REPORT

Biota and Receiving Environment Sampling and Assessment, Weipa

Submitted by:

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18100235-018-R-Rev0

15 October 2018



Executive Summary

Aquatic biota, sediment and surface water samples have been collected from 11 sites across a Biota Sampling Investigation Area at Weipa, Queensland. The biota samples include aquatic species commonly consumed in the area from a range of ecological groups with a varied mobility from pelagic fish to sessile invertebrates.

The reported PFAS concentrations in all biota samples analysed were an order of magnitude (or greater) below the adopted guideline values. Of the 83 biota samples analysed for PFAS, concentrations were reported below the laboratory's limit of reporting (LOR) in 79 samples. Three samples collected from Beening Creek and one sample from adjacent to Jessica Point reported PFAS concentrations at or marginally above the laboratory LOR. In addition, the PFAS concentrations in all 11 sediment and 11 surface water samples were below the adopted guideline values and below laboratory LOR. Adopted guideline values were derived from the PFAS National Environment Management Plan (NEMP, 2018)

Therefore, it is concluded from the dataset presented that there is likely to be:

- Minimal risk to human health from the consumption of aquatic biota and Environmental Values (EVs) relating to aquatic food consumption and aquaculture; and
- Negligible risk to recreational users, ecological health and EVs relating to recreational use and aquatic ecosystem health from surface waters.

The detections of PFAS in surface water reported in the Preliminary Site Investigation (PSI) are not reflected in results for surface water collected during the biota investigation. This may be due to several factors including:

- Sampling of surface water from a boat in a central position of the watercourse whilst surface water sampled as part of the PSI was collected from the bank; and
- Seasonal influence.

The biota sampling did not specifically target two primary PFAS source areas identified during the concurrent PSI. Therefore, the potential for localised impact and risk cannot be discounted in these specific areas. However, the absence of detectable PFAS concentrations in sediment and biota suggest that there is not widespread contamination in the receiving environment and that there is unlikely to be widespread adverse impact to relevant EVs in the study area.

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1.0 INTRODUCTION

1.1 General

Golder Associates Pty Ltd (Golder) was commissioned to provide consulting services in support of the assessment of potential per-and polyfluoroalkyl substances (PFAS) contamination in the Weipa and Andoom mining areas, Cape York, Queensland.

To guide the assessment of potential PFAS contamination, a PFAS Assessment Strategy was prepared by Golder (ref. 1780457-007-L-Rev6 dated 25 May 2018) on behalf of RTAW and subsequently submitted to the Department of Environment and Science (DES). The Assessment Strategy has the overarching objective to develop a plan for the management of potential risks to the environment and human health posed by legacy PFAS contamination (where identified) from RTAW operations.

In response to the Assessment Strategy, DES requested aquatic biota sampling be included in the scope of work (DES, 2 May 2018).

The assessment work presented in this report was guided by a Sampling Analysis and Quality Plan (SAQP) (Golder, 2018a, document #: 18100235-006-R-Rev0) which was submitted to DES on 15 June 2018 and subsequently acknowledged as being sound in terms of objectives, analytical planning and quality assurance on 6 July 2018.

The sites identified for sampling within the SAQP were based on an initial review conducted at that time of known areas of PFAS use and therefore potential source areas. Running in parallel with the biota sampling programme, a Preliminary Site Investigation (PSI) was also being completed and is now concluded (Golder document: 18100235-007-R-Rev0, (Golder, 2018b)). The PSI identified additional areas of historic PFAS and assessed, by sampling, whether each of these areas is an actual or potential source area. The sampling conducted in the PSI also provided a greater understanding of the lateral extent and potential pathways of PFAS movement particularly associated with some source areas. Whilst this additional information was not available during preparation of the SAQP and completion of the biota sampling programme it has been considered in the evaluation of the available data in this report.

This report documents the data collected during this sampling program and reports the analytical results obtained from the samples collected.

1.2 Objective

The objectives of the sampling and analysis were:

- To undertake a Tier I Human Health Risk Assessment (HHRA) which evaluates the potential for risks to humans associated with the consumption of aquatic biota potentially impacted from sources of historic AFFF use in locations identified through preliminary desk study and investigation;
- Through the assessment of co-located surface water samples, to conduct a Tier-I Ecological Risk Assessment (ERA); and
- Through the assessment of co-located sediment samples and in the absence of sediment guideline values, compare PFAS concentrations from reference or background sites to potentially impacted, downstream, areas.

2.0 DATA QUALITY OBJECTIVES

Data Quality Objectives (DQO) define the type, quantity and quality of data needed to support decisions relating to the environmental condition of a site.

As per Schedule B2 (Guideline on Site Characterisation) of the National Environmental Protection (Assessment of Site Contamination) Measure (NEPM) 1999, as amended in 2013) "*a systematic planning process is used for defining the objectives of a site assessment and to develop a sampling plan for the collection and evaluation of representative data to achieve those objectives. Without systematic planning, the site assessment may be ambiguous or inconclusive, which may lead to additional sampling requirements, resulting in increased costs and project delays*".

The seven step DQO/data quality indicator (DQI) process is identified in *Schedule B2* of the NEPM as one example of a suitable systematic planning approach for site investigations. The seven step DQO process includes:

- Step 1: State the problem
- Step 2: Identify the decision or goal of the investigation
- Step 3: Identify the information inputs
- Step 4: Define the site boundaries
- Step 5: Develop the analytical approach
- Step 6: Specify performance or acceptance limits
- Step 7: Develop the plan for obtaining data.

The DQO process has been applied to the sampling program reported in this document as described below, to ensure that data collection activities are appropriate and achieve the stated objectives.

2.1 Step 1: State the problem

The historic use of PFAS containing AFFF associated with RTAW operations in the Weipa and Andoom areas has potentially led to migration of PFAS into the receiving environment. A preliminary review by RTAW conducted prior to the drafting of the SAQP (Golder 2018a) indicated use of PFAS containing AFFF at the following four key locations each of which were considered to constitute potential PFAS source areas:

- East Weipa Heavy Equipment Workshop (EWHEQ)
- Weipa Airport
- Weipa Fire & Rescue
- Andoom Heavy Equipment Workshop (AHEQ), located approximately 6km north of the Mission River.

These locations and the wider operational area of RTAW were the subject of a PSI (Golder 2018b) conducted in parallel with the biota sampling scope under the PFAS Assessment Strategy submitted to DES. The PSI report confirmed the potential source areas identified in the SAQP and developed a greater understanding of the extent and potential movement of PFAS from these areas. The PSI also identified two primary and eight secondary source areas additional to those considered directly in the design of the SAQP. Whilst not specifically included in the biota campaign design, by virtue of the widespread nature of the biota sampling, conclusions are drawn relating to the potential influence of these additional source areas and improved understanding of the original source areas..

The location of the original four source areas identified in the SAQP and the additional areas identified in the PSI (Golder 2018b) are shown in Figure 1 in relation to the Biota Investigation Area.

Fishing (and the associated consumption of aquatic resources) within and including the large mangrove, tidal creek and mudflat systems in Albatross Bay (into which waterbodies adjacent to source areas drain), is an important subsistence, economic and recreational activity for the Weipa region. Human consumption of potential PFAS-impacted aquatic biota therefore represents a plausible exposure pathway, the study of which is reported in this document.

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LEGEND

- Source Areas identified in SAQP

Source Areas Identified in PSI

- Primary Source Area
- Secondary Source Area

Watercourse

- Major
- Minor

Fish Habitat Area

- Fish Habitat Area - 073

Biota Sampling Investigation Area

- Biota Sampling Investigation Area

Coordinate System:
GDA 1994 MGA Zone 54
Projection: Transverse Mercator
Datum: GDA 1994

0 2 4 6 8 10
Scale: 1:200,000 @ A3 kilometres

NOTE(S)
Gazetter: Department of Natural Resources, Mines and Energy) 2018
Watercourse: © Geoscience Australia
Fish Habitat Area: Department of National Parks, Sport and Racing *Established under Fisheries Act 1994, Queensland Fisheries Regulations 2008*
Known Point Source Locations, Receiving Environment for Known PFAS-Source Areas: Golder 2018

REFERENCE(S)
Service Layer Credits: Sources: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributors
Esri, Garmin, GEBCO, NOAA NGDC, and other contributors
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Basemap: Pan-sharpened Landsat 8 OLI Image Service, 31/07/2017

TITLE
RECEIVING ENVIRONMENT PFAS-SOURCE AREAS

CONSULTANT
GOLDER

YYYY-MM-DD	2018-10-12
DESIGNED	DC
PREPARED	DC
REVIEWED	JC
APPROVED	GW

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2.2 Step 2: Identification of the decision or goal of the investigation

The technical goal of the investigation is to complete a Tier I HHRA which evaluates the potential risk to humans associated with the consumption of aquatic biota potentially impacted from RTAW-derived PFAS, originating from the source areas identified in the SAQP and, more broadly across the biota investigation area.

Additionally, co-located surface water and sediment samples were collected. The surface water samples are used in a Tier-I Ecological Risk Assessment (ERA) using endorsed ecological risk guidelines values. In the absence of sediment guidelines, PFAS-sediment concentrations from reference sites are used to provide indicative background levels against which sediment sampled from potentially impacted, downstream locations can be compared.

2.3 Step 3: Identify the information inputs

The principle investigation inputs have been derived from the following:

- The state and national regulations and guidance applicable to the conduct of the sampling. This includes the National Environmental Protection (Assessment of Site Contamination) Measure (NEPM) 1999, as amended in 2013) and the PFAS National Environment Management Plan (NEMP, 2018);
- Tier 1 risk assessment guideline values (refer to Section 5.0);
- Information received from RTAW based on preliminary review of areas of historic AFFF use;
- Desktop information on environmental conditions and potential receptors (geology/hydrogeology, oceanography ecology, nearby surface water bodies, etc.);
- Identification of nearby and downstream receptors;
- Publicly available information including topographical, soil and geological maps, and Environmental Values; and
- Collection and laboratory analysis of representative biota, sediment and surface water samples from areas of known fisheries-resource use (as identified in Section 4.0).

2.4 Step 4: Define the investigation boundaries

2.4.1 Spatial investigation boundary

The nature of PFAS being generally highly mobile and, combined with legacy use and disposal practices of AFFF, may result in contaminant migration pathways that are complex. As such, the Biota Sampling Investigation Area includes areas downstream of the PFAS source areas identified in the SAQP. The Biota Sampling Investigation Area is shown in Figure 1 relative to the PFAS source areas identified in the SAQP and, for completeness, those identified in the PSI (Golder 2018b).

The Biota Sampling Investigation Area included the following:

- Andoom Creek as the receiving environment associated with the Andoom Heavy Equipment Workshop (AHEQ).
- The tidal creeks, foreshore, mangrove and mudflats of the Mission River including Trunding Creek prior to it entering Albatross Bay as the potential receiving environment associated with the East Weipa Heavy Equipment Workshop (EWHEQ) and, more generally the north Weipa peninsular.
- The lower Embley River in the Weipa Channel downstream of the confluence between the Hey and Embley Rivers and Beening Creek as the potential receiving environment for the Weipa Airport and Weipa Fire & Rescue.

Whilst outside of the Biota Sampling Investigation Area, additional reference sites were included upstream either from the perspective of a flow direction or where biota are unlikely to be exposed to PFAS from identified PFAS source areas. The intent of these reference sites is to provide context to the results obtained from the receiving environment water bodies. The locations of the reference sites are illustrated in Figure 2.

2.4.2 Types of Biota Targeted

Biota were selected for the sampling program based upon the following decision hierarchy:

1) Species that are targeted for human consumption in either recreational or commercial fisheries. This included species that are targeted by traditional owners.

2) Species that are sedentary or have relatively limited dispersal ranges during their adult life stage. Such species are likely to be representative of potential PFAS uptake associated with the identified PFAS source areas. Species such as offshore pelagic fish are migratory and whilst potentially being important in the fishery, they were not considered to be appropriate candidates for sampling. This is due to the difficulty in correlating measured PFAS concentrations (if any) to the identified source areas.

3) Recognising that concentrations of PFAS in biota tissue are highly variable and not necessarily higher in predatory organisms, a range of trophic levels were included in the sampling programme.

Full details on the taxon obtained during the sampling campaign and subsequently submitted for laboratory analysis are presented in Section 4.3.

2.5 Step 5: Develop the analytical approach

The purpose of this step is to define the parameters of interest, specify action levels and combine the outputs of the previous DQO steps to develop a series of options if certain trigger events occur. The key decision rules employed include:

- Have the analytical data collected met the Data Quality Indicators (DQI) presented in Section 2.6? If the answer is 'yes' then the data can be used to answer the decision rules below, and the statements developed in Step 1. If the answer is 'no', then an assessment of the need to collect supplementary data will be required;
- Do investigation data collected form an adequate basis for an appropriate level of assessment to quantify risk and to inform mitigation measures? If the answer is 'yes' then the data can be used to assess the magnitude of risk and inform mitigation measures. If the answer is 'no', then additional investigation data will be required; and
- Do PFAS concentrations exceed the adopted guideline values (defined in Section 5.0)? If the answer is 'no' then risks are considered acceptable. Where the answer is 'yes' and results exceed the adopted guideline values, this may not necessarily indicate an unacceptable level of risk. However, mitigation may need to be considered or further investigation will be required to confirm if risks are unacceptable.

2.6 Step 6: Specify performance or acceptance limits

Data Quality Indicators (DQI) are developed based on the following "PARCC" parameters:

- Precision - a quantitative measure of the variability (or reproducibility) of data;
- Accuracy - a quantitative measure of the closeness of reported data to the "true" value;
- Representativeness - the confidence (expressed qualitatively) that data are representative of each media present on site;

- Completeness - a measure of the amount of useable data from a data collection activity, and whether it is all the data required to enable the objectives to be met; and
- Comparability - the confidence (expressed qualitatively) that data is equivalent for each sampling and analytical event.

The measures or criteria employed to enable review of these parameters are described below and are detailed in the context of the analytical results obtained and reported in Section 7.0.

Precision

Field precision was monitored using sampling procedures outlined in the NEPM and NEMP. and ensuring that these are complied with throughout the sampling event. Suitable performance indicators for assessment of laboratory precision include analysis of intra-laboratory and inter-laboratory duplicate sample sets through calculation of Relative Percentage Differences (RPD) and qualitative analysis of surrogate recovery during the analytical process.

