISTD d_5 *N EtFOSA*	%		51	70	64	79	85
Extracted ISTD d_7 *N MeFOSE*	%		50	59	56	60	65
Extracted ISTD d_9 *N EtFOSE*	%		56	63	59	67	74
Extracted ISTD d_3 *N MeFOSAA*	%		59	66	85	81	83
Extracted ISTD d_5 *N EtFOSAA*	%		62	72	93	93	82
Total Positive PFHxS & PFOS	µg/L	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Total Positive PFOS & PFOA	µg/L	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Total Positive PFAS	µg/L	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Method ID	Methodology Summary
INORG-008	Moisture content determined by heating at 105 deg C for a minimum of 12 hours.
Org-035	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated after SPE. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: PFAS in Soil Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			26/03/2020	1	26/03/2020	26/03/2020		26/03/2020	[NT]
Date analysed	-			01/04/2020	1	01/04/2020	01/04/2020		01/04/2020	[NT]
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-035	<0.1	1	<0.1	<0.1	0	115	[NT]
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-035	<0.1	1	<0.1	<0.1	0	107	[NT]
Perfluorohexanesulfonic acid	µg/kg	0.1	Org-035	<0.1	1	<0.1	<0.1	0	105	[NT]
Perfluoroheptanesulfonic acid	µg/kg	0.2	Org-035	<0.2	1	<0.2	<0.2	0	105	[NT]
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-035	<0.1	1	<0.1	0.2	67	115	[NT]
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-035	<0.2	1	<0.2	<0.2	0	93	[NT]
Perfluorobutanoic acid	µg/kg	0.2	Org-035	<0.2	1	<0.2	<0.2	0	100	[NT]
Perfluoropentanoic acid	µg/kg	0.2	Org-035	<0.2	1	<0.2	<0.2	0	115	[NT]
Perfluorohexanoic acid	µg/kg	0.1	Org-035	<0.1	1	<0.1	<0.1	0	108	[NT]
Perfluoroheptanoic acid	µg/kg	0.1	Org-035	<0.1	1	<0.1	<0.1	0	112	[NT]
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-035	<0.1	1	<0.1	<0.1	0	105	[NT]
Perfluorononanoic acid	µg/kg	0.1	Org-035	<0.1	1	<0.1	<0.1	0	108	[NT]
Perfluorodecanoic acid	µg/kg	0.5	Org-035	<0.5	1	<0.5	<0.5	0	103	[NT]
Perfluoroundecanoic acid	µg/kg	0.5	Org-035	<0.5	1	<0.5	<0.5	0	92	[NT]
Perfluorododecanoic acid	µg/kg	0.5	Org-035	<0.5	1	<0.5	<0.5	0	120	[NT]
Perfluorotridecanoic acid	µg/kg	0.5	Org-035	<0.5	1	<0.5	<0.5	0	100	[NT]
Perfluorotetradecanoic acid	µg/kg	5	Org-035	<5	1	<5	<5	0	106	[NT]
4:2 FTS	µg/kg	0.1	Org-035	<0.1	1	<0.1	<0.1	0	98	[NT]
6:2 FTS	µg/kg	0.1	Org-035	<0.1	1	<0.1	<0.1	0	106	[NT]
8:2 FTS	µg/kg	0.1	Org-035	<0.1	1	<0.1	<0.1	0	105	[NT]
10:2 FTS	µg/kg	0.1	Org-035	<0.1	1	<0.1	<0.1	0	110	[NT]
Perfluorooctane sulfonamide	µg/kg	1	Org-035	<1	1	<1	<1	0	108	[NT]
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-035	<1	1	<1	<1	0	116	[NT]
N-Ethyl perfluorooctanesulfon -amide	µg/kg	1	Org-035	<1	1	<1	<1	0	110	[NT]
N-Me perfluorooctanesulfonamid -oethanol	µg/kg	1	Org-035	<1	1	<1	<1	0	103	[NT]
N-Et perfluorooctanesulfonamid -oethanol	µg/kg	5	Org-035	<5	1	<5	<5	0	97	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-035	<0.2	1	<0.2	<0.2	0	107	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-035	<0.2	1	<0.2	<0.2	0	132	[NT]
Surrogate $^{13}C_8$ PFOS	%		Org-035	100	1	103	103	0	97	[NT]
Surrogate $^{13}C_2$ PFOA	%		Org-035	90	1	83	86	4	97	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-035	108	1	96	91	5	89	[NT]

QUALITY CONTROL: PFAS in Soil Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Extracted ISTD $^{18}O_2$ PFHxS	%		Org-035	113	1	108	101	7	92	[NT]
Extracted ISTD $^{13}C_4$ PFOS	%		Org-035	115	1	110	107	3	95	[NT]
Extracted ISTD 13C4 PFBA	%		Org-035	89	1	55	52	6	83	[NT]
Extracted ISTD $^{13}C_3$ PFPeA	%		Org-035	108	1	80	78	3	85	[NT]
Extracted ISTD $^{13}C_2$ PFHxA	%		Org-035	114	1	93	86	8	88	[NT]
Extracted ISTD $^{13}C_4$ PFHpA	%		Org-035	124	1	104	103	1	92	[NT]
Extracted ISTD $^{13}C_4$ PFOA	%		Org-035	126	1	114	107	6	93	[NT]
Extracted ISTD $^{13}C_5$ PFNA	%		Org-035	134	1	106	113	6	94	[NT]
Extracted ISTD $^{13}C_2$ PFDA	%		Org-035	139	1	108	101	7	97	[NT]
Extracted ISTD $^{13}C_2$ PFUnDA	%		Org-035	117	1	97	88	10	129	[NT]
Extracted ISTD $^{13}C_2$ PFDoDA	%		Org-035	117	1	128	115	11	109	[NT]
Extracted ISTD $^{13}C_2$ PFTeDA	%		Org-035	101	1	87	94	8	59	[NT]
Extracted ISTD $^{13}C_2$ 4:2FTS	%		Org-035	97	1	91	85	7	98	[NT]
Extracted ISTD $^{13}C_2$ 6:2FTS	%		Org-035	98	1	98	102	4	96	[NT]
Extracted ISTD $^{13}C_2$ 8:2FTS	%		Org-035	96	1	116	100	15	96	[NT]
Extracted ISTD $^{13}C_8$ FOSA	%		Org-035	115	1	109	108	1	90	[NT]
Extracted ISTD d_3 N MeFOSA	%		Org-035	97	1	86	92	7	74	[NT]
Extracted ISTD d_5 N EtFOSA	%		Org-035	109	1	93	103	10	77	[NT]
Extracted ISTD d_7 N MeFOSE	%		Org-035	127	1	133	121	9	91	[NT]
Extracted ISTD d_9 N EtFOSE	%		Org-035	124	1	126	121	4	88	[NT]
Extracted ISTD d_3 N MeFOSAA	%		Org-035	118	1	104	101	3	97	[NT]

QUALITY CONTROL: PFAS in Soil Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-035	109	1	103	109	6	110	[NT]

QUALITY CONTROL: Moisture					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	
Date prepared	-			26/03/2020	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Date analysed	-			27/03/2020	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Moisture	%	0.1	INORG-008	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: PFAS in water TRACE Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	242245-4
Date prepared	-			27/03/2020	3	27/03/2020	27/03/2020		27/03/2020	27/03/2020
Date analysed	-			27/03/2020	3	27/03/2020	27/03/2020		27/03/2020	27/03/2020
Perfluorobutanesulfonic acid	µg/L	0.0004	Org-035	<0.0004	3	<0.0004	<0.0004	0	102	100
Perfluoropentanesulfonic acid	µg/L	0.001	Org-035	<0.001	3	<0.001	<0.001	0	100	102
Perfluorohexanesulfonic acid	µg/L	0.0002	Org-035	<0.0002	3	<0.0002	<0.0002	0	107	102
Perfluoroheptanesulfonic acid	µg/L	0.001	Org-035	<0.001	3	<0.001	<0.001	0	97	91
Perfluorooctanesulfonate PFOS	µg/L	0.0002	Org-035	<0.0002	3	<0.0002	<0.0002	0	108	110
Perfluorodecanesulfonic acid	µg/L	0.002	Org-035	<0.002	3	<0.002	<0.002	0	69	70
Perfluorobutanoic acid	µg/L	0.002	Org-035	<0.002	3	<0.002	<0.002	0	102	104
Perfluoropentanoic acid	µg/L	0.002	Org-035	<0.002	3	<0.002	<0.002	0	105	105
Perfluorohexanoic acid	µg/L	0.0004	Org-035	<0.0004	3	<0.0004	<0.0004	0	104	103
Perfluoroheptanoic acid	µg/L	0.0004	Org-035	<0.0004	3	<0.0004	<0.0004	0	107	129
Perfluorooctanoic acid PFOA	µg/L	0.0002	Org-035	<0.0002	3	<0.0002	<0.0002	0	106	107
Perfluorononanoic acid	µg/L	0.001	Org-035	<0.001	3	<0.001	<0.001	0	103	100
Perfluorodecanoic acid	µg/L	0.002	Org-035	<0.002	3	<0.002	<0.002	0	110	105
Perfluoroundecanoic acid	µg/L	0.002	Org-035	<0.002	3	<0.002	<0.002	0	91	91
Perfluorododecanoic acid	µg/L	0.005	Org-035	<0.005	3	<0.005	<0.005	0	84	82
Perfluorotridecanoic acid	µg/L	0.01	Org-035	<0.01	3	<0.01	<0.01	0	80	75
Perfluorotetradecanoic acid	µg/L	0.05	Org-035	<0.05	3	<0.05	<0.05	0	64	83
4:2 FTS	µg/L	0.001	Org-035	<0.001	3	<0.001	<0.001	0	99	97
6:2 FTS	µg/L	0.0004	Org-035	<0.0004	3	<0.0004	<0.0004	0	98	96
8:2 FTS	µg/L	0.0004	Org-035	<0.0004	3	<0.0004	<0.0004	0	90	93
10:2 FTS	µg/L	0.001	Org-035	<0.001	3	<0.001	<0.001	0	68	62
Perfluorooctane sulfonamide	µg/L	0.01	Org-035	<0.01	3	<0.01	<0.01	0	89	85
N-Methyl perfluorooctane sulfonamide	µg/L	0.005	Org-035	<0.005	3	<0.005	<0.005	0	84	95
N-Ethyl perfluorooctanesulfon -amide	µg/L	0.01	Org-035	<0.01	3	<0.01	<0.01	0	85	104
N-Me perfluorooctanesulfonamid -oethanol	µg/L	0.005	Org-035	<0.005	3	<0.005	<0.005	0	84	98
N-Et perfluorooctanesulfonamid -oethanol	µg/L	0.05	Org-035	<0.05	3	<0.05	<0.05	0	83	92
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-035	<0.002	3	<0.002	<0.002	0	88	123
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-035	<0.002	3	<0.002	<0.002	0	81	103
Surrogate $^{13}C_8$ PFOS	%		Org-035	104	3	96	100	4	97	102
Surrogate $^{13}C_2$ PFOA	%		Org-035	103	3	107	98	9	100	100
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-035	100	3	100	109	9	100	97

QUALITY CONTROL: PFAS in water TRACE Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	242245-4
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-035	92	3	85	93	9	90	85
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-035	73	3	61	59	3	78	62
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-035	78	3	56	60	7	88	63
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-035	103	3	96	101	5	104	97
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-035	97	3	87	91	4	100	89
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-035	99	3	93	97	4	97	91
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-035	104	3	100	106	6	102	102
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-035	90	3	86	86	0	92	96
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-035	77	3	60	56	7	74	67
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-035	71	3	50	54	8	66	62
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-035	67	3	67	64	5	64	62
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-035	57	3	57	65	13	65	71
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-035	131	3	160	173	8	131	157
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-035	132	3	170	168	1	117	155
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-035	103	3	92	90	2	98	99
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-035	67	3	52	54	4	63	58
Extracted ISTD d_3 *N MeFOSA*	%		Org-035	63	3	43	41	5	64	50
Extracted ISTD d_5 *N EtFOSA*	%		Org-035	66	3	51	45	12	70	53
Extracted ISTD d_7 *N MeFOSE*	%		Org-035	60	3	50	53	6	64	53
Extracted ISTD d_9 *N EtFOSE*	%		Org-035	71	3	56	54	4	62	53

QUALITY CONTROL: PFAS in water TRACE Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	242245-4
Extracted ISTD d_3 *N MeFOSAA*	%		Org-035	66	3	59	56	5	62	53
Extracted ISTD d_5 *N EtFOSAA*	%		Org-035	66	3	62	55	12	64	60

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

PFAS analysis conducted by Envirolab Services. Report 239635.

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

PFAS_Elutriate: MeFOSA and EtFOSA Extracted Internal Standards are outside of global acceptance criteria (50-150%) for LCS but within analyte specific acceptance criteria.

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CERTIFICATE OF ANALYSIS 242245-A

Client Details

Client	RPS Australia West Pty Ltd
Attention	Alan Foley
Address	Level 2, 27-31 Troode St, WEST PERTH, WA, 6005

Sample Details

Your Reference	**EEC19032.012 Rottnest Army Jetty**
Number of Samples	2 Elutriate
Date samples received	24/03/2020
Date completed instructions received	24/03/2020

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	11/04/2020
Date of Issue	02/04/2020

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Results Approved By
Heram Halim, Operations Manager

Authorised By

Michael Kubiak, Laboratory Manager

PFAS in elutriate TRACE Extended				
Our Reference			242245-A-1	242245-A-2
Your Reference	UNITS	PQL	SZZ1	SZZ2
Date Sampled			23/03/2020	23/03/2020
Type of sample			Elutriate	Elutriate
Date prepared	-		01/04/2020	01/04/2020
Date analysed	-		01/04/2020	01/04/2020
pH of Elutriate	pH Units		8.0	8.0
Perfluorobutanesulfonic acid	µg/L	0.0004	<0.0004	<0.0004
Perfluoropentanesulfonic acid	µg/L	0.001	<0.001	<0.001
Perfluorohexanesulfonic acid	µg/L	0.0002	<0.0002	<0.0002
Perfluoroheptanesulfonic acid	µg/L	0.001	<0.001	<0.001
Perfluorooctanesulfonate PFOS	µg/L	0.0002	<0.0002	0.0005
Perfluorodecanesulfonic acid	µg/L	0.002	<0.002	<0.002
Perfluorobutanoic acid	µg/L	0.002	<0.002	<0.002
Perfluoropentanoic acid	µg/L	0.002	<0.002	<0.002
Perfluorohexanoic acid	µg/L	0.0004	<0.0004	<0.0004
Perfluoroheptanoic acid	µg/L	0.0004	<0.0004	<0.0004
Perfluorooctanoic acid PFOA	µg/L	0.0002	<0.0002	<0.0002
Perfluorononanoic acid	µg/L	0.001	<0.001	<0.001
Perfluorodecanoic acid	µg/L	0.002	<0.002	<0.002
Perfluoroundecanoic acid	µg/L	0.002	<0.002	<0.002
Perfluorododecanoic acid	µg/L	0.005	<0.005	<0.005
Perfluorotridecanoic acid	µg/L	0.01	<0.01	<0.01
Perfluorotetradecanoic acid	µg/L	0.05	<0.05	<0.05
4:2 FTS	µg/L	0.001	<0.001	<0.001
6:2 FTS	µg/L	0.0004	<0.0004	<0.0004
8:2 FTS	µg/L	0.0004	<0.0004	<0.0004
10:2 FTS	µg/L	0.001	<0.001	<0.001
Perfluorooctane sulfonamide	µg/L	0.01	<0.01	<0.01
N-Methyl perfluorooctane sulfonamide	µg/L	0.005	<0.005	<0.005
N-Ethyl perfluorooctanesulfon -amide	µg/L	0.01	<0.01	<0.01
N-Me perfluorooctanesulfonamid -oethanol	µg/L	0.005	<0.005	<0.005
N-Et perfluorooctanesulfonamid -oethanol	µg/L	0.05	<0.05	<0.05
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.002	<0.002	<0.002
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.002	<0.002	<0.002
Surrogate $^{13}C_8$ PFOS	%		102	98
Surrogate $^{13}C_2$ PFOA	%		91	97
Extracted ISTD $^{13}C_3$ *PFBS*	%		118	110
Extracted ISTD $^{18}O_2$ *PFHxS*	%		95	93
Extracted ISTD $^{13}C_4$ *PFOS*	%		99	85