Accuracy (Bias)

Accuracy in the field activities was monitored using sampling procedures and ensuring that these are complied with throughout the sampling event.

The closeness of the reported data to the "true" value is assessed through review of performance of:

- Method blanks; which are analysed for the same PFAS compounds as those in the primary samples.
- Matrix spike sample sets;
- Surrogate spikes; and
- Laboratory control samples.

Representativeness

To ensure representativeness of the field data, appropriate media were sampled as identified in the SAQP (Golder 2018a) that guided this investigation. To ensure the data produced by the laboratories is representative of conditions encountered in the field, the following steps were taken:

- Blank samples were run at the laboratory in parallel with field samples to confirm there are no unacceptable instances of laboratory artefacts;
- A review of variance in field and laboratory duplicates[1] of water and sediment samples is undertaken to provide an indication of the analytical laboratory analysis repeatability and variance in concentrations from the same location; and
- The appropriateness of collection methodologies, handling, storage and preservation techniques are assessed to ensure or confirm there was minimal opportunity for interference or contamination of the samples.

Completeness

In assessing the completeness of the field data, the following is considered:

- All proposed locations are sampled;
- Representative samples of biota are collected from the sample locations identified; and
- An appropriately experienced sampling team is engaged in the investigation program.

[1] In the case of biota samples, only inter-laboratory (triplicate) blind samples will be employed.

In validating the degree of completeness of the analytical data sets acquired during the investigation the following is considered:

- Whether procedures for sampling protocols have been adhered to; and
- Copies of all project chain of custody (CoC) documentation are reviewed and presented.

Based on this information a decision can be made whether the proportion of "useable data" generated in the data collection activities is sufficient for the purposes of the assessment.

Comparability

The samples will be collected by experienced field staff and testing completed by National Association of Testing Authorities, Australia (NATA) accredited laboratories.

2.7 Step 7: Develop the plan for obtaining data

Sample locations were selected based on their location relative to the identified PFAS source areas and knowledge of the probable areas for fishing. The locations from which samples were collected are in accordance with those proposed in the SAQP (Golder 2018a) and included eight sites within the receiving environment and three reference or background sites. Additional sites were added opportunistically when in the field. Full details of samples collected at each location are provided in Section 4.1.

3.0 THE RECEIVING ENVIRONMENT

The Biota Sampling Investigation Area is within the waterbodies that drain into and comprise Albatross Bay, located on the northwest of Cape York Peninsula, on the eastern side of the Gulf of Carpentaria and approximately 700 km northwest of Cairns. The area has a tropical monsoonal climate with two distinct seasons (wet and dry). The wet season occurs between October and April (summer) with temperatures ranging from 18°C to 38°C. Tropical cyclones cross the Gulf of Carpentaria during this period, with data from the Bureau of Meteorology indicating that on average, cyclones occur in the area once every 2 years. Temperatures in the dry season (winter) range between 13°C and 35°C (PCQ, 2009).

The average annual rainfall in Weipa is approximately 1.9 m, 95% of which is received during the wet season (Larcombe and Taylor, 1997 and URS 2002). The dry season is dominated by south-easterly winds whilst, in the wet season, lighter, northerly and westerly winds are predominant.

3.1 Oceanography, tides and currents

Albatross Bay is a large shallow bay on the eastern side of the Gulf of Carpentaria. Depths within Albatross Bay vary from 0 m across the large intertidal mudflats associated with the several river systems that flow into the bay to 20 m at the mouth of the bay. There are numerous rocky headlands and outcrops particularly at the mouth of the bay although several coral shoals can be found within the main channels inside the bay.

Weipa is the standard port for tide measurements. The tide at Weipa is predominately diurnal (one high and one low tide per day) although, during neap tides, semi-diurnal tides occur. The tidal range in the bay is 1.5 m from mean high to mean low tide with the tidal range between astronomical high and low tides of 2.7 m (RTAW, 2011). Currents are predominantly related to tidal movement and the discharge of rivers into the bay. Tidal flow within the inner reaches of the bay and within the channels leading to Weipa peninsular are typically 1.5 to 2.5 knots although during peak amplitude spring tides, these currents can reach 3.5 knots (DTMR, 2016).

During the dry season the sea state in the bay is often smooth. During the wet season, the sea state is impacted by tropical depressions and cyclones which traverse the area. Wave heights during periods of unsettled weather can exceed 1.5 m in the bay (RTAW 2011).

Whilst flowing year round, during the wet season the four main rivers that drain into the bay (the Mission, Embley, Hey and Pine Rivers) discharge large amounts of suspended material into Albatross Bay. This results in high levels of turbidity observed seasonally which are further resuspended by wind and swell.

3.2 Ecological systems

3.2.1 Offshore

Areas offshore from Albatross Bay provide a productive habitat for both commercial and recreational fisheries. Soft sediment areas are common in the whole Gulf of Carpentaria and they have been widely studied as valuable habitats in particular for the commercially valuable Penaeidae family that support the local prawn fishery. Offshore areas are also relevant for their pelagic systems comprising, amongst the others, marine mammals, sea turtles, elasmobranchs and finfish (Blaber et al., 1990).

3.2.2 Inshore

Inshore, coastal areas within Albatross Bay incorporate a diverse range of habitats including seagrass beds, mangrove communities, associated soft bottom habitats, inter-tidal mud and sand flats and rock reefs. These habitats are highly productive and support significant fisheries resources as discussed in Section 3.4.

3.2.3 Estuarine and mangroves

Within Albatross Bay there are 375 km^2 of mangrove habitat across 199 individual habitat patches[2]. During previous surveys, up to 19 mangrove species were recorded in the area (PCQ, 2009). The mangrove systems are zoned into discrete species assemblages based on their presence in the estuaries and rivers and according to their position within the tidal range. Mangroves systems form the preferred habitat for many species and are renowned to be essential nurseries for estuarine and reef species alike, including finfish, elasmobranchs, gastropods and crustaceans. All sections of Mission, Hey and Embley rivers are characterized by dense mangrove habitat often with Red mangroves (*Rhizophora stylosa*) abundant in proximity of the lower tidal areas, together with River and Grey mangroves (respectively *Aegiceras comiculatum* and *Avicennia marina var. eucalyptoides*) and an increased occurrence of Mangrove Fern, Wrinkle Pod and Cannonball mangroves (*Acrostichum speciosum*, *Cynometra iripa* and *Xylocarpus spp.*) in upper estuary areas.

3.2.3.1 Coral reefs

Rocky reefs in Albatross Bay are generally located in shallow areas (up to 6 m). These hard substrate areas are located amongst otherwise soft bottom habitat provide suitable substrate for organisms including sponges, sea cucumbers, hydroids, soft corals and gastropods. Additionally, the higher complexity of these systems compared to surrounding soft bottom habitat provides habitat for reef fish and associated prey. The biota communities found in these habitats are synonymous with those found in other tropical areas of Northern Australia and include sessile filter-feeders (e.g. sponges, soft and hard corals, ascidians) and finfish. A comprehensive list of groups and species can be found in Blaber et al., 1990.

3.3 Environmental Values

No specific Environmental Values (EV) or Water Quality Objectives have been published by the Qld government for the Western Cape York Area. However, the Environmental Protection (Water) Policy 2009 (EPP Water) lists 8 broad environmental values that can be impacted by contamination, including:

- Aquatic ecosystem health
- Aquaculture and human consumption of aquatic foods

[2] Calculations made on Regional Ecosystem data accessed from https://www.qld.gov.au/environment/plants-animals/plants/ecosystems on 30 May 2018.

- Agricultural uses (e.g. stock watering and irrigation)
- Recreational uses (e.g. swimming, wading, boating, fishing and aesthetic)
- Drinking water (raw water supply)
- Industrial Uses
- Cultural and spiritual values.

The following 3 environmental values (EV) are considered relevant to the biota assessment, may be impacted by PFAS contamination and are considered as part of this report:

- Aquatic Ecosystem Health: the biological integrity of aquatic ecosystems;
- Aquaculture and human consumption of aquatic foods: the suitability of the water for producing food for human consumption; and
- Recreational Use: the suitability of the water for primary or secondary recreational use, or visual recreational use.

The potential impact on all other relevant EVs are assessed in the PSI (Golder, 2018b).

Sections of the marine and estuarine ecosystems of Albatross Bay including sections of the Biota Sampling Investigation Area are effectively unmodified and represent areas of high ecological value containing several Matters of State Environmental Significance (PCQ (2009) as discussed in Section 3.2). Other sections of the Biota Sampling Investigation Area, principally around the Weipa peninsular, are impacted by anthropogenic activities including dredging associated with Weipa port.

Albatross Bay which includes the Biota Sampling Investigation Area contains important fish habitat areas. The productive nature of the tropical embayment is derived from the spatial linkages present between inshore nursery grounds (mangroves and seagrass beds) and deeper, current-influenced channels.

Whilst there are no threatened ecological communities in Albatross Bay, there are a several threatened and migratory species recorded from the area. These include the Flatback Turtle (*Notator depressus*), Hawksbill Turtle (*Eretmochelys imbricata*), Olive Ridley Turtle (*Lepidochelys olivacea*), Loggerhead Turtle (*Caretta caretta*) and Green Turtle (*Chelonia mydas*) PCQ (2009).

In 2011, the Pine River Bay was declared as a Fish Habitat Area (FHA-073). The FHA encompasses the northern portion of Albatross Bay north of the line of latitude 10º 36’ 10” South (Figure 1) and incorporating a portion of the proposed Biota Sampling Investigation Area including the proposed reference site in northern Pine River Bay and the potential receiving environment of Andoom Creek.

3.4 Fisheries

3.4.1 Aquaculture

There are currently no aquaculture activities undertaken within Albatross Bay or the Biota Sampling Investigation Area.

3.4.2 Commercial fishing

Commercial fishing near the Biota Sampling Investigation Area can be broadly divided into the offshore fishery which occurs outside of the area of Albatross Bay and the inshore fishery within Albatross Bay.

The offshore fishery is further divided into two areas. The offshore net fishery (Northern Shark Fishery) targets tropical sharks and pelagic mackerel more than 200 km offshore from Weipa. The commercial offshore line fishery also targets mackerel and uses troll lines and operates approximately 37 km from coast.

The inshore fin-fishery within Albatross Bay and, potentially within the Biota Sampling Investigation Area, consists of a net and line fishery. The inshore net fishery operates up to 7 nautical miles (nm) from the coast whilst the inshore line fishery operates up to 3 nm from the coast. The inshore fishery targets barramundi and threadfins and is closed from 1 November to 1 February during barramundi breeding season.

In addition to the fin-fish component of the inshore fishery, the mangrove and mud-flat communities in Albatross Bay and the Biota Sampling Investigation Area host a significant commercial mud crab fishery. In 2017 there were 6 commercial mud crab licenced operators within the Weipa area[3]. The commercial mud crab catch reported through logbooks by these licence holders was 33.4 t in 2017[3].

Albatross Bay and the Weipa area are within the Northern Prawn Fishery zone which extends across the Gulf of Carpentaria and is managed by the Australian Fisheries Management Authority (AFMA (ed & rev) 2017). Prawn fishing is the main commercial fisheries activity occurring within Albatross Bay with the dominant species targeted in the bay being tiger, king and banana prawns (*Penaeus esculentus, P. latisulcatus*. and *Fenneropenaeus merguiensis*). The fishery in Albatross Bay is closed for a period of 2 months from 30 September to 30 November. The prawn fishery, whilst being undertaken within the outer areas of Albatross Bay, is not undertaken within the Biota Sampling Investigation Area. However, the mangroves and mudflats within the Biota Sampling Investigation Area provide an important nursery ground for juvenile prawns (Loneragan *et al*., 2002). These juvenile prawns later migrate to the fishing grounds and form part of the fishery.

3.4.3 Guided recreational fishery

Weipa is a destination for recreational anglers with several local and national operators visiting the area for organised guided fishing charters and tournaments including the Weipa Classic tournament. The fishing activities undertaken by the fishing tourism industry target a wide number of species both in inshore and estuarine environments as well as in pelagic areas within and outside of Albatross Bay (WCCC, 2011).

3.4.3.1 Pelagic

The most common pelagic species targeted by fishing tour operators are tuna, mackerel (Grey and Spanish), trevally (Ord. Carangidae) and billfish (e.g. Marlin and Sailfish). Although these species can commonly be found outside the Albatross Bay area, some are often present within the bay in proximity to shallow reef areas. Despite their popularity among recreational fishers, few of the pelagic species targeted are ultimately consumed as most recreational fishing activities on pelagic fish are for catch-and-release (AFMA (ed & rev) 2017). Two potential exceptions could include tuna and mackerel, which may be caught and consumed. Pelagic fish species, although widely targeted and consumed in the area, can move from one foraging ground to another in a short period often covering hundreds of kilometres along the coast or even venturing further offshore. As such, they do not represent a group of interest to this investigation.

3.4.3.2 Barramundi and inshore

Barramundi represents the main target species for most guided recreational fishers in the area with many operators focusing their activities on this fish. Barramundi are distributed across most parts of the tropical Indo-Pacific and are widespread across the Northern Australia region. They are found in various coastal, estuarine and freshwater habitats at different life stages with adults generally living in estuarine areas and juveniles capable of migrating into freshwater environments where they remain until maturity (National Oceans

[3] https://crystal-bowl.com.au/weipa-fishery-summary/weipa-mud-crab/ accessed 27/08/18

Office, 2004). In addition to targeting barramundi, the inshore guided recreational fishery may also target mangrove jack, threadfin and cod.

3.4.4 Recreational fishery

The recreational fishery in the Weipa area plays a role in the local community, representing the most common leisure activity in the area among residents and indigenous communities. The dominant species in the recreational fishery based on 2017 boat ramp surveys[4] include:

- Common coral trout;
- Mud crab;
- Crimson snapper;
- Barramundi;
- Mangrove jack; and
- Golden snapper.

3.4.5 Traditional owner community fisheries

Fishing is an activity for many traditional owners, forming an important part of tradition, cultural identity and maintaining kinship linkages (Henry and Lyle, 2003). Additionally, fishing is an important subsistence activity and it is likely that fisheries resources in the indigenous fishery are consumed at a rate higher than amongst non-indigenous fishers (Cisneros-Montemayor *et al.* 2016). Indigenous communities in the Weipa area predominately use line fishing from shore targeting barramundi, threadfin salmon and queenfish and, using nets, mullet. Additionally, capturing and harvesting of other aquatic species may also form a significant component of the indigenous fishery with mud crabs and shellfish such as oysters (*Saccostrea cucullate*), cockles (*Anadara granosa*) and mud mussels (*Polymesoda coaxans*) being the predominately targeted groups. During sample collection, indigenous people were observed collecting cockles and oysters at low tide from areas between Lorim and Kerr Point.

[4] https://crystal-bowl.com.au/weipa-fishery-summary/

4.0 SAMPLING PROGRAM AND ANALYTICAL PLAN

4.1 Sampling dates and locations

Sampling of biota, surface water and sediments reported in this document was conducted over an eleven-day period from the 16 to 25 July 2018. Except for shore-based collection on two occasions, all other sampling was conducted from a 9m, outboard engine-powered vessel chartered for the duration of the sampling.

The weather during the sampling campaign was fair, with day time temperatures ranging from approximately 30 – 32 ° C with light to moderate winds. The six-weeks preceding the sampling campaign had been dry with only 1 mm of rain recorded at Weipa airport since 1 June 2018[5].

The locations from which samples were collected are presented in Figure 2. These locations were, with minor modifications made to allow for tidal access and habitat quality, consistent with those proposed in the SAQP (Golder 2018a). Additional biota samples were also collected from two sites including:

- Site 1 (Andoom Creek). In addition to the location downstream of the railway bridge proposed for sampling in the SAQP, two additional sub-areas were also sampled comprising:
  - An area in the eastern channel upstream of the confluence of the two channels that form Andoom Creek. This eastern channel does not drain from the Andoom Heavy Equipment Workshop and, as such, was considered an additional reference site. Biota samples collected from this area are denoted with the sample identification: “BT01US”.
  - An area immediately upstream of the railway bridge over Andoom Creek. Biota samples collected from this area are denoted with the sample identification: “BT01DS”.
- Site 3 (Kerr Point). Due to the lack of fin-fish catch to the west of Goonburg Point at site 3, gill nets were set adjacent to the main Weipa channel immediately west of Goonburg Point. Biota samples collected from this area are denoted with the sample identification “BT03A”.

The locations, a brief description of the site, names of samples across the media collected and photographs of sediment samples are summarised in Table 1.

[5] http://www.bom.gov.au/climate/dwo/201807/html/IDCJDW4133.201807.shtml

Site	Sample location	Habitats present	Rationale
1 and 1DS	Andoom Creek: downstream (site 1) and upstream (site 1DS) of the railway crossing	Estuarine creek system lined with dense and extensive mangroves on both banks.	Downstream from areas of the Andoom mining area and the Andoom Heavy Equipment Workshop PFAS source area. Fishing spot for both shore and boat fishing.
2	Wallaby Island on southern bank of the Mission River	Wide sand bank adjacent to a rocky shore.	Downstream receiving environment approximately 2 km west of the mouth of the Trunding Creek which originates in the vicinity of the East Weipa Heavy Equipment Workshop (EWHEQ) PFAS source area and more generally the north Weipa peninsular.
3 and 3A	Kerr and Goonburg Points	Shallow, sandy and muddy foreshore. Shoreline fringed with mangroves.	Receiving environment of the Weipa Fire & Rescue potential PFAS source. Fishing spots for either shore or boat-based fishing and key areas for the collection of bivalves from intertidal shores.
4	Bank in Weipa Channel off Humbug Point	Shallow bank of shell gravel and coarse sand.	
5	Jessica Point off Napranum	Muddy foreshore.	
6	Leithen Creek mouth	Narrow estuarine creek mouth lined with dense and extensive mangroves.	
7	Beening Creek mouth	Narrow estuarine creek mouth lined with dense and extensive mangroves.	Drains areas associated with the Weipa Airport and the East Weipa Heavy Equipment Workshop (EWHEQ) potential PFAS source areas.
8	Hey and Embely River confluence	Wide estuarine mud flats lined with dense and extensive mangroves.	Albeit slightly upstream of potential PFAS sources, the confluence of the site is considered to be within the zone of potential impact from the identified PFAS source areas.
1US	Eastern branch of Andoom Creek	Estuarine creek system lined with dense and extensive mangroves on both banks.	Remote from the inferred drainage associated with the Andoom Heavy Equipment Workshop (AHEQ) potential PFAS source area.
9	Upper Hey River	Wide estuarine mud flats lined with dense and extensive mangroves on both banks.	Reference sites upstream of known potential PFAS source areas.
10	Upper Mission River		
11	North Pine River Bay		





LEGEND

Watercourse
- Major
- Minor

Sample Locations
- Potential Receiving Environment
- Reference Sites
- Biota Sampling Investigation Area

Coordinate System:
GDA 1994 MGA Zone 54
Projection: Transverse Mercator
Datum: GDA 1994

0 2 4 6 8 10
Scale: 1:200,000 @ A3 kilometres

NOTE(S)

Gazetter: © State of Queensland (Department of Natural Resources, Mines and Energy) 2018
Watercourse: © Geoscience Australia.

REFERENCE(S)

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Basemap: Pan-sharpened Landsat 8 OLI Image Service, 31/07/2017

TITLE

BIOTA SAMPLING: SAMPLE LOCATIONS

CONSULTANT

GOLDER

YYYY-MM-DD	2018-10-12
DESIGNED	DC
PREPARED	DC
REVIEWED	JC
APPROVED	GW

PROJECT NO.	CONTROL	REV.	FIGURE
18100235	018	0	2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET HAS BEEN ADJUSTED FROM ISO A1

Table 1: Biota, surface water and sediment sampling sites and descriptions

Sample Site	Description and notes	Site photograph	Water/ Sediment sample ID and photograph	Biota sample ID
S01	Andoom Creek. Andoom Creek is downstream from areas of the Andoom mining area and the Andoom Heavy Equipment Workshop. The creek at the sampling site prior to its confluence with the Mission River is approximately 100 m wide with mangroves on both banks. In addition to sampling at the main site nominated in the SAQP, biota sampling was also done further upstream where more suitable habitat was present and within an eastern branch of the creek (as a reference site) This eastern branch is remote from the PFAS source areas identified.		 SW01/SD01	BT01_Bream_24/07/18 BT01_Bream(2)_24/07/18 BT01_Catfish_24/07/18 BT01_Mudcrab(2)_24/07/18 BT01_Mudcrab_24/07/18 BT01_Prawn(2)_24/07/18 BT01_Prawn_24/07/18 BT01DS_Catfish_23/07/18 BT01DS_Javelinfish(2)_23/07/18 BT01DS_Javelinfish_23/07/18 BT01DS_Mudcrab_23/07/18 BT01DS_Mullet_23/07/18 BT01DS_Rockcod_23/07/18 BT01US_Mullet_23/07/18 BT01US_Rockcod_23/07/18 BT01US_Shrimp_23/07/18
S02	Wallaby Island adjacent to the southern bank of the Mission River. The site is adjacent to the receiving environment for Trunding Creek which drains the north Weipa peninsular including the area in proximity to the East Weipa Heavy Equipment Workshop. The area is characterised by a wide, flat sand bank. Biota samples were collected approximately 200 m from shore except for the gastropod, pipi and oyster samples which were collected from the shore between Wallaby Island and Trunding Creek mouth.		 SW02/SD02	BT02_Cockle_23/07/18 BT02_Gastropod_23/07/18 BT02_Mudcrab_20/07/18 BT02_Pippy_23/07/18 BT02_Rockoyster_23/07/18 BT02_Swimmer(2)_22/07/18 BT02_Swimmer(3)_22/07/18

Sample Site	Description and notes	Site photograph	Water/ Sediment sample ID and photograph	Biota sample ID
S03	Kerr Point. The area consists of a wide mud and fine sand bank to the west of Goonburg Point, a rocky feature that extends from shore into Weipa channel. The shoreline adjacent to the site supports a narrow band of mangrove. Samples from this site were collected immediately adjacent to the shoreline mangrove fringe. The milkfish sample (BT03A_Milkfish_20/07/18) was collected to the east of Goonburg Point at the margins of the Weipa channel.		 SW03/SD03	BT03_Cockle_19/07/18 BT03_Mudcrab_19/07/18 BT03_Rockoyster_19/07/18 BT03_Swimmer_19/07/18 BT03A_Milkfish_20/07/18
S04	Gravel bank in Weipa Channel in the lower Embley River. The substrate consists of shell gravel and coarse sand. During both ebbing and flooding tides, strong currents were encountered at the site. These currents limited the ability to deploy fishing gear other than crab pots and, consequently, the biota samples collected at this site were limited.		 SW04/SD04	BT04_Swimmer_21/07/18

Sample Site	Description and notes	Site photograph	Water/ Sediment sample ID and photograph	Biota sample ID
S05	Jessica Point off Napranum community. This site lies between Napranum and the bulk material handling facility at Weipa. It is within the likely receiving environment of Weipa Fire and Rescue Service and the Weipa Airport. Biota samples were collected via gill netting and crab pots set approximately 400 m from shore. Gastropod and cockle samples were collected on foot from shore. The environment is depositional with thick, soft mud present both adjacent to shore and in the area where crab pots and gill nets were set.		 SW05/SD05	BT05_Catfish_20/07/18 BT05_Cockle_19/07/18 BT05_Gastropod_19/07/18 BT05_Grunter_20/07/18 BT05_Mudcrab_20/07/18 BT05_Swimmer_20/07/18 BT05_Trumpeter_20/07/18
S06	Leithen Creek, south bank of the Weipa Channel. This site consists of an intertidal mudflat that rises from the deeper channel. Sediment at the site was characterised by fine sand and mud. Biota samples were collected along the edge of Weipa channel and, accessible only at high tide, from within the mouth of Leithen Creek.		 SW06/SD06	BT06_Bream(2)_25/07/18 BT06_Bream_25/07/18 BT06_Dmullet_21/07/18 BT06_Mudcrab(2)_18/07/18 BT06_Mudcrab(3)_18/07/18 BT06_Mudcrab_18/07/18 BT06_Mullet_21/07/18 BT06_Shark_18/07/18 BT06_Silverbiddy_21/07/18 BT06_Snapper_18/07/18 BT06_Swimmer_18/07/18

Sample Site	Description and notes	Site photograph	Water/ Sediment sample ID and photograph	Biota sample ID
S07	Beening Creek is the downstream receiving environment associated with the Weipa Airport and East Weipa Heavy Equipment Workshop. The lower reach of the creek prior to entering the Embley River is approximately 20m in width with dense mangroves on either bank. Sediment collected at the site comprised fine mud. Biota samples were obtained in crab pots, cast nets and gill nets set.		 SW07/SD07	BT07_Catfish_17/07/18 BT07_Grunter_24/07/18 BT07_Javelinfish_24/07/18 BT07_Mudcrab(2)_17/07/18 BT07_Mudcrab_24/07/18 BT07_Mullet(2)_16/07/18 BT07_Mullet_24/07/18 BT07_Scat(2)_16/07/18 BT07_Scat_16/07/18 BT07_Snapper_16/07/18
S08	This site is adjacent to the confluence of the Hey and Embley Rivers. A wide, intertidal mud bank extends from the mangrove-fringed land. Both the sediment and water sample for the site were collected within the influence of the Embley River with the sediment sample comprised of fine mud. Biota samples were collected adjacent to the mangroves.		 SW08/SD08	BT08_Catfish(2)_16/07/18 BT08_Catfish_19/07/18 BT08_Javelinfish_19/07/18 BT08_Mudcrab_17/07/18 BT08_Mullet(2)_19/07/18 BT08_Mullet(3)_19/07/18 BT08_Mullet_19/07/18

Sample Site	Description and notes	Site photograph	Water/ Sediment sample ID and photograph	Biota sample ID
S09	This site on the Hey River was chosen as a reference location. Sampling was performed within a creek that drains into the main Hey River. The creek is approximately 40 m wide, lined with dense mangroves on both banks and sediment consisting of shell grit and fine gravel.		 SW09/SD09	BT09_Bream_19/07/18 BT09_Catfish_19/07/18 BT09_Mudcrab_19/07/18 BT09_Rockcod_19/07/18
S10	This site on the Upper Mission River was chosen as a reference location. The site is within a dense tidal mangrove creek system with soft mud substrate.		 SW10/SD10	BT10_Catfish(2)_22/07/18 BT10_Catfish_22/07/18 BT10_Mudcrab_22/07/18 BT10_Mullet_22/07/18 BT10_Scat_22/07/18 BT10_Swimmer(2)_22/07/18 BT10_Swimmer_22/07/18

Sample Site	Description and notes	Site photograph	Water/ Sediment sample ID and photograph	Biota sample ID
S11	This site on the north-eastern shore of Pine River Bay was selected as a reference site. It was characterised by an open estuarine system with extensive mangrove ecosystems and wide tidal mudflats.		 SW11/SD11	BT11_Catfish_18/07/18 BT11_Herring_18/07/18 BT11_Mullet(2)_18/07/18 BT11_Mullet(3)_18/07/18 BT11_Mullet(4)_18/07/18 BT11_Mullet_18/07/18 BT11_Salmon(2)_18/07/18 BT11_Salmon_18/07/18 BT11_Swimmer_18/07/18

4.2 Surface water and sediment sampling

Surface water and sediment sampling followed the procedures outlined in the SAQP (Golder 2018a) with each being collected co-located with the biota samples. Additionally, where possible due to access constraints, water samples were collected on a falling tide. In-situ water quality measurements were made using a YSI EXO1 multiparameter water quality meter capable of recording: temperature, pH, turbidity, oxygen reduction potential, electrical conductivity and dissolved oxygen. In situ water quality data is presented in Section 6.1.1.

4.3 Biota samples

Biota were collected under General Fisheries Permit No. 181742 and Animal Ethics Approval No. CA 2015/08/893 held by FRC Environmental (FRC). The biota sampling techniques employed generally followed those outlined in the SAQP (Golder 2018a) and consisted of:

- Gill nets 20m in length, 1.8m drop and 40mm mesh. Each net was set and retrieved at 15 minute intervals to minimise by-catch and in accordance with the General Fisheries Permit. Multiple individual nets were set simultaneously at some sites;
- Baited crab pots with up to 10 baited pots set at each site. Pots were typically left overnight although where sufficient crab sample was obtained during daylight hours, pots were retrieved the same day;
- Beam trawl consisting of a 1m x 0.5m frame and 1mm mesh net towed behind a vessel. This trawl was employed specifically to target prawn; and
- Six- and eight-feet diameter cast nets cast from the vessel.