PFAS in elutriate TRACE Extended				
Our Reference	UNITS	PQL	242245-A-1	242245-A-2
Your Reference			SZZ1	SZZ2
Date Sampled			23/03/2020	23/03/2020
Type of sample			Elutriate	Elutriate
Extracted ISTD $^{13}C_4$ *PFBA*	%		85	78
Extracted ISTD $^{13}C_3$ *PFPeA*	%		108	107
Extracted ISTD $^{13}C_2$ *PFHxA*	%		110	109
Extracted ISTD $^{13}C_4$ *PFHpA*	%		125	120
Extracted ISTD $^{13}C_4$ *PFOA*	%		149	130
Extracted ISTD $^{13}C_5$ *PFNA*	%		158	124
Extracted ISTD $^{13}C_2$ *PFDA*	%		125	86
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		90	86
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		84	66
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		70	49
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		#	181
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		#	#
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		#	177
Extracted ISTD $^{13}C_8$ *FOSA*	%		84	67
Extracted ISTD d_3 *N MeFOSA*	%		39	34
Extracted ISTD d_5 *N EtFOSA*	%		42	28
Extracted ISTD d_7 *N MeFOSE*	%		59	48
Extracted ISTD d_9 *N EtFOSE*	%		71	49
Extracted ISTD d_3 *N MeFOSAA*	%		151	83
Extracted ISTD d_5 *N EtFOSAA*	%		137	78
Total Positive PFHxS & PFOS	µg/L	0.0002	<0.0002	0.0005
Total Positive PFOS & PFOA	µg/L	0.0002	<0.0002	0.0005
Total Positive PFAS	µg/L	0.0002	<0.0002	0.0005

Method ID	Methodology Summary
INORG-001	pH - Measured using pH meter and electrode base on APHA latest edition, Method 4500-H+. Please note that the results for water analyses may be indicative only, as analysis can be completed outside of the APHA recommended holding times. Soils are reported from a 1:5 water extract unless otherwise specified.
Org-035	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated after SPE. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: PFAS in elutriate TRACE Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	242245-A-2
Date prepared	-			01/04/2020	1	01/04/2020	01/04/2020		01/04/2020	01/04/2020
Date analysed	-			01/04/2020	1	01/04/2020	01/04/2020		01/04/2020	01/04/2020
Perfluorobutanesulfonic acid	µg/L	0.0004	Org-035	<0.0004	1	<0.0004	<0.0004	0	102	107
Perfluoropentanesulfonic acid	µg/L	0.001	Org-035	<0.001	1	<0.001	<0.001	0	108	112
Perfluorohexanesulfonic acid	µg/L	0.0002	Org-035	<0.0002	1	<0.0002	<0.0002	0	102	107
Perfluoroheptanesulfonic acid	µg/L	0.001	Org-035	<0.001	1	<0.001	<0.001	0	103	115
Perfluorooctanesulfonate PFOS	µg/L	0.0002	Org-035	<0.0002	1	<0.0002	<0.0002	0	106	105
Perfluorodecanesulfonic acid	µg/L	0.002	Org-035	<0.002	1	<0.002	<0.002	0	81	81
Perfluorobutanoic acid	µg/L	0.002	Org-035	<0.002	1	<0.002	<0.002	0	98	103
Perfluoropentanoic acid	µg/L	0.002	Org-035	<0.002	1	<0.002	<0.002	0	101	102
Perfluorohexanoic acid	µg/L	0.0004	Org-035	<0.0004	1	<0.0004	<0.0004	0	105	109
Perfluoroheptanoic acid	µg/L	0.0004	Org-035	<0.0004	1	<0.0004	<0.0004	0	102	114
Perfluorooctanoic acid PFOA	µg/L	0.0002	Org-035	<0.0002	1	<0.0002	<0.0002	0	104	110
Perfluorononanoic acid	µg/L	0.001	Org-035	<0.001	1	<0.001	<0.001	0	105	109
Perfluorodecanoic acid	µg/L	0.002	Org-035	<0.002	1	<0.002	<0.002	0	122	115
Perfluoroundecanoic acid	µg/L	0.002	Org-035	<0.002	1	<0.002	<0.002	0	94	102
Perfluorododecanoic acid	µg/L	0.005	Org-035	<0.005	1	<0.005	<0.005	0	110	124
Perfluorotridecanoic acid	µg/L	0.01	Org-035	<0.01	1	<0.01	<0.01	0	81	95
Perfluorotetradecanoic acid	µg/L	0.05	Org-035	<0.05	1	<0.05	<0.05	0	109	104
4:2 FTS	µg/L	0.001	Org-035	<0.001	1	<0.001	<0.001	0	101	111
6:2 FTS	µg/L	0.0004	Org-035	<0.0004	1	<0.0004	<0.0004	0	110	102
8:2 FTS	µg/L	0.0004	Org-035	<0.0004	1	<0.0004	<0.0004	0	103	95
10:2 FTS	µg/L	0.001	Org-035	<0.001	1	<0.001	<0.001	0	77	128
Perfluorooctane sulfonamide	µg/L	0.01	Org-035	<0.01	1	<0.01	<0.01	0	108	104
N-Methyl perfluorooctane sulfonamide	µg/L	0.005	Org-035	<0.005	1	<0.005	<0.005	0	111	96
N-Ethyl perfluorooctanesulfon -amide	µg/L	0.01	Org-035	<0.01	1	<0.01	<0.01	0	113	97
N-Me perfluorooctanesulfonamid -oethanol	µg/L	0.005	Org-035	<0.005	1	<0.005	<0.005	0	111	102
N-Et perfluorooctanesulfonamid -oethanol	µg/L	0.05	Org-035	<0.05	1	<0.05	<0.05	0	98	99
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-035	<0.002	1	<0.002	<0.002	0	100	90
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-035	<0.002	1	<0.002	<0.002	0	87	93
Surrogate $^{13}C_8$ PFOS	%		Org-035	97	1	102	98	4	100	94
Surrogate $^{13}C_2$ PFOA	%		Org-035	94	1	91	94	3	102	95
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-035	117	1	118	114	3	95	97

QUALITY CONTROL: PFAS in elutriate TRACE Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	242245-A-2
Extracted ISTD $^{18}O_2$ PFHxS	%		Org-035	95	1	95	87	9	81	82
Extracted ISTD $^{13}C_4$ PFOS	%		Org-035	94	1	99	86	14	80	84
Extracted ISTD $^{13}C_4$ PFBA	%		Org-035	119	1	85	83	2	106	76
Extracted ISTD $^{13}C_3$ PFPeA	%		Org-035	125	1	108	110	2	101	103
Extracted ISTD $^{13}C_2$ PFHxA	%		Org-035	126	1	110	104	6	108	103
Extracted ISTD $^{13}C_4$ PFHpA	%		Org-035	125	1	125	114	9	99	113
Extracted ISTD $^{13}C_4$ PFOA	%		Org-035	122	1	149	138	8	96	115
Extracted ISTD $^{13}C_5$ PFNA	%		Org-035	107	1	158	136	15	99	117
Extracted ISTD $^{13}C_2$ PFDA	%		Org-035	85	1	125	109	14	69	88
Extracted ISTD $^{13}C_2$ PFUnDA	%		Org-035	94	1	90	85	6	77	74
Extracted ISTD $^{13}C_2$ PFDoDA	%		Org-035	75	1	84	85	1	61	55
Extracted ISTD $^{13}C_2$ PFTeDA	%		Org-035	81	1	70	74	6	53	50
Extracted ISTD $^{13}C_2$ 4:2FTS	%		Org-035	117	1	#	#		83	156
Extracted ISTD $^{13}C_2$ 6:2FTS	%		Org-035	127	1	#	#		84	186
Extracted ISTD $^{13}C_2$ 8:2FTS	%		Org-035	130	1	#	#		106	#
Extracted ISTD $^{13}C_8$ FOSA	%		Org-035	84	1	84	71	17	66	57
Extracted ISTD d_3 N MeFOSA	%		Org-035	53	1	39	35	11	42	31
Extracted ISTD d_5 N EtFOSA	%		Org-035	51	1	42	41	2	36	31
Extracted ISTD d_7 N MeFOSE	%		Org-035	79	1	59	64	8	59	47
Extracted ISTD d_9 N EtFOSE	%		Org-035	74	1	71	68	4	60	46

QUALITY CONTROL: PFAS in elutriate TRACE Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	242245-A-2
Extracted ISTD d_3 *N MeFOSAA*	%		Org-035	96	1	151	127	17	71	75
Extracted ISTD d_5 *N EtFOSAA*	%		Org-035	86	1	137	120	13	64	64

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

PFAS analysis conducted by Envirolab Services. Report 239635.