Biota caught and subsequently submitted for analysis were broadly consistent with those nominated in the SAQP (Golder 2018a). Notable exceptions were general lack of barramundi and prawns. This was supported by local anecdotal reports that during the period over which sampling was performed there was very few prawns in the study area. Despite significant effort using the beam trawl, the only prawns obtained were caught opportunistically in cast nets and only within Andoom Creek. Whilst barramundi were not caught, species with similar ecologies and trophic characteristics (including the various snapper and bream species) were obtained and provide a suitable surrogate for barramundi.

A total of 257 fish (32 species), 136 crustaceans (5 species), 48 molluscs (3 species) and 32 gastropods (1 species) were caught during the survey. Of the 473 individuals across all taxa caught, 193 were retained for subsequent laboratory analysis. All other organisms were released or, where considered unlikely to be viable, were euthanised.

Fishing gear used, total fishing effort and catch by species at each site compiled by FRC Environmental is included as Appendix A.

Where tissues from individual organisms from the same species collected from the same site were of insufficient mass to constitute a sample, multiple individuals were processed together. In total, the 193 individuals retained formed 84 laboratory samples. Details of these samples are included in Appendix B.

The species that were retained for analysis represented the taxa listed below.

Fin-fish:

- *Acanthopagrus palmaris* (northwest black bream);
- *Amniataba caudavittata* (yellowtail grunter);
- *Chanos chanos* (milkfish);

- *Eleutheronema tetradactylum* (blue threadfin);
- *Elops hawaiensis* (Hawaiian giant herring);
- *Epinephelus coioides* (goldenspotted rockcod);
- *Epinephelus malabaricus* (blackspotted rockcod);
- *Euristhmus lepturus* (longtail catfish);
- *Gerres subfasciatus* (common silverbiddy);
- *Liza vaigiensis* (diamondscale mullet);
- *Lutjanus carponotatus* (striped snapper);
- *Lutjanus russellii* (Moses' snapper);
- *Mugil cephalus* (sea mullet);
- *Neoarius graeffei* (blue catfish);
- Pelates quadrilineatus (fourline striped grunter);
- *Pomadasys kaakan* (spotted javelinfish);
- *Portunus armatus* (blue swimmer crab);
- *Rhizoprionodon acutus* (milk shark); and
- *Selenotoca multifasciata* (striped scat).

Crustaceans:

- *Scylla serrata* (mud crab);
- *Metapenaeus endeavouri* (endeavour prawn); and
- *Penaeus esculentus* (brown tiger prawn).

Bivalve and gastropods:

- *Batillariid spp.* (mud whelk);
- *Crassostrea gigas* (pacific oyster);
- *Plebidonax deltoides* (pipi); and
- *Tegillarca granosa* (blood cockle).

Upon collection, organisms were euthanised, rinsed in PFAS-free deionised water, double-bagged and kept whole and placed on ice whilst on the vessel. Once onshore the biota samples were transferred to a freezer prior to subsequent transport to the laboratory. All samples were transferred to the laboratory under Chain of Custody documentation.

4.3.1 Laboratory sample preparation

Biota samples were processed to extract the edible portions of the whole-body samples provided to the laboratory. The edible portions were considered to consist of:

- Fillets of fin fish processed skin-on;

- The adductor muscle of bivalves;
- Soft tissue of gastropods; and
- Soft tissue from crustaceans comprising carapace meat and claws from crabs and tail meat from prawns after removal of the head).

Prior to dissection the analytical laboratory photographed and recorded the weight of all individual organisms comprising a sample. Dissection of samples was performed in the laboratory using PFAS-free equipment and decontamination techniques to minimise the possibility of sample cross-contamination.

5.0 ASSESSMENT CRITERIA

The analytical results derived from the sampling have been used in a Tier 1 Human Health and Ecological Risk Assessment (HHERA). A Tier 1 risk assessment involves screening analytical results against an adopted set of guideline values as described in the following sections.

5.1 Biota

The *Food and Standards Australia New Zealand report on Perfluorinated Chemicals in Food* (FSANZ, 2017) derived PFOS + PFHxS and PFOA trigger points for certain food groups which have been adopted in this assessment as shown in Table 2. The trigger points are the maximum concentration of these chemicals that could be present in individual foods or food groups, so that even high consumers of these foods would not have dietary exposure exceeding the relevant TDI (FSANZ, 2017).

Table 2: Trigger Point for Perfluorinated Chemicals in Food (Source: FSANZ (2017))

Food	Food classification	Proposed trigger points for investigation (µg/kg wet weight)		Derivation
		PFOS, PFOS+ PFHxS	PFOA	
Fish and Seafood	Crustaceans#	65	520	Children 2-6 years, median consumption
	Finfish (all)	5.2	41	Children 2-6 years, P90 consumption

Notes: #occasionally consumed food, trigger points for investigation for crustaceans will be applied to molluscs due to the small number of consumers of molluscs.

5.2 Surface water

As part of the Tier 1 Ecological Risk Assessment, surface water analytical results are compared to the guideline values summarised in Table 3.

Table 3: Adopted Surface Water Guideline Values (Source: NEMP, 2018)

Exposure Scenario	PFOS (µg/L)	PFOA (µg/L)
Surface water		
High conservation/ecological value systems (99% species protection) (µg/L)	0.00023	19
Slightly to moderately disturbed ecosystems (95% species protection) (µg/L)	0.13	220

The selected guideline values for aquatic ecosystems are for freshwater ecosystems. Whilst the ecosystem sampled is estuarine or marine, the PFAS National Environment Management Plan (NEMP, 2018) notes that freshwater values are to be used on an interim basis until final marine guideline values are established using the nationally-agreed process under the Australian and New Zealand Guidelines for Fresh and Marine Water Quality.

Additionally, the screening values used are based on the level of ecosystem modification in accordance with ANZECC (2000). For bioaccumulative or biomagnifying toxicants (such as PFAS) an increased level of species protection is adopted i.e., for an aquatic ecosystem described as *slightly to moderately disturbed* the 99% species protection level is adopted. The waterbodies within the Investigation Area meet varied descriptions of ecosystem disturbance and modification ranging from *highly disturbed* to *slightly-to moderately disturbed.* To introduce a level of conservatism in the assessment, all water bodies sampled are assessed as either *high ecological value* or *slightly to moderately disturbed* and, therefore, all are screened against the most conservative (*high ecological value system*) screening value.

In addition to the screening undertaken to inform the Tier 1 ecological risk assessment, surface water samples have been screened against human health-based guidelines endorsed in the PFAS National Environment Management Plan (NEMP, 2018) applicable to use of surface water for recreation. These guidelines are presented in Table 4.

Table 4: Health-based guidelines: recreational use of water

Exposure scenario	PFOS+PFHxS	PFOA
Recreational use of water	0.7 µg/L	5.6 µg/L

5.3 Sediments

No reliable international screening guidelines are available for PFOS and PFOA in sediments. As a result, and in their absence, an approach consistent with the ANZECC guidelines for toxicants in sediments has been used. The approach uses the concentration of a toxicant in background or reference sites multiplied by an appropriate factor (notionally 2) as an adopted screening value. The background reference sites are: north eastern Pine River Bay (S11), upstream of areas of known AFFF use in the Mission River (S10) and the southern branch of the Hey River (S09).

6.0 SUMMARY RESULTS AND DISCUSSION

6.1 Surface water

6.1.1 In situ surface water quality

Coincidental with the collection of surface water samples for laboratory analysis, in situ water quality parameters were also recorded. These recordings are summarised in Table 5.

Table 5: In-situ surface water quality parameters

Site	Date	Time	Tidal condition	Temp (° C)	pH	Turbidity (FNU)	Oxygen Reduction Potential (mV)	EC (µS/cm)	Dissolved Oxygen (mg/L)
S01	23/07/2018	10:45	Rising	25.902	7.16	16.67	-34.6	45,837	4.77
S02	21/07/2018	9:39	Rising	24.419	7.92	8.22	-78.7	51,493	5.47
S03	20/07/2018	10:16	Falling	23.89	7.97	8.34	-81.6	51,498	6.41
S04	21/07/2018	14:15	Falling	25.93	8	4.43	-83.8	53,479	7.11
S05	20/07/2018	8:06	Rising	24.58	7.94	20.14	-80.2	52,051	6.21
S06	17/07/2018	11:46	Rising	26.65	7.88	22.39	-75.8	53,942	6.33
S07	16/07/2018	9:02	Falling	25.8	7.36	23.05	-	49,183	4.19
S08	16/07/2018	10:18	Falling	25.3	7.78	15	-72.3	52,560	5.81
S09	19/07/2018	11:10	Falling	25.35	7.73	11.54	-68.1	53,054	6.1
S10	22/07/2018	12:40	Rising	27.033	7.33	17.14	-44.9	47,205	6.42
S11	18/07/2018	8:36	Falling	25.49	7.77	24.81	-70.8	52,385	6.26

The physiochemistry of all samples was consistent with that of seawater. Electrical conductivity (EC) representative of the salinity of the water and pH showed minor variation between sites. Recordings of both EC and pH at sample sites S01 and S10 and, to a lesser extent, S07 were marginally lower than the other sites. Sites S01, S10 and S07 are likely to be influenced by freshwater discharge with lower salinity and lower pH more than the other sites which are more typical of areas of open seawater with limited freshwater influence within Albatross Bay.

6.1.2 Surface water analytical laboratory results

Tabulated surface water analytical results, with a comparison to the relevant assessment criteria for ecological and human health as described in Section 5.2 are presented in Table A of Appendix C. Laboratory certificates for primary surface water samples are provided in Appendix D.

Concentrations of PFAS compounds in all surface water samples are reported below the laboratory limit of reporting (LOR) and, by default, below adopted screening guidelines for the assessment of both ecological and human health risk.

6.2 Sediment

Tabulated sediment analytical results are presented in Table B in Appendix C. Laboratory certificates for primary surface water samples are provided in Appendix E.

Concentrations of PFAS compounds in all sediment samples are reported below the LOR. By virtue of the absence of reported results being >LOR, it is not possible to derive a site-specific guideline as discussed in Section 5.3.

6.3 Biota

Tabulated biota tissue analytical results are presented in Table C of Appendix C. Laboratory certificates for primary biota tissue samples are provided in Appendix F.

There was insufficient tissue mass recoverable from a cockle sample collected at site S02 (sample: BT02_Cockle_23/07/18) for laboratory analysis to proceed. Of the remaining 83 samples analysed, the concentration of all PFAS compounds reported were below laboratory LOR in 79 samples.

Samples that had reported concentrations above laboratory LOR in one or more PFAS compounds together with the reported concentrations are show in Table 6

Table 6: Biota tissue samples reporting concentrations of PFAS above laboratory LOR

Sample	PFOA (µg/kg)	PFHxS (µg/kg)	PFBA (µg/kg)	PFPeS (µg/kg)	PFOS (µg/kg)	Sum PFAS (µg/kg)
BT05_GASTROPOD_19/07/18	0.5	0.4	<LOR	<LOR	<LOR	0.9
BT07_MUDCRAB(2)_17/07/18	<LOR	<LOR	0.6	<LOR	<LOR	0.6
BT07_MULLET_24/07/18	<LOR	<LOR	<LOR	0.6	<LOR	0.6
BT07_SCAT(2)_16/07/18	<LOR	<LOR	<LOR	<LOR	0. 7	0.7

Concentrations reported as µg/kg for direct comparison with adopted assessment criteria. All LOR = 0.5 µg/kg. PFOA: Perfluorooctanoic acid, PFHxS: Perfluorohexane sulfonic acid, PFBA: Perfluorobutanoic acid, PFPeS: Perfluoropentane sulfonic acid, PFOS: Perfluorooctane sulfonic acid.

The concentrations reported above laboratory LOR are only marginally above LOR (0.5 µg/kg), with the highest reported concentration of a single PFAS compound of 0. 7 µg/kg and a total PFAS concentration across 28 analysed compounds of 0.9 µg/kg.

All reported concentrations greater than LOR are significantly (approximately two orders of magnitude) below the adopted human health screening guidelines.

7.0 QUALITY ASSURANCE

Data Quality Objectives (DQOs) adopted for this investigation are described in detail in the SAQP (Golder 2018a). Specific mechanisms for checking the accuracy and precision of analytical data, to ensure that DQOs are met, involve the analysis and review of laboratory and field quality control (QC) samples.

QC samples collected during the investigation included intra-laboratory duplicates, inter-laboratory triplicates, rinsate and trip blanks as summarised in Table 7. All field QAQC samples were analysed for the same PFAS suite and at the same laboratory limit of reporting as the corresponding primary sample.

Table 7: Summary of QA/QC Samples Collected and Analysed

QA/QC ID	Primary sample ID	Matrix	Sample Type
QAQC200	SD11	Sediment	Interlab replicate
QAQC100	SD11	Sediment	Intralab duplicate
QAQC202	BT07_Mullet_24/07/18	Biota tissue	Interlab replicate
QAQC203	BT09_Rockcod_19/07/18	Biota tissue	Interlab replicate
QAQC204	BT01_Prawn(2)_24/07/18	Biota tissue	Interlab replicate
QAQC205	BT05_Cockle_19/07/18	Biota tissue	Interlab replicate
QAQC206	BT03_Mudcrab_19/07/18	Biota tissue	Interlab replicate
QAQC207	BT01_Mudcrab(2)_24/07/18	Biota tissue	Interlab replicate
QAQC208	BT05_Gastropod_19/07/18	Biota tissue	Interlab replicate
QAQC209	BT07_Mudcrab(2)_17/07/18	Biota tissue	Interlab replicate
QAQC201	SW5	Surface water	Interlab replicate
QAQC101	SW5	Surface water	Intralab duplicate
QAQC400	-	Rinsate water	Rinsate collected from bowl used in sediment homogenisation
QAQC404	-	Rinsate water	Rinsate collected from crab pot
QAQC402	-	Rinsate water	Rinsate collected from gill net #1
QAQC403	-	Rinsate water	Rinsate collected from gill net #2
QAQC401	-	Rinsate water	Rinsate collected from sediment grab sampler
QAQC300	-	Water	Trip blank

In addition to field QC samples, the laboratory prepared and analysed the following QC/QA samples with each laboratory batch:

- Laboratory duplicates (DUP);

- Method blanks (MB);
- Surrogate spikes;
- Matrix spikes (MS); and
- Laboratory control samples (LCS).

7.1 Data Validation

The validity of analytical data was assessed by critical review of the QA/QC sample results. A summary of the data quality review for each analytical batch is provided and summarised in Appendix G along with the analytical results and laboratory certificates for field QA/QC samples.

7.1.1 Surface water QA/QC Results

All surface water samples were received with appropriate chain of custody documentation, using appropriate storage and were analysed within the respective holdings times.

All intra- and inter-lab surface water duplicate samples reported PFAS concentrations below LOR and, whilst therefore no Relative Percent Difference (RPD) could be calculated, no differences intra- and inter-lab samples was recorded.

All laboratory QC samples were within the laboratory quality control specification. All surrogate recoveries were within the laboratory range of acceptance.

7.1.2 Sediment QA/QC Results

All sediment samples were received with appropriate chain of custody documentation, using appropriate storage and were analysed within the respective holdings times.

All intra- and inter-lab sediment duplicate samples reported PFAS concentrations below LOR and, whilst therefore no Relative Percent Difference (RPD) could be calculated, no differences intra- and inter-lab samples was recorded

All laboratory QC samples were within the laboratory quality control specification. All surrogate recoveries were within the laboratory range of acceptance.

7.1.3 Biota QA/QC Results

All biota samples were received with appropriate chain of custody documentation, using appropriate storage and were analysed within the respective holdings times.

The primary laboratory prepared the biota samples and therefore it was not possible to analyse a blind intra-lab duplicate. Of the four biota tissue samples where PFAS was found at or marginally above the LOR at the primary laboratory, the secondary laboratory consistently reported these as below LOR. It was not possible to calculate an RPD value in these instances.

All laboratory QC samples were within the laboratory quality control specification. All surrogate recoveries were within the laboratory range of acceptance.

7.1.4 Rinsate QA/QC Results

PFAS concentrations in all rinsate samples collected during the program were reported by the laboratory to be below LOR for all compounds, indicating that cross contamination by field equipment is unlikely to have occurred.

7.1.5 Trip blank QA/QC Results

One water field blank sample (QAQC300) was prepared in the field on 20 July 2018. This sample was placed in a cool box with ice together with the other samples collected on the day and was transported to Eurofins with samples of biota and sediment that constituted the second sample batch received by the laboratory on 27 July 2018.

The PFAS concentrations reported for the field blank were below LOR for all PFAS compounds, indicating that cross contamination of samples from shipping, handling and laboratory sources is unlikely to have occurred.

7.2 QA/QC Summary

Based on the validation procedure employed, the overall quality of the analytical data is considered to be of an acceptable standard for interpretive use.

8.0 CONCLUSIONS

The data collected and presented in this report satisfied the Data Quality Indicators of precision, accuracy, representativeness, completeness and comparability.

Biota samples analysed include species commonly consumed across the Biota Sampling Investigation Area or, by virtue of their ecology, surrogates of species commonly consumed. Species sampled included a range of functional ecological groups including: pisciverous, omnivorous and detritivorous fish; omnivorous crustaceans; carnivorous gastropods and filter-feeding sessile bivalves; and species with a range of site fidelity and mobility from pelagic fish to sessile invertebrates.

Reported PFAS concentrations in all eleven surface water and sediment samples analysed were below laboratory LOR.

Of the 83 biota samples collected across the Biota Sampling Investigation Area and analysed for PFAS, concentrations were reported below the laboratory LOR in 79 samples. Four biota samples (three collected from Site 07 in Beening Creek and one from Site 05 adjacent to Jessica Point off Napranum) reported detections for PFAS with concentrations at or marginally above the laboratory LOR.

The recorded PFAS concentrations in biota and surface water samples were all an order of magnitude (or greater) below adopted guideline values. The recorded PFAS concentrations in sediment were all reported below laboratory Limits of Reporting. Therefore, it is concluded from the dataset presented that there is likely to be:

- Minimal risk to human health from the consumption of aquatic biota in the study area, unlikely to be an adverse impact to the aquatic food consumption EV or the aquaculture EV (although not occurring in the area at present); and
- Negligible risk to recreational users and ecological health from the recorded PFAS concentrations in surface waters and there is unlikely to be an adverse impact to the EVs: recreational use and aquatic ecosystem health environmental values.

Whilst all surface water samples documented in this report recorded concentrations of PFAS below the laboratory LOR, surface water samples reported in the PSI (Golder 2018b) reported detectable concentrations of PFAS that exceeded the adopted guideline values. This may be due to several factors including:

- Surface water tested as part of the biota investigation was collected from a boat in a central position of the watercourse with local water quality indicative of seawater whilst surface water tested as part of the PSI was collected from the bank; and

- Seasonal influence with surface water tested as part of the biota investigation collected during the dry season when surface and potentially groundwater PFAS migration pathways may be reduced.

The biota sampling was focussed on the receiving environment of the four source areas identified in the SAQP and later confirmed in the PSI. In addition to these four key locations, the PSI (Golder 2018b), running in parallel with the biota sampling program, identified a further two primary PFAS source areas and six secondary source areas. Additionally, the PSI provided a greater understanding of the lateral extent and potential pathways of PFAS movement particularly associated with Lorim Point and Evans Landing.

Whilst these additional locations were not specifically targeted and as such, the potential for localised impact and risk cannot be discounted in specific areas, the absence of detectable PFAS concentrations reported in the media in which PFAS is more likely to be resident (sediment and biota) suggest that there is no widespread contamination in the receiving environment across the Biota Sampling Investigation Area and that there is unlikely to be widespread adverse impact to the environmental values assessed in this report.

9.0 IMPORTANT INFORMATION

Your attention is drawn to the document Important Information Relating to this Report, which is included in Appendix H of this report. The statements presented in this document are intended to advise you of what your realistic expectations of this report should be, and to present you with recommendations on how to minimise the risks associated with the services provided for this project. The document is not intended to reduce the level of responsibility accepted by Golder Associates, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing

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Signature Page

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APPENDIX A

Fishing gear used, total fishing effort and catch by species by site. Report prepared by FRC Environmental.

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30 July 2018 Our Reference: 180703Li

James Comley
Senior Environmental Scientist
Golder Associates Pty Ltd
147 Coronation Drive
MILTON QLD 4064

Dear James,

Re: North Queensland Biota Sampling

frc environmental was commissioned to collect a composite sample of fish and crustaceans from estuarine sites in the Pine River Bay, Weipa Channel, Leithen Creek, Hey River, Mission River, Andoom Creek and Beening Creek areas. The aim was to collect 5 g wet weight of biota from each site with a target priority for samples to be any combination of:

- higher trophic
- for human consumption, or
- sedentary.

Sample Collection Area

Biota were collected between 16 and 25 July 2018 from:

- five locations within Weipa Channel:
  - Kerr Point (Site 3)
  - Evans Landing Jetty (Site 3A)
  - the centre of Weipa channel (Site 4)
  - Jessica Point (Site 5), and
  - Leithen Creek mouth (Site 6).
- two locations within the Mission River:
  - Wallaby Island (Site 2), and

  - upper Mission River (Site 10).
- two locations within the Hey River:
  - Hey and Embley River confluence (Site 8), and
  - Upper Hey River (Site 9).
- three locations on Andoom Creek (Site 1, Site 1 US and Site 1 DS)
- one location on Beening Creek (Site 7), and
- one location in north Pine River Bay (Site 11).

The sampling of fishes was conducted under General Fisheries Permit No. 181742 and Animal Ethics Approval No. CA 2015/08/893 issued to frc environmental.

Biota

Biota were caught using a combination of gill nets, crab pots, line fishing, beam trawl, cast net and by hand (Table 1). All biota that was suitable for analysis was immediately ethically euthanised, placed on ice and transferred to a Golder Associates Pty Ltd representative.

A total of 257 fish (32 species), 136 crustaceans (5 species), 48 molluscs (3 species) and 32 gastropods (1 species) were caught during the survey (Table 2-5). The species that were retained for analysis were:

- *Acanthopagrus palmaris* (northwest black bream)
- *Amniataba caudavittata* (yellowtail grunter)
- *Batillariid* spp. (batillariid)
- Chanos chanos (milkfish)
- *Crassostrea gigas* (pacific oyster)
- *Eleutheronema tetradactylum* (blue threadfin)
- *Elops hawaiensis* (Hawaiian giant herring)
- *Epinephelus coioides* (goldenspotted rockcod)
- *Epinephelus malabaricus* (blackspotted rockcod)
- *Euristhmus lepturus* (longtail catfish)
- *Gerres subfasciatus* (common silverbiddy)
- *Liza vaigiensis* (diamondscale mullet)

- *Lutjanus carponotatus* (striped snapper)
- *Lutjanus russellii* (Moses' snapper)
- *Metapenaeus endeavouri* (endeavour prawn)
- *Mugil cephalus* (sea mullet)
- *Neoarius graeffei* (blue catfish)
- *Pelates quadrilineatus* (fourline striped grunter)
- *Penaeus esculentus* (brown tiger prawn)
- Plebidonax deltoides (pipi)
- *Pomadasys kaakan* (spotted javelinfish)
- *Portunus armatus* (blue swimmer crab)
- *Rhizoprionodon acutus* (milk shark)
- *Scylla serrata* (mud crab)
- *Selenotoca multifasciata* (striped scat)
- *Tegillarca granosa* (blood cockle)

Other biota was caught in the surveys but not retained for analysis. If native, these were returned to the water and if exotic, were ethically euthanised. These included:

- Aetobatus ocellatus (whitespotted eagle ray)
- *Ambassis interrupta* (longspine glassfish)
- *Atherinomorus vaigiensis* (common hardyhead)
- Carcharhinus sp. (shark)
- *Clibanarius taeniatus* (yellow-striped hermit)
- *Epinephelus lanceolatus* (Queensland groper)
- *Glossogobius* sp. (goby)
- *Hippocampus* sp. (seahorse)
- *Leiognathus equulus* (common ponyfish)
- *Megalops cyprinoides* (oxeye herring)
- *Pristis zijsron* (green sawfish)
- *Scomberoides commersonnianus* (giant queenfish)

- Scomberomorus commerson (Spanish mackeral)
- *Tetractenos* sp. (toadfish)
- Zenarchopterus buffonis (northern river garfish)

James, if you have any queries, please do not hesitate to contact us.

Wishing you well with the project,



Andrew Bentley

On behalf of frc environmental.

Table 1 Sampling effort used during the July 2018 survey

Site	Habitat	Method	Date In	Time In	Date Out	Time Out	Effort
Site 1	main channel	gill net (2)	24/7/18	9:30	24/7/18	10:30	20m x 1.8m, 40mm mesh
		crab pot (11)	24/7/18	9:00	24/7/18	11:00	–
		cast net (2)	24/7/18	10:00	–	–	6' and 8' cast net
Site 1 DS	main channel	gill net (2)	23/7/18	9:30	23/7/18	10:30	20m x 1.8m, 40mm mesh
		crab pot (6)	23/7/18	9:00	23/7/18	12:45	–
Site 1 US	main channel and side creek	gill net (2)	23/7/18	10:45	23/7/18	12:30	20m x 1.8m, 40mm mesh
		crab pot (5)	23/7/18	9:00	23/7/18	12:45	–
		cast net (1)	23/7/18	9:30	–	–	6' cast net
		line (1)	23/7/18	10:30	–	–	–
Site 2	bay edge	cast net (1)	20/7/18	12:00	–	–	6' cast net
		gill net (2)	21/7/18	9:30	21/7/18	12:00	20m x 1.8m, 40mm mesh
		crab pot (7)	21/7/18	11:00	22/7/18	9:00	–
	mud flat	transect walk (2)	23/7/18	13:00	23/7/18	15:00	200m
Site 3	bay edge	crap pot (9)	18/7/18	14:00	19/7/18	7:00	–
		gill net (3)	19/7/18	7:30	19/7/18	8:00	20m x 1.8m, 40mm mesh
		gill net (3)	20/7/18	10:00	20/7/18	11:00	20m x 1.8m, 40mm mesh
		gill net (2)	25/7/18	7:00	25/7/18	7:30	20m x 1.8m, 40mm mesh
	mud flat	transect walk (2)	19/7/18	16:00	19/7/18	17:30	300 m
Site 3A	bay edge	gill net (3)	20/7/18	9:00	20/7/18	9:30	20m x 1.8m, 40mm mesh

Site	Habitat	Method	Date In	Time In	Date Out	Time Out	Effort
Site 4	bay	crab pot (6)	20/7/18	12:00	21/7/18	8:00	–
		gill net (1)	21/7/18	8:30	21/7/18	8:45	20m x 1.8m, 40mm mesh
		gill net (2)	25/7/18	9:15	25/7/18	10:15	20m x 1.8m, 40mm mesh
Site 5	bay edge	crab pot (10)	19/7/18	14:00	20/7/18	8:00	–
		gill net (2)	20/7/18	8:30	20/7/18	9:00	20m x 1.8m, 40mm mesh
	mud flat	transect walk (2)	19/7/18	14:30	19/7/18	15:30	200 m
Site 6	bay edge	crab pot (10)	17/7/18	11:00	18/7/18	7:00	–
	bay edge	gill net (2)	21/7/18	12:00	21/7/18	12:45	–
	side creek	cast net (1)	21/7/18	13:00	–	–	6' cast net
		line (1)	25/7/18	8:00	–	–	–
		cast net (1)	25/7/18	8:30	–	–	6' cast net
		gill net (1)	25/7/18	8:00	25/7/18	9:00	20m x 1.8m, 40mm mesh
Site 7	main channel	crab pot (6)	16/7/18	7:30	17/7/18	7:00	–
		cast net (2)	16/7/18	8:00	–	–	6' and 8' cast net
		beam trawl	16/7/18	9:00	–	–	1m x 0.5m, 1mm mesh
		line (2)	16/7/18	8:00	–	–	–
		beam trawl	17/7/18	7:30	–	–	1m x 0.5m, 1mm mesh
		cast net (1)	24/7/18	13:00	–	–	6' cast net