Envirolab Services (WA) Pty Ltd trading as MPL Laboratories
ABN 53 140 099 207
16-18 Hayden Court Myaree WA 6154
ph 08 9317 2505 fax 08 9317 4163
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DATA QUALITY ASSESSMENT SUMMARY

Report Details

Envirolab Report Reference	**242245-A**
Client ID	RPS Australia West Pty Ltd
Project Reference	EEC19032.012 Rottnest Army Jetty
Date Issued	02/04/2020

QC DATA

All laboratory QC data was within the Envirolab Group's specifications except:

QC Specification Exceptions

QC Type	Reference	Analysis	Comments
Spike Recovery %	242245-A-2	*Extracted ISTD* $^{13}C_2$ *8:2FTS*	Fails internal acceptance criteria

See Report 242245-A-[R00] for QA/QC details

HOLDING TIME COMPLIANCE EVALUATION

All preservation / holding times (based on AS/ASPHA/ISO/NEPM/USEPA reference documents and standards) are compliant except:

Holding Time Exceedances

Analysis	Sample No	Date Sampled	Date Extracted	Date Analysed	Accepted
PFAS in elutriate TRACE Extended					
	242245-A-1	23/03/2020	01/04/2020	01/04/2020	✗
	242245-A-2	23/03/2020	01/04/2020	01/04/2020	✗

Certain analyses have had their recommended technical holding times elongated by filtering and/or freezing on receipt at the laboratory (e.g. BOD, chlorophyll/Pheophytin, nutrients and acid sulphate soil tests).

COMPLIANCE TO QC FREQUENCY (NEPM)

Internal laboratory QC rate complies with NEPM requirements (LCS/MB/MS 1 in 20, Duplicates 1 in 10 samples). Note, samples are batched together with other sample consignments in order to assign QC sample frequency.

QC Evaluation

Duplicate(s) was performed as per NEPM frequency	✓
Laboratory Control Sample(s) were analysed with the samples received	✓
A Method Blank was performed with the samples received	✓
Matrix spike(s) was performed as per NEPM frequency (Not Applicable for Air samples)	✓

Refer to Certificate of Analysis for all Quality Control data.

CHAIN OF CUSTODY

Level 2, 27-31 Troode Street
West Perth WA 6005
Tel: (618) 9211 1111
Fax: (618) 9211 1122

Site:	Rottnest Army Jetty
Project reference:	EEC19032.012
Scientist(s)	SMW
Sample type(s):	Sediment and Water
Report to:	Alan Foley / Shae Miller-White
Invoice to:	west.accountspayable@rpsgroup.com

Page number:
Turnaround time: Standard
Quote number:

Sample I.D.	Date collected	Number of jars / bottles / bags	PFAS (Standard) - Sediment	PFAS (Trace levels) - Elutriate	PFAS (Trace levels) - Water	Storage	Analytical suites / Remarks
SWZZ1 1	27.3.20	2x PFAS.	x	x			Extended suites NO 24/3
SWZZ2 2	↓	↓	x	x			
WZZ1 3					x		
WZZ2 4					x		
WRR1 5					x		
WRR2 6					x		
WBB1 7					x		

Total number of bottles/bags/jars

ENVIROLAB Laboratories
Job No.- 242245
Date Rec.- 24/3
Time Rec.- 945
Rec By.-
TAT Req.- SAME / 1 / 2 / 3 / STD
Temp. Cool / ambient
Cooling Ice / Ice pack / None
Security Seal Yes / No

Primary destination:	MPL	Received by:	C. Jadusa	Secondary destination:	Received by:
Relinquished by:	Shae Miller-White	Organisation:	MPL	Relinquished by:	Organisation:
Organisation:	RPS	Date:	24/3/20	Organisation:	Date:
Date:	24.3.20	Time:	945	Date:	Time:
Time:	9am.			Time:	

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DATA QUALITY ASSESSMENT SUMMARY

Report Details

Envirolab Report Reference	**242245**
Client ID	RPS Australia West Pty Ltd
Project Reference	EEC19032.012 Rottnest Army Jetty
Date Issued	02/04/2020

QC DATA

All laboratory QC data was within the Envirolab Group's specifications.

HOLDING TIME COMPLIANCE EVALUATION

All preservation / holding times (based on AS/ASPHA/ISO/NEPM/USEPA reference documents and standards) are compliant.

Certain analyses have had their recommended technical holding times elongated by filtering and/or freezing on receipt at the laboratory (e.g. BOD, chlorophyll/Pheophytin, nutrients and acid sulphate soil tests).

COMPLIANCE TO QC FREQUENCY (NEPM)

Internal laboratory QC rate complies with NEPM requirements (LCS/MB/MS 1 in 20, Duplicates 1 in 10 samples). Note, samples are batched together with other sample consignments in order to assign QC sample frequency.

QC Evaluation

Duplicate(s) was performed as per NEPM frequency	✓
Laboratory Control Sample(s) were analysed with the samples received	✓
A Method Blank was performed with the samples received	✓
Matrix spike(s) was performed as per NEPM frequency (Not Applicable for Air samples)	✓

Refer to Certificate of Analysis for all Quality Control data.

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SAMPLE RECEIPT ADVICE

Client Details

Client	RPS Australia West Pty Ltd
Attention	Alan Foley

Sample Login Details

Your reference	EEC19032.012 Rottnest Army Jetty
MPL Reference	242245
Date Sample Received	24/03/2020
Date Instructions Received	24/03/2020
Date Results Expected to be Reported	02/04/2020

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	2 Soil, 5 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	7
Cooling Method	Ice
Sampling Date Provided	Yes

Comments

Nil

Please direct any queries to:

Heram Halim	Meredith Conroy
Phone: 08 9317 2505	**Phone: 08 9317 2505**
Fax: 08 9317 4163	**Fax: 08 9317 4163**
Email: hhalim@mpl.com.au	**Email: mconroy@mpl.com.au**

Analysis Underway, details on the following page:

Envirolab Services (WA) Pty Ltd trading as MPL Laboratories
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lab@mpl.com.au
www.mpl.com.au

Sample ID	PFAS in Soil Extended	PFAS in water TRACE Extended
SZZ1	✓	✓
SZZ2	✓	✓
WZZ1		✓
WZZ2		✓
WRR1		✓
WRR2		✓
WBB1		✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.

Appendix C
Quality Control and Assurance Evaluation

APPENDIX C: QUALITY CONTROL AND ASSURANCE EVALUATION

1.1 Overview

Sampling and analysis was undertaken in general accordance with the following guidance documentation:

- Commonwealth of Australia, 2009. *National Assessment Guidelines for Dredging (NAGD)*
- Simpson et al. 2005. *Handbook for Sediment Quality Assessment*. CSIRO
- DWER. 2014. *Assessment and Management of Contaminated Sites*
- Department of Water and Environment Regulation. June 2015a. *Identification and Investigation of Acid Sulfate Soils and Acid Landscapes*
- NEPM 2013. *National Environment Protection (Assessment of Site Contamination) Measure*. National Environmental Protection Council,
- HEPA. 2018. *PFAS National Environmental Management Plan*.
- Standards Australia. 2005. AS 4482.1. *Guide to the Sampling and Investigation of Potentially Contaminated Soil, Part 1: Non-volatile and Semi-volatile Compounds*.
- Standards Australia. 1999. AS 4482.2. *Guide to the Sampling and Investigation of Potentially Contaminated Soil, Part 2: Volatile Compound*s.
- Standards Australia. 1998. Water Quality—Sampling. Part 9: *Guidance on sampling from marine waters* (AS/NZS 5667.9:1998).

Strict hygiene procedures were applied throughout to assure sample integrity and quality, including the decontamination of all sampling equipment between sampling locations to prevent possible cross-contamination.

Consistent with aforementioned guidance documentation, quality control procedures included the collection and analysis of a duplicate sample for every 20 samples (minimum) collected (per matrix) submitted for analysis. The primary laboratory used during this exercise was ALS Environmental (ALS).

1.2 Quality Control Criteria

RPS requires that laboratories have a QAQC program that is endorsed by National Association of Testing Authorities (NATA) and meets the following criteria:

- All recovery rates to be between 70% and 130%.
- Relative percentage differences (RPDs) between original and duplicate samples to range between +/-30%. If the RPD is greater than +/-30%, the higher value is used for evaluation purposes.

Calculation of the RPD value is provided in the following equation:

$$RPD = \frac{(Co - Cs)}{\left(\frac{Co + Cs}{2}\right)} x100$$

where: Co = concentration of the original sample

Cs = concentration of the duplicate sample

The RPD calculation was used to normalise each pair of results to allow for better QAQC data interpretation. For those RPD values which exceed a generally acceptable 30–50% (Standards Australia 2005) data correlation is considered poor, however, consideration needs to be given to sample homogeneity and the concentrations detected.

1.3 Field QAQC Evaluation

1.3.1 Sediment Field Duplicates

Tables C-A to C-G presents the sediment field duplicate RPD assessment calculations.