Site	Habitat	Method	Date In	Time In	Date Out	Time Out	Effort
Site 8	channel edge	cast net (1)	16/7/18	10:40	–	–	6' cast net
		crab pot (6)	16/7/18	10:00	17/7/18	9:00	–
		gill net (1)	16/7/18	10:30	16/7/18	11:00	60m x 1.8m, 40mm mesh
		gill net (1)	17/7/18	10:10	17/7/18	11:10	60m x 1.8m, 40mm mesh
		gill net (3)	19/7/18	9:00	19/7/18	9:15	20m x 1.8m, 40mm mesh
Site 9	channel edge	crab pot (10)	19/7/18	11:00	19/7/18	12:30	–
		gill net (2)	19/7/18	11:00	19/7/18	12:30	20m x 1.8m, 40mm mesh
		cast net (2)	19/7/18	12:00	–	–	6' and 8' cast net
Site 10	main channel	gill net (2)	22/7/18	9:30	22/7/18	15:45	20m x 1.8m, 40mm mesh
		crab pot (11)	22/7/18	9:30	22/7/18	15:00	–
		cast net (2)	22/7/18	10:00	–	–	6' and 8' cast net
		line (2)	22/7/18	10:00	–	–	–
Site 11	bay edge	gill net (3)	18/7/18	8:30	18/7/18	9:00	20m x 1.8m, 40mm mesh
		crab pot (10)	18/7/18	8:00	18/7/18	13:00	
		beam trawl	18/7/18	10:00	–	–	1m x 0.5m, 1mm mesh
		cast net (2)	18/7/18	10:00	–	–	6' and 8' cast net

Table 2 Biota caught and retained at sites within the Weipa Channel in the July 2018 survey

Taxa Name	Site	Site 3 (Kerr Point)			Site 3A (Evans Landing Jetty)			Site 4 (Weipa Channel)			Site 5 (Jessica Point)			Site 6 (Leithen Creek)			Total		
	Common Name	Caught	Retained	# of Samples	Caught	Retained	# of Samples	Caught	Retained	# of Samples	Caught	Retained	# of Samples	Caught	Retained	# of Samples	Caught	Retained	# of Samples
Acanthopagrus palmaris	northwest black bream	0	0	0	0	0	0	0	0	0	0	0	0	3	2	2	3	2	2
Aetobatus ocellatus	whitespotted eagle ray	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Amniataba caudavittata	yellowtail grunter	0	0	0	0	0	0	0	0	0	2	2	1	0	0	0	2	2	1
Batillariid spp.	batillariid	0	0	0	0	0	0	0	0	0	20	20	1	0	0	0	20	20	1
Carcharhinus sp.	shark	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Chanos chanos	milkfish	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1
Clibanarius taeniatus	yellow-striped hermit	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	7	0	0
Crassostrea gigas	pacific oyster	20	20	1	0	0	0	0	0	0	0	0	0	0	0	0	20	20	1
Gerres subfasciatus	common silverbiddy	0	0	0	0	0	0	0	0	0	0	0	0	3	1	1	3	1	1
Glossogobius sp.	goby	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0
Leiognathus equulus	common ponyfish	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	9	0	0
Liza vaigiensis	diamondscale mullet	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	2	1	1
Lutjanus carponotatus	striped snapper	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
Mugil cephalus	sea mullet	0	0	0	0	0	0	0	0	0	0	0	0	21	6	1	21	6	1
Neoarius graeffei	blue catfish	0	0	0	0	0	0	0	0	0	6	1	1	0	0	0	6	1	1
Pelates quadrilineatus	fourline striped grunter	0	0	0	0	0	0	0	0	0	2	2	1	0	0	0	2	2	1
Portunus armatus	blue swimmer crab	3	2	1	0	0	0	10	2	1	9	2	1	5	1	1	27	7	4
Rhizoprionodon acutus	milk shark	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
Scomberoides commersonnianus	giant queenfish	0	0	0	2	0	0	0	0	0	0	0	0	2	0	0	4	0	0
Scylla serrata	mud crab	5	1	1	0	0	0	0	0	0	11	1	1	10	3	3	26	5	5
Tegillarca granosa	blood cockle	3	3	1	0	0	0	0	0	0	10	10	1	0	0	0	13	13	2
Zenarchopterus buffonis	northern river garfish	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0
Total		**32**	**26**	**4**	**4**	**1**	**1**	**17**	**2**	**1**	**60**	**38**	**7**	**61**	**16**	**11**	**174**	**83**	**24**

Table 3 Biota caught and retained at sites in Mission River and Hey River during the July 2018 survey

Taxa Name	Site	Site 2 (Wallaby Island)			Site 10 (upper Mission River)			Site 8 (Hey & Embley River Confluence)			Site 9 (upper Hey River)			Total		
	Common Name	Caught	Retained	# of Samples	Caught	Retained	# of Samples	Caught	Retained	# of Samples	Caught	Retained	# of Samples	Caught	Retained	# of Samples
Acanthopagrus palmaris	northwest black bream	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
Atherinomorus vaigiensis	common hardyhead	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0
Batillariid spp.	batillariid	12	12	1	0	0	0	0	0	0	0	0	0	12	12	1
Carcharhinus sp.	shark	1	0	0	0	0	0	5	0	0	0	0	0	6	0	0
Crassostrea gigas	pacific oyster	7	7	1	0	0	0	0	0	0	0	0	0	7	7	1
Epinephelus coioides	goldenspotted rockcod	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
Gerres subfasciatus	common silverbiddy	0	0	0	2	0	0	0	0	0	0	0	0	2	0	0
Hippocampus sp.	seahorse	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
Leiognathus equulus	common ponyfish	0	0	0	1	0	0	0	0	0	1	0	0	2	0	0
Megalops cyprinoides	oxeye herring	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
Mugil cephalus	sea mullet	0	0	0	1	1	1	25	3	3	2	0	0	28	4	4
Neoarius graeffei	blue catfish	0	0	0	6	2	2	2	2	2	0	1	1	8	5	5
Plebidonax deltoides	pipi	7	7	1	0	0	0	0	0	0	0	0	0	7	7	1
Pomadasys kaakan	spotted javelinfish	0	0	0	0	0	0	1	1	1	0	0	0	1	1	1
Portunus armatus	blue swimmer crab	8	3	2	11	3	2	2	0	0	0	0	0	21	6	4
Pristis zijsron	green sawfish	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Scomberoides commersonnianus	giant queenfish	2	0	0	11	0	0	6	0	0	0	0	0	19	0	0
Scomberomorus commerson	Spanish mackeral	0	0	0	0	0	0	3	0	0	0	0	0	3	0	0
Scylla serrata	mud crab	1	1	1	5	1	1	5	2	1	9	2	1	20	6	4
Selenotoca multifasciata	striped scat	0	0	0	4	1	1	0	0	0	0	0	0	4	1	1
Tegillarca granosa	blood cockle	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1
Total		**40**	**31**	**7**	**41**	**8**	**7**	**51**	**8**	**7**	**17**	**5**	**4**	**149**	**52**	**25**

Table 4 Biota caught and retained at sites on Andoom Creek, Beening Creek and Pine River Bay during the July 2018 survey.

Taxa Name	Site	Site 1 (Andoom Creek)			Site 1 US (Andoom Creek Upstream)			Site 1 DS (Andoom Creek Downstream)			Site 7 (Beening Creek)			Site 11 (north Pine River Bay)			Total		
	Common Name	Caught	Retained	# of Samples	Caught	Retained	# of Samples	Caught	Retained	# of Samples	Caught	Retained	# of Samples	Caught	Retained	# of Samples	Caught	Retained	# of Samples
Acanthopagrus palmaris	northwest black bream	3	3	2	0	0	0	0	0	0	0	0	0	0	0	0	3	3	2
Ambassis interrupta	longspine glassfish	1	0	0	0	0	0	0	0	0	16	0	0	0	0	0	17	0	0
Amniataba caudavittata	yellowtail grunter	0	0	0	0	0	0	0	0	0	2	2	1	0	0	0	2	2	1
Eleutheronema tetradactylum	blue threadfin	0	0	0	0	0	0	0	0	0	0	0	0	4	2	2	4	2	2
Elops hawaiensis	Hawaiian giant herring	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
Epinephelus coioides	goldenspotted rockcod	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	1	1	1
Epinephelus lanceolatus	Queensland groper	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
Epinephelus malabaricus	blackspotted rockcod	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	1	1	1
Euristhmus lepturus	longtail catfish	5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	5	1	1
Gerres subfasciatus	common silverbiddy	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	0	0
Leiognathus equulus	common ponyfish	2	0	0	0	0	0	1	0	0	11	0	0	0	0	0	14	0	0
Lutjanus russellii	Moses' snapper	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1	1	1
Megalops cyprinoides	oxeye herring	3	0	0	0	0	0	6	0	0	0	0	0	0	0	0	9	0	0
Metapenaeus endeavouri	endeavour prawn	10	9	1	0	0	0	2	2	1	0	0	0	0	0	0	12	11	2
Mugil cephalus	sea mullet	0	0	0	1	1	1	5	4	1	12	9	2	6	4	4	24	18	8
Neoarius graeffei	blue catfish	0	0	0	4	1	1	2	0	0	2	1	1	1	1	1	9	3	3
Penaeus esculentus	brown tiger prawn	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Pomadasys kaakan	spotted javelinfish	0	0	0	2	2	2	0	0	0	1	1	1	0	0	0	3	3	3
Portunus armatus	blue swimmer crab	0	0	0	1	1	0	0	0	0	0	0	0	1	1	1	2	2	1
Scomberoides commersonnianus	giant queenfish	3	0	0	7	0	0	0	0	0	0	0	0	3	0	0	13	0	0
Scylla serrata	mud crab	9	3	2	9	1	1	0	0	0	2	2	2	0	0	0	20	6	5
Selenotoca multifasciata	striped scat	0	0	0	0	0	0	0	0	0	2	2	2	0	0	0	2	2	2
Tetractenos sp.	toadfish	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Total		**38**	**17**	**7**	**24**	**6**	**5**	**18**	**8**	**4**	**54**	**18**	**10**	**16**	**9**	**9**	**150**	**58**	**35**

Table 5 Biota caught and retained during the July 2018 survey

Taxa Name	Site	Total		
	Common Name	Caught	Retained	# of Samples
Acanthopagrus palmaris	northwest black bream	7	6	5
Aetobatus ocellatus	whitespotted eagle ray	1	0	0
Ambassis interrupta	longspine glassfish	17	0	0
Amniataba caudavittata	yellowtail grunter	4	4	2
Atherinomorus vaigiensis	common hardyhead	3	0	0
Batillariid spp.	batillariid	32	32	2
Carcharhinus sp.	shark	7	0	0
Chanos chanos	milkfish	1	1	1
Clibanarius taeniatus	yellow-striped hermit	7	0	0
Crassostrea gigas	pacific oyster	27	27	2
Eleutheronema tetradactylum	blue threadfin	4	2	2
Elops hawaiensis	Hawaiian giant herring	1	1	1
Epinephelus coioides	goldenspotted rockcod	2	2	2
Epinephelus lanceolatus	Queensland groper	1	0	0
Epinephelus malabaricus	blackspotted rockcod	1	1	1
Euristhmus lepturus	longtail catfish	5	1	1
Gerres subfasciatus	common silverbiddy	9	1	1
Glossogobius sp.	goby	2	0	0
Hippocampus sp.	seahorse	1	0	0
Leiognathus equulus	common ponyfish	25	0	0
Liza vaigiensis	diamondscale mullet	2	1	1
Lutjanus carponotatus	striped snapper	1	1	1
Lutjanus russellii	Moses' snapper	1	1	1
Megalops cyprinoides	oxeye herring	10	0	0
Metapenaeus endeavouri	endeavour prawn	12	11	2
Mugil cephalus	sea mullet	73	28	13
Neoarius graeffei	blue catfish	23	9	9
Pelates quadrilineatus	fourline striped grunter	2	2	1
Penaeus esculentus	brown tiger prawn	1	1	1
Plebidonax deltoides	pipi	7	7	1
Pomadasys kaakan	spotted javelinfish	4	4	4
Portunus armatus	blue swimmer crab	50	15	9
Pristis zijsron	green sawfish	1	0	0
Rhizoprionodon acutus	milk shark	1	1	1
Scomberoides commersonnianus	giant queenfish	36	0	0
Scomberomorus commerson	Spanish mackeral	3	0	0
Scylla serrata	mud crab	66	17	14
Selenotoca multifasciata	striped scat	6	3	3
Tegillarca granosa	blood cockle	14	14	3
Tetractenos sp.	toadfish	1	0	0
Zenarchopterus buffonis	northern river garfish	2	0	0
Total		**473**	**193**	**84**

APPENDIX B

Laboratory analysed biota samples

Sample ID	Species	Number of individuals comprising the sample	Photograph
BT01_Bream(2)_24/07/18	Northwest black bream (*Acanthopagrus palmaris*)	1	
BT01_Bream_24/07/18	Northwest black bream (*Acanthopagrus palmaris*)	2	
BT01_Catfish_24/07/18	Longtail catfish (*Euristhmus lepturus*)	1	
BT01_Mudcrab(2)_24/07/18	Mud crab (*Scylla serrata*)	1	
BT01_Mudcrab_24/07/18	Mud crab (*Scylla serrata*)	1	
BT01_Prawn(2)_24/07/18	Brown tiger prawn (*Penaeus esculentus*)	1	
BT01_Prawn_24/07/18	Endeavour prawn (*Metapenaeus endeavouri*)	9	
BT01DS_Catfish_23/07/18	Blue Catfish (*Neoarius graeffei*)	1	

Sample ID	Species	Number of individuals comprising the sample	Photograph
BT01DS_Javelinfish(2)_23/07/18	Spotted javelinfish (*Pomadasys kaakan*)	1	
BT01DS_Javelinfish_23/07/18	Spotted javelinfish (*Pomadasys kaakan*)	1	
BT01DS_Mudcrab_23/07/18	Mud crab (*Scylla serrata)*	2	
BT01DS_Mullet_23/07/18	Sea mullet (*Mugil cephalus*)	4	
BT01DS_Rockcod_23/07/18	Golden spot rockcod (*Epinephelus coioides*)	1	
BT01US_Mullet_23/07/18	Sea mullet (*Mugil cephalus*)	1	
BT01US_Rockcod_23/07/18	Blackspotted rockcod (*Epinephelus malabaricus*)	1	
BT01US_Shrimp_23/07/18	Endeavour prawn (*Metapenaeus endeavouri*)	2	

Sample ID	Species	Number of individuals comprising the sample	Photograph
BT02_Cockle_23/07/18	Blood cockle (*Tegillarca granosa*)	1	
BT02_Gastropod_23/07/18	Mud whelk (*Batillaria spp.*)	11	
BT02_Mudcrab_20/07/18	Mud crab (*Scylla serrata)*	1	
BT02_Pippy_23/07/18	Pipi (*Plebidonax deltoids*)	7	
BT02_Rockoyster_23/07/18	Pacific (Rock) oyster (*Crassostrea gigas*)	7	