- A total of 214 of the 216 analyte tests (~99%) performed on the field duplicate samples had a RPD within 30% of the original samples indicating the sampling and analysis procedures applied by RPS and the laboratory were generally reproducible. A review of the observed exceedances concludes the following:
  - Both failures are considered insignificant as concentrations of both the primary and duplicate samples are <5x LOR. These results merely reflect that analytical test precision decreases as analyte concentrations approach the limit of detection.

These failures are not considered to have affected the overall assessment, as all concentrations were below relevant assessment criteria and the highest concentration has been used in the assessment.

1.3.2 Sediment Field Triplicates

Tables C-A to C-G presents the sediment field triplicate RPD assessment calculations.

A total of 197 of the 215 analyte tests (~92%) performed on the field triplicate samples had a RPD within 30% of the original samples indicating the sampling and analysis procedures applied by RPS and the laboratory were generally reproducible. A review of the observed exceedances concludes the following:

- The majority of exceedances occurred on metals and nutrients where various in concentrations can be observed due to heterogeneity.
- Several of the metals and the PFAS result exceedances are considered insignificant as concentrations of both the primary and triplicate samples are <5x LOR. These results merely reflect that analytical test precision decreases as analyte concentrations approach the limit of detection.
- For all the above cases implementing a conservative approach, the higher sample values have been adopted to characterise the sediment quality of the site, and as such no re-analysis was considered necessary.

These failures are not considered to have affected the overall assessment, as all concentrations were below relevant assessment criteria and the highest concentration has been used in the assessment.

1.3.3 Surface Water Field Duplicates

Table C-E-2 presents the surface water field duplicate RPD assessment calculations.

- A total of 54 of the 60 analyte tests (~90%) performed on the field duplicate samples had a RPD within 30% of the original samples indicating the sampling and analysis procedures applied by RPS and the laboratory were generally reproducible. A review of the observed exceedances concludes the following:
  - All failures are considered insignificant as concentrations of both the primary and duplicate samples are <5x LOR. These results merely reflect that analytical test precision decreases as analyte concentrations approach the limit of detection.

These failures are not considered to have affected the overall assessment, as the highest concentration has been used in the assessment.

1.3.4 Surface Water Field Triplicates

Table C-E-2 presents the surface water field triplicate RPD assessment calculations.

- All of the 60 analyte tests (~100%) performed on the field triplicate samples had a RPD within 30% of the original samples indicating the sampling and analysis procedures applied by RPS and the laboratory were generally reproducible.

1.3.5 Elutriate Field Triplicates

Table C-E-3 presents the elutriate water field triplicate RPD assessment calculations.

A total of 57 of the 60 analyte tests (~95%) performed on the field duplicate samples had a RPD within 30% of the original samples indicating the sampling and analysis procedures applied by RPS and the laboratory were generally reproducible. A review of the observed exceedances concludes the following:

- All failures are considered insignificant as concentrations of both the primary and triplicate samples are <5x LOR. These results merely reflect that analytical test precision decreases as analyte concentrations approach the limit of detection.

These failures are not considered to have affected the overall assessment, as the highest concentration has been used in the assessment.

1.3.6 Rinsates, Blanks and Trip Blanks

Tables C-H to C-M presents the investigation rinsate, blank and trip blank results.

Concentrations of analytes for the field rinsates, field blanks and trip blanks were generally below the respective LORs (>99%), with the exceptions limited to copper, zinc and PFOS as discussed below:

- Concentrations of copper zinc were present in the rinsate and blank samples from the 13 November 2019 that marginally exceeded the respective LORs, and concentrations were <5x LOR. The presence of trace metals and nutrients in all of the water QAQC samples demonstrates that the presence of minor contamination of the supplied deionised water. As such, the exceedances are not considered a consequence of contamination occurring during sampling and are not considered to have affected the overall assessment.

- A minor detection of PFOS was observed in a rinsate from the 23 March 2020 that marginally exceeded the respective LORs, and concentrations were <5x LOR. Given the marginal exceedance and no other PFAS identified in the sample and or any other rinsate, blank and or trip blank, the exceedance is not considered a consequence of contamination occurring during sampling and is not considered to have affected the overall assessment.

1.3.7 Overall

Although QAQC failures were identified, they are not considered to have affected the integrity of the data collected or the resultant overall site assessment, and the data collected is considered suitable to use to characterise the site.

1.4 Internal Laboratory QAQC Evaluation

1.4.1 Laboratory Summary

In accordance with ISO/IEC 17025:2005, the NATA accredited laboratories are required to perform various internal QAQC procedures to ensure integrity of analytical results.

Standard laboratory methods were used throughout the program by the National Association of Testing Authorities (NATA) accredited laboratory with a summary of QAQC procedures implemented and details any outliers by the laboratory for each area presented in Table C.1 below.

Table C.1: Laboratory QA/QC Summary

Laboratory QAQC Undertaken/ Outliers		Matrix	
		Sediment	Water
Method Blank	Undertaken	Y	Y
	Outlier/Failures	N	N
Control Standard	Undertaken	Y	Y
	Outlier/Failures	Y	Y
Duplicate	Undertaken	Y	Y
	Outlier/Failures	N	N
Spike	Undertaken	Y	Y
	Outlier/Failures	Y	N
Surrogates	Undertaken	Y	Y
	Outlier/Failures	Y	N
Quality Control Frequency	Undertaken	Y	Y
	Outlier/Failures	N	Y
Holding Time	Undertaken	Y	Y
	Outlier/Failures	Y	N

Notes: Y – Yes, N – No

1.4.2 Laboratory Method Blanks

No laboratory method blank results were above their respective analyte LORs, indicating no contamination occurred during the sample preparation or subsequent analysis.

1.4.3 Laboratory Control Standards

All laboratory control standards (LCS) were reported within acceptable criteria.

1.4.4 Laboratory Duplicates

All laboratory duplicates were within acceptable criteria.

1.4.5 Surrogates

The majority of surrogate recoveries were within the acceptance criteria, indicating minimal sample matrix interferences were observed. Exceptions to this was identified in the sediment and water surrogate recovery for organotin which had a low recovery due to matrix interferences.

1.4.6 Matrix Spikes

Most matrix spike recoveries were within the acceptance criteria; however a failure for ammonia was reported due to the concentrations in the sample being significantly greater than the spike concentration. This is a reflection of the matrix of the samples are not the method.

1.4.7 Quality Control Frequency

All laboratory quality control frequencies were within the acceptance criteria, with the exception of some water analysis due to insufficient samples.

1.4.8 Sample Holding Time Evaluation

All samples were transported to the laboratory within the recommended holding time for each analyte and as such the several holding time failures are a result of the laboratory and not the sampling process.

1.4.9 Overall

Although QAQC failures were identified overall they are not considered to affect the overall assessment.

1.5 Documentation Completeness

Chain of Custody (CoC) documentation was submitted to the laboratory together with the samples. These were signed by the personnel accepting the samples and included the following information:

- sampling location and job reference number
- sample ID
- date
- name of sampler
- name of Project Manager
- requested suite of analysis
- type of sample preservation (if any)
- date and time and signature verifying release to the laboratory
- date and time and signature verifying acceptance from the laboratory.

For each QAQC sample the identifier and sample type were noted. The sampler, sampling conditions, date, and place at which the samples were taken are recorded on the log sheet. All QAQC samples are recorded on CoCs.

All QAQC samples submitted to a NATA accredited laboratory for analysis have a signed laboratory report detailing the results of the analysis.

1.6 Data Completeness

All samples designated for chemical analysis were determined based on the historic and current site use and previous findings. All sampling and analysis was undertaken in accordance with Water Quality Australia and DWER requirements.

1.7 Data Comparability

There are a number of factors that contribute to, or detract from, data comparability. These can be grouped into two general categories, factors related to sample collection and handling, and factors related to the analytical methods used. Sample collection issues include sample support (i.e. exactly what was sampled) and acquisition techniques, environmental conditions at the time of sampling, and sample handling/preservation methods. Analytical issues related to data comparability include sample preparation, clean up, and determinative methods used. Analytical surety in this monitoring investigation was addressed by employing NATA accredited laboratories.

Sample collection issues were addressed by utilising laboratory issued, standard collection bottles appropriate for the analytes of interest, the use of rigorous decontamination procedures, using appropriate preservation and storage techniques and by keeping storage times to a minimum. These measures generally

maintain, as much as is practically possible, the comparability of data between chronologically separate sampling events.

1.8 Data Representativeness

The sample set detailed above was determined to be sufficiently representative of the site for the purpose of the program. The duplicate sample results were subjected to analytical data validation and it was concluded that the results could be used to confirm the conclusions about the quality of soil and groundwater at the site.

1.9 Data Comparability Checks

The samples were collected by trained field scientists throughout the sampling program. The field scientists followed the RPS field manual and employed identical sampling methodology and techniques.

Table C-A: Sediment Analytical Results - Metals, Metalloids, Organotins and Nutrients - QAQC

Definitions:

LOR (Limits of Reporting),
--- denotes not tested

Notes:

All values in mg/kg except Tributyl in µg Sn/kg. Table uses colour coding for data interpretation.
deontes <LOR
denotes exceeds the RPD

Sample ID	Date Sampled	Trigger	Total Metals														Tributyl Tin	Nutrients					
			Antimony	Arsenic	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Vanadium	Zinc		Total Phosphorus	Phosphorous Reactive	Total Nitrogen	Nitrogen Kjeldahl Total	Ammonia (as N)	NOX
		LOR	0.5	1	0.1	1	0.5	1	1	10	0.01	1	0.1	0.1	2	1	2	0.1	20	20	20	0.1	0.1
Duplicate																							
C01S03	12/11/2019		0.5	1	0.2	10	1	1	1	10	0.01	1	0.1	0.1	11	1.1	0.5	232	0.1	310	310	0.2	0.1
SZ01			0.6	1.09	0	9.8	1	1	1	10	0.01	1	0.2	0.1	11	1.2	0.5	305	0.1	310	310	0.5	0.1
RPD%			18	9	0	1	0	0	0	0	0	0	**67**	0	1	9	0	27	0	0	0	**86**	0
Triplicate																							
C01S03	12/11/2019		0.5	1	0.2	10	1	1	1	10	0.01	1	0.1	0.1	11	1.1	0.5	232	0.1	310	310	0.2	0.1
SZZ01			1	0.7	0.1	---	0.5	0.5	0.5	6	0.01	0.7	0.2	0.1	6.8	0.5	0.5	280	0.5	140	140	---	0.1
RPD%			0	0	**67**	#	0	0	0	0	0	**0**	**67**	0	**50**	**75**	0	19	0	**76**	**76**	0	0

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Table C-B: Sediment Analytical Results - PAHs - QAQC

Definitions:

LOR (Limits of Reporting), PAH - Polycyclic Aromatic Hydrocarbons

--- denotes not tested

Notes:

All values in mg/kg unless indicated. Table uses colour coding for data interpretation.

deontes <LOR

denotes exceeds the RPD

Sample ID	Date Sampled	Trigger	PAHs																				
			2-methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benz(a)pyrene	Benz(b)fluoranthene	Benz(e)pyrene	Benz(ghi)perylene	Benz(k)fluoranthene	Chrysene	Coronene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Perylene	Phenanthrene	Pyrene	TEQ BaP	Total PAH
		LOR	0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004
Duplicate																								
C01S03	12/11/2019		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004
SZ01			0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004
RPD%			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Triplicate																								
C01S03	12/11/2019		0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004
SZZ01			0.005	0.005	0.005	0.005	0.005	0.005	0.010	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
RPD%			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Table C-C: Sediment Analytical Results - TRH and BTEX - QAQC

Definitions:

LOR (Limits of Reporting),
--- denotes not tested

Notes:

All values in mg/kg unless indicated. Table uses colour coding for data interpretation.
deontes <LOR
denotes exceeds the RPD

Sample ID	Date Sampled	Trigger	BTEX							TPH					TRH							
			Benzene	Ethyl Benzene	Toluene	ortho-Xylene	meta,para-Xylene	Xylene	Sum of BTEX	C6 - C9	C10 - C14	C15 - C28	C29 - C36	C10 - C36 (sum)	C6 - C10	C6 - C10 minus BTEX (F1)	>C10 - C16	>C10 - C16 minus Naphthalene (F2)	>C16 - C34	>C34 - C40	>C10 - C40 (sum)
		LOR	0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
Duplicate																						
C01S03	12/11/2019		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
SZ01			0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
RPD%			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Triplicate																						
C01S03	12/11/2019		0.2	0.2	0.2	0.2	0.2	0.5	0.2	3	3	3	5	3	3	3	3	3	3	5	3
SZZ01			0.2	0.2	0.2	0.2	0.4	0.4	0.2	25	25	25	25	25	25	25	25	25	2	25	25
RPD%			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Table C-D: Sediment Analytical Results - OC/OP Pesticides - QAQC

Definitions:

LOR (Limits of Reporting),
--- denotes not tested

Notes:

All values in mg/kg unless indicated. Table uses colour coding for data interpretation.
deontes <LOR
denotes exceeds the RPD

Sample ID	Date Sampled	Trigger	OCs																							
			Aldrin	Aldrin+Dieldrin	Alpha-BHC	Beta-BHC	Chlordane	cis-Chlordane	DDD	DDE	DDT	Delta-BHC	Dieldrin	Endosulfan (sum)	Endosulphan I	Endosulphan II	Endosulphan Sulfate	Endrin	Endrin Aldehyde	Endrin Ketone	gamma-BHC (Lindane)	HCB	Heptachlor	Heptachlor Epoxide	Methoxychlor	Oxychlordane	trans-Chlordane
		LOR	0.0005	0.0005	0.0005	0.0005	0.00025	0.00025	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005
Duplicate																											
C01S03	12/11/2019		0.0005	0.0005	0.00050	0.00050	0.00025	0.00025	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00025	0.00050	0.00050	0.00050	0.00050	0.00025	0.00050
SZ01			0.0005	0.0005	0.00050	0.00050	0.00025	0.00025	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00025	0.00050	0.00050	0.00050	0.00050	0.00025	0.00050
RPD%			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Triplicate																											
C01S03	12/11/2019		0.0005	0.0005	0.00050	0.00050	0.00025	0.00025	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00025	0.00050	0.00050	0.00050	0.00050	0.00025	0.00050
SZZ01			0.0010	0.0010	0.0010	0.0010	0.0005	0.0005	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0002	---	---	0.0010	0.0000	0.0010	0.0010	0.0010	0.0010	0.0010
RPD%			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#	#	0	0	0	0	0	0	0

Sample ID	Date Sampled	Trigger	OPs																			
			Bromophos-ethyl	Carbophenothion	Chlorfenvinphos (E)	Chlorfenvinphos (Z)	Chlorpyrifos	Chlorpyrifos-methyl	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenamiphos	Fenthion	Malathion	Azinphos Methyl	Monocrotophos	Parathion	Parathion-methyl	Pirimphos-ethyl	Prothiofos
		LOR	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Duplicate																						
C01S03	12/11/2019		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
SZ01			0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
RPD%			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Triplicate																						
C01S03	12/11/2019		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
SZZ01			0.05	---	---	---	0.05	0.05	---	0.05	---	---	0.05	---	0.05	0.05	---	---	0.05	0.05	0.05	---
RPD%			0	#	#	#	0	0	#	0	#	#	0	#	0	0	#	#	0	0	0	#

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Table C-E-1: Sediment Analytical Results - PFAS - QAQC

Definitions:

LOR (Limits of Reporting),
--- denotes not tested

Notes:

All values in mg/kg unless indicated. Table uses colour coding for data interpretation.
deontes <LOR
denotes exceeds the RPD

Sample ID	Date Sampled	Trigger	PFAS																												
			Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOS)	Sum of PFHxS and PFOS	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-methyl perfluorooctane sulfonamide (MeFOSA)	N-ethyl perfluorooctane sulfonamide (EtFOSA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	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 sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Total PFAS
	LOR		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	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
Duplicate																															
C01S03	12/11/2019		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
SZ01			0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
RPD%			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C01S01	23/03/2020		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
SZ1			0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
RPD%			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C02S01	23/03/2020		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
SZ2			0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
RPD%			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Triplicate																															
C01S03	12/11/2019		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
SZZ01			0.0001	0.0001	0.0001	0.0002	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0005	0.0005	0.0005	0.0005	0.0050	0.0010	0.0010	0.0050	0.0010	0.0010	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001
RPD%			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C01S01	23/03/2020		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
SZZ1			0.0001	0.0001	0.0001	0.0002	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0005	0.0005	0.0005	0.0005	0.0050	0.0010	0.0010	0.0050	0.0010	0.0010	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001
RPD%			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C02S01	23/03/2020		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	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
SZZ2			0.0001	0.0001	0.0001	0.0002	0.0005	0.0005	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0005	0.0005	0.0005	0.0005	0.0050	0.0010	0.0010	0.0050	0.0010	0.0010	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0005
RPD%			0	0	0	0	**86**	**86**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**86**