Sample ID	Species	Number of individuals comprising the sample	Photograph
BT02_Swimmer(2)_22/07/18	Blue Swimmer Crab (*Portunus armatus*)	1	
BT02_Swimmer(3)_22/07/18	Blue Swimmer Crab (*Portunus armatus*)	2	
BT03_Cockle_19/07/18	Blood cockle (*Tegillarca granosa*)	3	 
BT03_Mudcrab_19/07/18	Mud crab (*Scylla serrata)*	1	
BT03_Rockoyster_19/07/18	Pacific (Rock) oyster (*Crassostrea gigas*)	19	

Sample ID	Species	Number of individuals comprising the sample	Photograph
BT03_Swimmer_19/07/18	Blue Swimmer Crab (*Portunus armatus*)	2	
BT03A_Milkfish_20/07/18	Milkfish (*Chanos chanos*)	1	
BT04_Swimmer_21/07/18	Blue Swimmer Crab (*Portunus armatus*)	2	
BT05_Catfish_20/07/18	Blue Catfish (*Neoarius graeffei*)	1	
BT05_Cockle_19/07/18	Blood cockle (*Tegillarca granosa*)	10	
BT05_Gastropod_19/07/18	Mud whelk (*Batillaria spp.*)	20	
BT05_Grunter_20/07/18	Yellowtail grunter (*Amniataba caudavittatal)*	2	

Sample ID	Species	Number of individuals comprising the sample	Photograph
BT05_Mudcrab_20/07/18	Mud crab (*Scylla serrata*)	1	
BT05_Swimmer_20/07/18	Blue Swimmer Crab (*Portunus armatus*)	2	
BT05_Trumpeter_20/07/18	Fourline striped grunter (*Pelates quadrilineatus*)	2	
BT06_Bream(2)_25/07/18	Northwest black bream (*Acanthopagrus palmaris*)	1	
BT06_Bream_25/07/18	Northwest black bream (*Acanthopagrus palmaris*)	1	
BT06_Dmullet_21/07/18	Diamond scale mullet (*Liza vaigiensis*)	1	
BT06_Mudcrab(2)_18/07/18	Mud crab (*Scylla serrata*)	1	
BT06_Mudcrab(3)_18/07/18	Mud crab (*Scylla serrata*)	1	

Sample ID	Species	Number of individuals comprising the sample	Photograph
BT06_Mudcrab_18/07/18	Mud crab (*Scylla serrata)*	1	
BT06_Mullet_21/07/18	Sea mullet (*Mugil cephalus*)	6	
BT06_Shark_18/07/18	Milk shark (*Rhizoprionodon acutus*)	1	
BT06_Silverbiddy_21/07/18	Common silverbiddy (*Gerres subfasciatus*)	1	
BT06_Snapper_18/07/18	Striped snapper (*Lutjanus carponotatus*)	1	
BT06_Swimmer_18/07/18	Blue Swimmer Crab (*Portunus armatus*)	1	
BT07_Catfish_17/07/18	Blue Catfish (*Neoarius graeffei*)	1	

Sample ID	Species	Number of individuals comprising the sample	Photograph
BT07_Grunter_24/07/18	Yellowtail grunter (*Amniataba caudavittata*)	2	
BT07_Javelinfish_24/07/18	Spotted javelinfish (*Pomadasys kaakan*)	1	
BT07_Mudcrab(2)_17/07/18	Mud crab (*Scylla serrata)*	1	
BT07_Mudcrab_24/07/18	Mud crab (*Scylla serrata)*	1	
BT07_Mullet(2)_16/07/18	Sea mullet (*Mugil cephalus*)	8	
BT07_Mullet_24/07/18	Sea mullet (*Mugil cephalus*)	1	
BT07_Scat(2)_16/07/18	Stiped scat (*Selenotoca multifasciata*)	1	
BT07_Scat_16/07/18	Stiped scat (*Selenotoca multifasciata*)	1	
BT07_Snapper_16/07/18	Moses' snapper (*Lutjanus russellii*)	1	

Sample ID	Species	Number of individuals comprising the sample	Photograph
BT08_Catfish(2)_16/07/18	Blue Catfish (*Neoarius graeffei*)	1	
BT08_Catfish_19/07/18	Blue Catfish (*Neoarius graeffei*)	1	
BT08_Javelinfish_19/07/18	Spotted javelinfish (*Pomadasys kaakan*)	1	
BT08_Mudcrab_17/07/18	Mud crab (*Scylla serrata)*	2	
BT08_Mullet(2)_19/07/18	Sea mullet (*Mugil cephalus*)	1	
BT08_Mullet(3)_19/07/18	Sea mullet (*Mugil cephalus*)	1	
BT08_Mullet_19/07/18	Sea mullet (*Mugil cephalus*)	1	
BT09_Bream_19/07/18	Northwest black bream (*Acanthopagrus palmaris)*	1	

Sample ID	Species	Number of individuals comprising the sample	Photograph
BT09_Catfish_19/07/18	Blue Catfish (*Neoarius graeffei*)	1	
BT09_Mudcrab_19/07/18	Mud crab (*Scylla serrata)*	2	
BT09_Rockcod_19/07/18	Golden spotted rockcod (*Epinephelus coioides*)	1	
BT10_Catfish(2)_22/07/18	Blue Catfish (*Neoarius graeffei*)	1	
BT10_Catfish_22/07/18	Blue Catfish (*Neoarius graeffei*)	1	
BT10_Mudcrab_22/07/18	Mud crab (*Scylla serrata)*	1	
BT10_Mullet_22/07/18	Sea mullet (*Mugil cephalus*)	1	
BT10_Scat_22/07/18	Striped scat (*Selenotoca multifasciata*)	1	

Sample ID	Species	Number of individuals comprising the sample	Photograph
BT10_Swimmer(2)_22/07/18	Blue Swimmer Crab (*Portunus armatus*)	1	
BT10_Swimmer_22/07/18	Blue Swimmer Crab (*Portunus armatus*)	2	
BT11_Catfish_18/07/18	Blue Catfish (*Neoarius graeffei*)	1	
BT11_Herring_18/07/18	Hawaiian giant herring (*Elops hawaiensis*)	1	
BT11_Mullet(2)_18/07/18	Sea mullet (*Mugil cephalus*)	1	
BT11_Mullet(3)_18/07/18	Sea mullet (*Mugil cephalus*)	1	
BT11_Mullet(4)_18/07/18	Sea mullet (*Mugil cephalus*)	1	
BT11_Mullet_18/07/18	Sea mullet (*Mugil cephalus*)	1	
BT11_Salmon(2)_18/07/18	Blue threadfin (*Eleutheronema tetradactylum*)	1	

Sample ID	Species	Number of individuals comprising the sample	Photograph
BT11_Salmon_18/07/18	Blue threadfin (*Eleutheronema tetradactylum*)	1	
BT11_Swimmer_18/07/18	Blue Swimmer Crab (*Portunus armatus*)	1	

APPENDIX C

Analytical result tables

Table A - Summary Surface Water PFAS Laboratory Results

Field_ID	Sampled Date	Matrix Type	Lab Report Number	Per- and Polyfluoroalkyl Substances (PFAS)																							
				8:2 Fluorotelomer sulfonate	N-Et-FOSA	N-Et-FOSE	N-Me-FOSA	N-Me-FOSE	Perfluorobutanoic acid (PFBA)	Perfluoro-n-pentanoic acid (PFPeA)	PFDcS	N-methyl-perfluorooctanesulfonamidoacetic acid	Perfluorobutanesulfonic acid (PFBS)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoA)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanesulfonic acid (PFHxS)	Perfluorohexanoic acid (PFHxA)	Perfluorononanoic acid (PFNA)	N-ethyl-perfluorooctanesulfonamidoacetic acid	Perfluorooctanesulfonamide (PFOSA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctanesulfonic acid (PFOS)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnA)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	Perfluorooctanoate (PFOA)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				0.001	0.001	0.001	0.001	0.001	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0001	0.0005	0.0005	0.001	0.0005
National Environmental Management Plan - Health Based Guidance Values for Recreational Water																											5.6
High conservation/ecological value systems (99% species protetion), surface water (protection of freshwater aquatic ecosystems)																							0.00023 [a,d]				19 [c]
Slightly to moderately disturbed ecosystems (95% species protection), surface water (protection of freshwater aquatic ecosystems)																							0.13 [b,c]				220 [c]
SW01	23-Jul-18	WATER	EB1818258	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.001	<0.0005
SW02	21-Jul-18	WATER	EB1818258	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.001	<0.0005
SW03	20-Jul-18	WATER	EB1818258	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.001	<0.0005
SW04	21-Jul-18	WATER	EB1818258	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.001	<0.0005
SW05	20-Jul-18	WATER	EB1818258	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.001	<0.0005
SW06	17-Jul-18	WATER	EB1818258	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.001	<0.0005
SW07	16-Jul-18	WATER	EB1818258	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.001	<0.0005
SW08	16-Jul-18	WATER	EB1818258	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.001	<0.0005
SW09	19-Jul-18	WATER	EB1818258	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.001	<0.0005
SW10	22-Jul-18	WATER	EB1818258	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.001	<0.0005
SW11	18-Jul-18	WATER	EB1818258	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.001	<0.0005

Table A - Summary Surface Water PFAS Laboratory Results

				Sum of PFHxS and PFOS (lab reported)	10:2 Fluorotelomer sulfonic acid	4:2 Fluorotelomer sulfonic acid	Perfluoroheptane sulfonic acid	Perfluoropentane sulfonic acid
				mg/L	µg/L	µg/L	µg/L	µg/L
EQL				0.0000003	0.001	0.001	0.0005	0.0005
National Environmental Management Plan - Health Based Guidance Values for Recreational Water				<3.0E-4				
High conservation/ecological value systems (99% species protetion), surface water (protection of freshwater aquatic ecosystems)								
Slightly to moderately disturbed ecosystems (95% species protection), surface water (protection of freshwater aquatic ecosystems)								
Field_ID	Sampled Date	Matrix Type	Lab Report Number					
SW01	23-Jul-18	WATER	EB1818258	<3.0E-7	<0.001	<0.001	<0.0005	<0.0005
SW02	21-Jul-18	WATER	EB1818258	<3.0E-7	<0.001	<0.001	<0.0005	<0.0005
SW03	20-Jul-18	WATER	EB1818258	<3.0E-7	<0.001	<0.001	<0.0005	<0.0005
SW04	21-Jul-18	WATER	EB1818258	<3.0E-7	<0.001	<0.001	<0.0005	<0.0005
SW05	20-Jul-18	WATER	EB1818258	<3.0E-7	<0.001	<0.001	<0.0005	<0.0005
SW06	17-Jul-18	WATER	EB1818258	<3.0E-7	<0.001	<0.001	<0.0005	<0.0005
SW07	16-Jul-18	WATER	EB1818258	<3.0E-7	<0.001	<0.001	<0.0005	<0.0005
SW08	16-Jul-18	WATER	EB1818258	<3.0E-7	<0.001	<0.001	<0.0005	<0.0005
SW09	19-Jul-18	WATER	EB1818258	<3.0E-7	<0.001	<0.001	<0.0005	<0.0005
SW10	22-Jul-18	WATER	EB1818258	<3.0E-7	<0.001	<0.001	<0.0005	<0.0005
SW11	18-Jul-18	WATER	EB1818258	<3.0E-7	<0.001	<0.001	<0.0005	<0.0005

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Table B - Summary Sediment PFAS Laboratory Results

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					Per- and polyfluoroalkyl substances (PFAS)																										
					8:2 Fluorotelomer sulfonate	N-Et-FOSA	N-Et-FOSE	N-Me-FOSA	N-Me-FOSE	Perfluorobutanoic acid (PFBA)	Perfluoro-n-pentanoic acid (PFPeA)	PFDoS	N-methyl-perfluorooctanesulfonamidoacetic acid	Perfluorobutanesulfonic acid (PFBS)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoA)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanesulfonic acid (PFHxS)	Perfluorohexanoic acid (PFHxA)	Perfluorononanoic acid (PFNA)	N-ethyl-perfluorooctanesulfonamidoacetic acid	Perfluorooctanesulfonamide (PFOSA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctanesulfonic acid (PFOS)3	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnA)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	Perfluorooctanoate (PFOA)	Sum of US EPA PFAS (PFOS + PFOA)	Sum of WA DER PFAS (n=10)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.01	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.01	0.005	0.005	0.005	0.005	0.005	0.005	0.01	0.005	0.005	0.01
Sediment Screening Value, sample SD11 the background reference site results multiplied by a factor of 2 [a]																								0.01				0.01			
Field_ID	Sampled_Date_Time	Matrix_Description	Lab_Report_Number	SampleCode																											
SD01	18-Jul-18	SEDIMENT	612811	B18-JI34042	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01
SD02	18-Jul-18	SEDIMENT	612811	B18-JI34041	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01
SD03	18-Jul-18	SEDIMENT	612811	B18-JI34034	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01
SD04	18-Jul-18	SEDIMENT	612811	B18-JI34043	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01
SD05	18-Jul-18	SEDIMENT	612811	B18-JI34035	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01
SD06	18-Jul-18	SEDIMENT	612811	B18-JI34036	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01
SD07	18-Jul-18	SEDIMENT	612811	B18-JI34037	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01
SD08	18-Jul-18	SEDIMENT	612811	B18-JI34038	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01
SD09	18-Jul-18	SEDIMENT	612811	B18-JI34039	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01
SD10	18-Jul-18	SEDIMENT	613763	B18-Au29331	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01
SD11	18-Jul-18	SEDIMENT	612811	B18-JI34040	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01