Table C-E-2: Surface Water Analytical Results - PFAS - QAQC

Definitions:

LOR (Limits of Reporting),
--- denotes not tested

Notes:

All values in µg/L unless indicated. Table uses colour coding for data interpretation.
deontes <LOR
denotes exceeds the RPD

Sample ID	Date Sampled	Trigger	PFAS																												
			Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOS)	Sum of PFHxS and PFOS	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-methyl perfluorooctane sulfonamide (MeFOSA)	N-ethyl perfluorooctane sulfonamide (EtFOSA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	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 sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Total PFAS
	LOR		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002
Duplicate																															
C06-SW	23/03/2020		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002
WZ1			0.0005	0.0005	0.0005	0.0005	0.0006	0.0006	0.0005	0.0020	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0010	0.0010	0.0010	0.0010	0.0005	0.0005	0.0010	0.0010	0.0010	0.0010	0.0006
RPD%			0	0	0	0	**100**	**100**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**100**
C04-SW	23/03/2020		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002
WZ2			0.0005	0.0005	0.0005	0.0005	0.0003	0.0003	0.0005	0.0020	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0010	0.0010	0.0010	0.0010	0.0005	0.0005	0.0010	0.0010	0.0010	0.0010	0.0003
RPD%			0	0	0	0	**40**	**40**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**40**
Triplicate																															
C06-SW	23/03/2020		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002
WZZ1			0.0004	0.0010	0.0002	0.0010	0.0002	0.0002	0.0020	0.0020	0.0020	0.0004	0.0004	0.0002	0.0010	0.0020	0.0020	0.0050	0.0100	0.0500	0.0100	0.0050	0.0100	0.0050	0.0500	0.0020	0.0020	0.0010	0.0004	0.0004	0.0010	0.0002
RPD%			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C04-SW	23/03/2020		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002
WZZ2			0.0004	0.0010	0.0002	0.0010	0.0002	0.0002	0.0020	0.0020	0.0020	0.0004	0.0004	0.0002	0.0010	0.0020	0.0020	0.0050	0.0100	0.0500	0.0100	0.0050	0.0100	0.0050	0.0500	0.0020	0.0020	0.0010	0.0004	0.0004	0.0010	0.0002
RPD%			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table C-E-3: Elutriate Analytical Results - PFAS - QAQC

Definitions:

LOR (Limits of Reporting),
--- denotes not tested

Notes:

All values in µg/L unless indicated. Table uses colour coding for data interpretation.
deontes <LOR
denotes exceeds the RPD

MAKING COMPLEX EASY

Sample ID	Date Sampled	Trigger	PFAS																												
			Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOS)	Sum of PFHxS and PFOS	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-methyl perfluorooctane sulfonamide (MeFOSA)	N-ethyl perfluorooctane sulfonamide (EtFOSA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	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 sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Total PFAS
		LOR	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002
Triplicate																																
C01S01	23/03/2020		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002
SZZ1			0.0004	0.0010	0.0002	0.0010	0.0002	0.0002	0.0020	0.0020	0.0020	0.0004	0.0004	0.0002	0.0010	0.0020	0.0020	0.0050	0.0100	0.0500	0.0100	0.0050	0.0100	0.0050	0.0500	0.0020	0.0020	0.0010	0.0004	0.0004	0.0010	0.0002
RPD%			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C02S01	23/03/2020		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002
SZZ2			0.0004	0.0010	0.0002	0.0010	0.0005	0.0005	0.0020	0.0020	0.0020	0.0004	0.0004	0.0002	0.0010	0.0020	0.0020	0.0050	0.0100	0.0500	0.0100	0.0050	0.0100	0.0050	0.0500	0.0020	0.0020	0.0010	0.0004	0.0004	0.0010	0.0005
RPD%			0	0	0	0	**86**	**86**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**86**

MAKING COMPLEX EASY

Table C-F: Sediment Analytical Results - Explosives - QAQC

Definitions:

LOR (Limits of Reporting),
--- denotes not tested

Notes:

All values in mg/kg unless indicated. Table uses colour coding for data interpretation.
deontes <LOR
denotes exceeds the RPD

Sample ID	Date Sampled	Trigger	Explosives																
			HMX	RDX	1.3.5-Trinitrobenzene	1.3-Dinitrobenzene	Tetryl	2.4.6-TNT	4-Amino.2.6-DNT	2-Amino-4.6-DNT	4- & 2-Am-DNT(Isomeric Mixture)	2.4-Dinitrotoluene	2.6-Dinitrotoluene	2.4- & 2.6-DNT(Isomeric Mixture)	Nitrobenzene	2-Nitrotoluene	3-Nitrotoluene	4-Nitrotoluene	Nitroglycerine	PETN
		LOR	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	1
Duplicate																				
C01S03	12/11/2019		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	1
SZ01			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	1
RPD%			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Triplicate																				
C01S03	12/11/2019		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	1
SZZ01			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	1
RPD%			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

MAKING COMPLEX EASY

Table C-G: Sediment Analytical Results - Acid Sulfate Soils - QAQC

Definitions:

LOR (Limits of Reporting),
--- denotes not tested

Notes:

Units as ndicated. Table uses colour coding for data interpretation.
deontes <LOR
denotes exceeds the RPD

Sample ID	Date Sampled	Test	Acidity Trail					CRS		Net Acidity excluding ANC		ANC	
		Analyte	pH_{KCl}	pH_{OX}	TAA	S_{TAA}	TPA	aS_{CR}	S_{CR}	S_{CR} + S_{TAA}		ANC	ANC
		Units	pH	pH	mol (H+/tonne)	%S	mol (H+/tonne)	mol (H+/tonne)	%S	mol (H+/tonne)	%S	mol (H+/tonne)	%S
		LOR	0.1	0.1	2	0.01	2	5	0.005	5	0.005	10	0.02
Duplicate													
C01S03	12/11/2019		10.0	7.9	<2	<0.02	<2	<10	0.007	<10	<0.02	17,500	28
SZ01			10.0	7.8	<2	<0.02	<2	<10	0.007	<10	<0.02	17,000	27.2
RPD%			0	0	0	0	0	0	0	0	0	3	3
Triplicate													
C01S03	12/11/2019		10.0	7.9	<2	<0.02	<2	<10	0.007	<10	<0.02	17,500	28
SZZ01			10.0	8.1	<5	<0.01	<5	<5	<0.005	<5	<0.005	18,000	29
RPD%			0	2	0	0	0	0	0	0	0	3	4

MAKING COMPLEX EASY

Table C-H: Rinsate, Blanks and Trip Blank Results - Metals, Metalloids and Nutrients

Definitions:

LOR (Limits of Reporting),

Notes:

All values in mg/L . Table uses colour coding for data interpretation.

deontes <LOR

Sample ID	Date Sampled	Sample Type	Trigger	Total Metals														Nutrients					
				Antimony	Arsenic	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Vanadium	Zinc	Total Phosphorus	Phosphorous Reactive	Total Nitrogen	Nitrogen Kjeldahl Total	Ammonia (as N)	NOX
			LOR	0.001	0.001	0.0001	0.001	0.001	0.001	0.001	0.0001	0.001	0.001	0.01	0.001	0.01	0.005	0.01	0.01	0.1	0.1	0.01	0.01
Blank																							
WB1	12/11/2019	Blank		<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.01	<0.001	<0.01	<0.005	0.01	0.01	0.1	0.1	0.01	0.01
WB2	13/11/2019	Blank		<0.001	<0.001	<0.0001	<0.001	<0.001	0.014	<0.001	<0.0001	<0.001	<0.001	<0.01	<0.001	<0.01	0.012	0.01	0.01	0.1	0.1	0.01	0.01

MAKING COMPLEX EASY

Table C-I: Rinsate, Blanks and Trip Blank Results - PAHs

Definitions:

LOR (Limits of Reporting),

Notes:

All values in mg/L . Table uses colour coding for data interpretation.

deontes <LOR

Sample ID	Date Sampled	Sample Type	Trigger	PAHs															
				Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b+j)fluoranthene	Benzo(g.h.i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a.h)anthracene	Fluoranthene	Fluorene	Indeno(1.2.3.cd)pyrene	Naphthalene	Phenanthrene	Pyrene
			LOR	0.001	0.001	0.001	0.001	0.0005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Blank																			
WB1	12/11/2019	Blank		0.001	0.001	0.001	0.001	0.0005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
WB2	13/11/2019	Blank		0.001	0.001	0.001	0.001	0.0005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Rinsate																			
WR1	12/11/2019	Rinsate		0.001	0.001	0.001	0.001	0.0005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
WR2	13/11/2019	Rinsate		0.001	0.001	0.001	0.001	0.0005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

MAKING COMPLEX EASY

Table C-J: Rinsate, Blanks and Trip Blank Results - TRH and BTEX

Definitions:

LOR (Limits of Reporting), --- not tested

Notes:

All values in mg/L unless indicated. Table uses colour coding for data interpretation.

deontes <LOR

Sample ID	Date Sampled	Sample Type	Trigger	BTEX							TPH					TRH						
				Benzene	Ethyl Benzene	Toluene	ortho-Xylene	meta,para-Xylene	Xylene	Sum of BTEX	C6 - C9	C10 - C14	C15 - C28	C29 - C36	C10 - C36 (sum)	C6 - C10	C6 - C10 minus BTEX (F1)	>C10 - C16	>C10 - C16 minus Naphthalene (F2)	>C16 - C34	>C34 - C40	>C10 - C40 (sum)
			LOR	0.001	0.002	0.002	0.002	0.002	0.002	0.001	0.02	0.05	0.1	0.05	0.05	0.02	0.02	0.1	0.1	0.1	0.1	0.1
Blank																						
WB1	12/11/2019	Blank		0.001	0.002	0.002	0.002	0.002	0.002	0.001	0.02	0.05	0.1	0.05	0.05	0.02	0.02	0.1	0.1	0.1	0.1	0.1
WB2	13/11/2019	Blank		0.001	0.002	0.002	0.002	0.002	0.002	0.001	0.02	0.05	0.1	0.05	0.05	0.02	0.02	0.1	0.1	0.1	0.1	0.1
Rinsate																						
WR1	12/11/2019	Rinsate		0.001	0.002	0.002	0.002	0.002	0.002	0.001	0.02	0.05	0.1	0.05	0.05	0.02	0.02	0.1	0.1	0.1	0.1	0.1
WR2	13/11/2019	Rinsate		0.001	0.002	0.002	0.002	0.002	0.002	0.001	0.02	0.05	0.1	0.05	0.05	0.02	0.02	0.1	0.1	0.1	0.1	0.1
Trip Blank																						
WTB1	12/11/2020	Trip Blank		0.001	0.002	0.002	0.002	0.002	0.002	0.001	0.02	0.05	---	---	---	0.02	0.02	---	---	---	---	---

MAKING COMPLEX EASY

Table C-K: Rinsate, Blanks and Trip Blank Results - OC/OP Pesticides

Definitions:

LOR (Limits of Reporting),

Notes:

All values in µg/L unless indicated. Table uses colour coding for data interpretation.

deontes <LOR

Sample ID	Date Sampled	Sample Type	Trigger	OCs																						
				4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC	alpha-Endosulfan	beta-BHC	beta-Endosulfan	cis-Chlordane	delta-BHC	Dieldrin	Endosulfan sulfate	Endrin	Endrin aldehyde	Endrin ketone	gamma-BHC	Heptachlor	Heptachlor epoxide	Hexachlorobenzene (HCB)	Methoxychlor	Sum of Aldrin + Dieldrin	Sum of DDD + DDE + DDT	Total Chlordane (sum)	trans-Chlordane
			LOR	0.5	0.5	2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	0.5	0.5	0.5	0.5
Blank																										
WB1	12/11/2019	Blank		0.5	0.5	2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	0.5	0.5	0.5	0.5
WB2	13/11/2019	Blank		0.5	0.5	2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	0.5	0.5	0.5	0.5
Rinsate																										
WR1	12/11/2019	Rinsate		0.5	0.5	2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	0.5	0.5	0.5	0.5
WR2	13/11/2019	Rinsate		0.5	0.5	2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	0.5	0.5	0.5	0.5

Sample ID	Date Sampled	Sample Type	Trigger	OPs																			
				Azinphos-methyl	Bromophos-ethyl	Carbofenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Disulfoton	Ethion	Fenamiphos	Fenthion	Malathion	Monocrotophos	Parathion	Parathion-methyl	Pirimiphos-ethyl	Prothiofos
			LOR	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	2	2	0.5	0.5	0.1
Blank																							
WB1	12/11/2019	Blank		0.50	0.5	0.50	0.50	0.50	0.5	0.50	0.50	0.5	0.50	0.50	0.50	0.50	0.50	2	2	2	0.5	0.50	0.1
WB2	13/11/2019	Blank		0.50	0.5	0.50	0.50	0.50	0.5	0.50	0.50	0.5	0.50	0.50	0.50	0.50	0.50	2	2	2	0.5	0.50	0.1
Rinsate																							
WR1	12/11/2019	Rinsate		0.50	0.5	0.50	0.50	0.50	0.5	0.50	0.50	0.5	0.50	0.50	0.50	0.50	0.50	2	2	2	0.5	0.50	0.1
WR2	13/11/2019	Rinsate		0.50	0.5	0.50	0.50	0.50	0.5	0.50	0.50	0.5	0.50	0.50	0.50	0.50	0.50	2	2	2	0.5	0.50	0.1

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Table C-L: Rinsate, Blanks and Trip Blank Results - PFAS - QAQC

Definitions:
LOR (Limits of Reporting),

Notes:
All values in µg/L unless indicated. Table uses colour coding for data interpretation.
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Sample ID	Date Sampled	Sample Type	Trigger	PFAS																												
				Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOS)	Sum of PFHxS and PFOS	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	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 sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Total PFAS
		LOR		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002
Blank																																
WB1	12/11/2019	Blank		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0020	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002
WB2	13/11/2019	Blank		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0020	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002
WB1	23/03/2020	Blank		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0020	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002
WBB1	23/03/2020	Trip Blank		0.0004	0.0010	0.0002	0.0010	0.0002	0.0002	0.0020	0.0020	0.0004	0.0004	0.0002	0.0010	0.0020	0.0020	0.0050	0.0100	0.0500	0.0100	0.0050	0.010	0.005	0.050	0.002	0.0020	0.0010	0.000	0.000	0.001	0.001	0.0002
Rinsate																																
WR1	12/11/2019	Rinsate		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0020	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002
WR2	13/11/2019	Rinsate		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0020	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002
WR1	23/03/2020	Rinsate		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0020	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002
WR2	23/03/2020	Rinsate		0.0005	0.0005	0.0005	0.0005	0.0003	0.0003	0.0005	0.0020	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0003
WRR1	23/03/2020	Trip Rinsate		0.0004	0.0010	0.0002	0.0010	0.0002	0.0002	0.0020	0.0020	0.0004	0.0004	0.0002	0.0010	0.0020	0.0020	0.0050	0.0100	0.0500	0.0100	0.0050	0.010	0.005	0.050	0.002	0.0020	0.0010	0.000	0.000	0.001	0.001	0.0002
WRR2	23/03/2020	Trip Rinsate		0.0004	0.0010	0.0002	0.0010	0.0002	0.0002	0.0020	0.0020	0.0004	0.0004	0.0002	0.0010	0.0020	0.0020	0.0050	0.0100	0.0500	0.0100	0.0050	0.010	0.005	0.050	0.002	0.0020	0.0010	0.000	0.000	0.001	0.001	0.0002
Trip Blank																																
WTB1	12/11/2020	Trip Blank		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0020	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002
TBW 197	23/03/2020	Trip Blank		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0020	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002
TBW 168	23/03/2020	Trip Blank		0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0020	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	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	0.0002

Table C-M: Rinsate, Blanks and Trip Blank Results - Explosives - QAQC

Definitions:

LOR (Limits of Reporting),

Notes:

All values in µg/L unless indicated. Table uses colour coding for data interpretation.

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Sample ID	Date Sampled		Trigger	Explosives																	
				HMX	RDX	1.3.5-Trinitrobenzene	1.3-Dinitrobenzene	Tetryl	2.4.6-TNT	4-Amino.2.6-DNT	2-Amino-4.6-DNT	4- & 2-Amino-DNT(Isomeric Mixture)	2.4-Dinitrotoluene	2.6-Dinitrotoluene	2.4- & 2.6-DNT(Isomeric Mixture)	Nitrobenzene	2-Nitrotoluene	3-Nitrotoluene	4-Nitrotoluene	Nitroglycerine	PETN
		LOR		20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	200	200
Blank																					
WB1	12/11/2019	Blank		20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	200	200
WB2	13/11/2019	Blank		20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	200	200
Rinsate																					
WR1	12/11/2019	Rinsate		20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	200	200
WR2	13/11/2019	Rinsate		20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	200	200