Table B - Summary Sediment PFAS Laboratory Results

					Sum of PFASs (n=28)	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)	10:2 Fluorotelomer sulfonic acid	4:2 Fluorotelomer sulfonic acid	Perfluoroheptane sulfonic acid	Perfluoropentane sulfonic acid
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.05	0.005	0.005	0.005	0.005	0.005
Sediment Screening Value, sample SD11 the background reference site results multiplied by a factor o										
Field_ID	Sampled_Date_Time	Matrix_Description	Lab_Report_Number	SampleCode						
SD01	18-Jul-18	SEDIMENT	612811	B18-JI34042	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005
SD02	18-Jul-18	SEDIMENT	612811	B18-JI34041	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005
SD03	18-Jul-18	SEDIMENT	612811	B18-JI34034	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005
SD04	18-Jul-18	SEDIMENT	612811	B18-JI34043	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005
SD05	18-Jul-18	SEDIMENT	612811	B18-JI34035	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005
SD06	18-Jul-18	SEDIMENT	612811	B18-JI34036	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005
SD07	18-Jul-18	SEDIMENT	612811	B18-JI34037	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005
SD08	18-Jul-18	SEDIMENT	612811	B18-JI34038	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005
SD09	18-Jul-18	SEDIMENT	612811	B18-JI34039	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005
SD10	18-Jul-18	SEDIMENT	613763	B18-Au29331	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005
SD11	18-Jul-18	SEDIMENT	612811	B18-JI34040	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005

Table C - Summary Biota PFAS Laboratory Results

Field_ID	Sampled Date	Matrix Description	Lab Report Number	Per- and polyfluoroalkyl substances (PFAS)																																
				N-Methyl PFO sulfonamidoethanol (MeFOSE)	Perfluorodecane sulfonic acid (PFDS)	N-methyl-PFO sulfonamidoacetic acid (MeFOSAA)	Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS (lab reported)	Sum of US EPA PFAS (PFOS + PFOA)	Sum of WA DER PFAS (n=10)	Sum of PFASs (n=28 - Lab Reported)	Perfluorobutanoic acid (PFBA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecanoic acid (PFDA)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorododecanoic acid (PFDoDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorobutane sulfonic acid (PFBS)	4:2 Fluorotelomer sulfonic acid (4:2 FTSA)	6:2 Fluorotelomer sulfonic acid (6:2 FTSA)	8:2 Fluorotelomer sulfonic acid (8:2 FTSA)	10:2 Fluorotelomer sulfonic acid (10:2 FTSA)	N-Ethyl PFO sulfonamide (EtFOSA)	N-Ethyl PFO sulfonamidoethanol (EtFOSE)	N-Methyl PFO sulfonamide (MeFOSA)	Perfluorooctane sulfonamide (FOSA)	N-ethyl-PFO sulfonamidoacetic acid (EtFOSAA)	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				0.0005	0.0005	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	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Trigger Point for Fish and Seafood, Crustaceans#, derivation from Childeren 2-6 years, median consumption [a]							0.52	0.065		0.065																										
Trigger Point for Fish and Seafood, Finfish (all), derivation from Children 2-6 years, P90 consumption [a]							0.041	0.0052		0.0052																										
BT01_BREAM(2)_24/07/18	24-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT01_BREAM_24/07/18	24-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT01_CATFISH_24/07/18	24-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT01_MUDCRAB(2)_24/07/18	24-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT01_MUDCRAB_24/07/18	24-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT01_PRAWN(2)_24/07/18	24-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT01_PRAWN_24/07/18	24-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT01DS_MULLET_23/07/18	23-Jul-18	Biota	613766	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT01DS_CATFISH_23/07/18	23-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT01DS_JAVLINFISH(2)_23/07/18	23-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT01DS_JAVLINFISH_23/07/18	23-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT01DS_MUDCRAB_23/07/18	23-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT01DS_ROCKCOD_23/07/18	23-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT01US_MULLET_23/07/18	23-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT01US_ROCKCOD_23/07/18	23-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT01US_SHRIMP_23/07/18	23-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT02_GASTROPOD_23/07/18	23-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT02_MUDCRAB_20/07/18	20-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT02_PIPPY_23/07/18	23-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT02_ROCKOYSTER_23/07/18	23-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT02_SWIMMER(2)_22/07/18	22-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT02_SWIMMER(3)_22/07/18	22-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT03_COCKLE_19/07/18	19-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT03_MUDCRAB_19/07/18	19-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT03_ROCKOYSTER_19/07/18	19-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT03_SWIMMER_19/07/18	19-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT03A_MILKFISH_20/07/18	20-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT04_SWIMMER_21/07/18	21-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT05_CATFISH_20/07/18	20-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT05_COCKLE_19/07/18	19-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT05_GASTROPOD_19/07/18	19-Jul-18	Biota	609830	<0.0005	<0.0005	<0.0005	0.0005	<0.0003	0.0004	<0.0005	0.0005	0.0009	0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0009
BT05_GRUNTER_20/07/18	19-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT05_MUDCRAB_20/07/18	19-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT05_SWIMMER_20/07/18	19-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT05_TRUMPETER_20/07/18	19-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT06_BREAM(2)_25/07/18	25-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT06_BREAM_25/07/18	25-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT06_DMULLET_21/07/18	21-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT06_MUDCRAB(2)_18/07/18	18-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT06_MUDCRAB(3)_18/07/18	18-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT06_MUDCRAB_18/07/18	18-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT06_MULLET_21/07/18	21-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT06_SHARK_18/07/18	21-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT06_SILVERBIDDY_21/07/18	21-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT06_SNAPPER_18/07/18	18-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT06_SWIMMER_18/07/18	18-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT07_CATFISH_17/07/18	17-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT07_GRUNTER_24/07/18	24-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT07_JAVELINFISH_24/07/18	24-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT07_MUDCRAB(2)_17/07/18	17-Jul-18	Biota	609830	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0003	<0.0005	<0.0005	0.0006	0.0006	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT07_MUDCRAB_24/07/18	24-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT07_MULLET(2)_16/07/18	16-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT07_MULLET_24/07/18	24-Jul-18	Biota	609830	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT07_SNAPPER_16/07/18	16-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT07_SCAT_16/07/18	16-Jul-18	Biota	613766	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT07_SCAT(2)_16/07/18	16-Jul-18	Biota	613766	<0.0005	<0.0005	<0.0005	<0.0005	0.0007	<0.0003	0.0007	0.0007	0.0007	0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0007
BT08_JAVELINFISH_19/07/18	16-Jul-18	Biota	613766	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT08_CATFISH(2)_16/07/18	16-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT08_CATFISH_19/07/18	19-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT08_MUDCRAB_17/07/18	17-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT08_MULLET_19/07/18	19-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT08_MULLET(2)_19/07/18	19-Jul-18	Biota	613766	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT08_MULLET(3)_19/07/18	19-Jul-18	Biota	613766	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT09_BREAM_19/07/18	19-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT09_CATFISH_19/07/18	19-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT09_MUDCRAB_19/07/18	19-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT09_ROCKCOD_19/07/18	19-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT10_CATFISH(2)_22/07/18	22-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT10_CATFISH_22/07/18	22-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT10_MUDCRAB_22/07/18	22-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT10_MULLET_22/07/18	22-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT10_SCAT_22/07/18	22-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT10_SWIMMER(2)_22/07/18	22-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT10_SWIMMER_22/07/18	22-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT11_CATFISH_18/07/18	18-Jul-18	Biota	613766	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT11_MULLET(4)_18/07/18	18-Jul-18	Biota	613766	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT11_SALMON(2)_18/07/18	18-Jul-18	Biota	613766	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT11_HERRING_18/07/18	18-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT11_MULLET(2)_18/07/18	18-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT11_MULLET(3)_18/07/18	18-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT11_MULLET_18/07/18	18-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT11_SALMON_18/07/18	18-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BT11_SWIMMER_18/07/18	18-Jul-18	Biota	609830	<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	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Notes:

"<" Denotes below detection limit and is in grey font

"-" - Not analysed

a) Food and Standards Australia New Zealand report on Perfluorinated Chemicals in Food (FSANZ, 2017)

#occasionally consumed food, trigger points for investigation for crustaceans will be applied to molluscs due to the small number of consumers of molluscs

APPENDIX D

Laboratory certificates: surface water samples

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1825269**	Page	: 1 of 7
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Sydney
Contact	: MR GREG WHITMORE	Contact	: Customer Services ES
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: 18100235	Date Samples Received	: 28-Aug-2018 11:30
Order number	:	Date Analysis Commenced	: 28-Aug-2018
C-O-C number	: ----	Issue Date	: 03-Sep-2018 15:44
Sampler	: ----		
Site	: ----		
Quote number	: EN/002/18 National BQ		
No. of samples received	: 8		
No. of samples analysed	: 8		

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*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Franco Lentini		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.

- EP231X (Biota): ALS NATA accreditation for PFAS in Biota covers all Perfluoroalkyl Sulfonic Acids, Perfluoroalkyl Carboxylic Acids and (n:2) Fluorotelomer Sulfonic Acids in fish (whole and muscle), plants and vegetable matrices, with the exception PFBA (fish only), EtFOSA, MeFOSE, EtFOSE, MeFOSAA, EtFOSAA.

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)				Client sample ID	QAQC202	QAQC203	QAQC204	QAQC205	QAQC206
				Client sampling date / time	23-Aug-2018 00:00	23-Aug-2018 00:00	23-Aug-2018 00:00	23-Aug-2018 00:00	23-Aug-2018 00:00
Compound	CAS Number	LOR	Unit		ES1825269-001	ES1825269-002	ES1825269-003	ES1825269-004	ES1825269-005
					Result	Result	Result	Result	Result
Biota Sample Pre-Preparation									
ø Sample Description	----	-	--		Biota	Biota	Biota	Biota	Biota
ø Weight of Sample Prepared	----	0.1	g		1.9	24.6	12.1	18.9	21.2
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg		<1	<1	<1	<1	<1
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg		<1	<1	<1	<1	<1
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg		<1	<1	<1	<1	<1
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg		<1	<1	<1	<1	<1
Perfluorooctane sulfonic acid (PFOS) - Linear	2795-39-3	1	µg/kg		<1	<1	<1	<1	<1
Perfluorooctane sulfonic acid (PFOS) - Branched	----	1	µg/kg		<1	<1	<1	<1	<1
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg		<1	<1	<1	<1	<1
Perfluorodecane sulfonic acid (PFDS)	335-77-3	2	µg/kg		<2	<2	<2	<2	<2
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg		<5	<5	<5	<5	<5
Perfluoropentanoic acid (PFPeA)	2706-90-3	2	µg/kg		<2	<2	<2	<2	<2
Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg		<1	<1	<1	<1	<1
Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg		<1	<1	<1	<1	<1
Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg		<1	<1	<1	<1	<1
Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg		<1	<1	<1	<1	<1
Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg		<1	<1	<1	<1	<1
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg		<1	<1	<1	<1	<1
Perfluorododecanoic acid (PFDoDA)	307-55-1	2	µg/kg		<2	<2	<2	<2	<2
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	2	µg/kg		<2	<2	<2	<2	<2
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg		<2	<2	<2	<2	<2

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)				Client sample ID	QAQC202	QAQC203	QAQC204	QAQC205	QAQC206
				Client sampling date / time	23-Aug-2018 00:00	23-Aug-2018 00:00	23-Aug-2018 00:00	23-Aug-2018 00:00	23-Aug-2018 00:00
Compound	CAS Number	LOR	Unit		ES1825269-001	ES1825269-002	ES1825269-003	ES1825269-004	ES1825269-005
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	5	µg/kg		<5	<5	<5	<5	<5
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	5	µg/kg		<5	<5	<5	<5	<5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg		<2	<2	<2	<2	<2
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg		<2	<2	<2	<2	<2
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg		<2	<2	<2	<2	<2
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg		<1	<1	<1	<1	<1
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg		<1	<1	<1	<1	<1
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg		<2	<2	<2	<2	<2
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg		<2	<2	<2	<2	<2
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg		<2	<2	<2	<2	<2
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg		<2	<2	<2	<2	<2
EP231P: PFAS Sums									
^ Sum of PFAS	----	1	µg/kg		<1	<1	<1	<1	<1
EP231S: PFAS Surrogate									
13C4-PFOS	----	1	%		**93.0**	**85.5**	**119**	**79.5**	**67.5**
13C8-PFOA	----	1	%		**62.5**	**61.5**	**89.0**	**61.5**	**62.5**

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)				Client sample ID	QAQC207	QAQC208	QAQC209	----	----
				Client sampling date / time	23-Aug-2018 00:00	23-Aug-2018 00:00	23-Aug-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		ES1825269-006	ES1825269-007	ES1825269-008	--------	--------
					Result	Result	Result	----	----
Biota Sample Pre-Preparation									
ø Sample Description	----	-	--		Biota	Biota	Biota	----	----
ø Weight of Sample Prepared	----	0.1	g		3.5	7.6	4.5	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg		<1	<1	<1	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg		<1	<1	<1	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg		<1	<1	<1	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg		<1	<1	<1	----	----
Perfluorooctane sulfonic acid (PFOS) - Linear	2795-39-3	1	µg/kg		<1	<1	<1	----	----
Perfluorooctane sulfonic acid (PFOS) - Branched	----	1	µg/kg		<1	<1	<1	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg		<1	<1	<1	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	2	µg/kg		<2	<2	<2	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg		<5	<5	<5	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	2	µg/kg		<2	<2	<2	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg		<1	<1	<1	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg		<1	<1	<1	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg		<1	<1	<1	----	----
Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg		<1	<1	<1	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg		<1	<1	<1	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg		<1	<1	<1	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	2	µg/kg		<2	<2	<2	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	2	µg/kg		<2	<2	<2	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg		<2	<2	<2	----	----

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)				Client sample ID	QAQC207	QAQC208	QAQC209	----	----
				Client sampling date / time	23-Aug-2018 00:00	23-Aug-2018 00:00	23-Aug-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		ES1825269-006	ES1825269-007	ES1825269-008	--------	--------
					Result	Result	Result	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	5	µg/kg		<5	<5	<5	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	5	µg/kg		<5	<5	<5	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg		<2	<2	<2	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg		<2	<2	<2	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg		<2	<2	<2	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg		<1	<1	<1	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg		<1	<1	<1	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg		<2	<2	<2	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg		<2	<2	<2	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg		<2	<2	<2	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg		<2	<2	<2	----	----
EP231P: PFAS Sums									
^ Sum of PFAS	----	1	µg/kg		<1	<1	<1	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	1	%		**83.5**	**78.5**	**76.0**	----	----
13C8-PFOA	----	1	%		**66.0**	**70.0**	**60.5**	----	----

Surrogate Control Limits

Sub-Matrix: **BIOTA**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	50	130
13C8-PFOA	----	50	130

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Sheet..... of.....

Project No:	18100235	Phase:	6000	Lab Name:	ALS Brisbane
Site ID No.:	n/a	Site Location:		Quote No.	BN/112/18
Sampled By:					

Turnaround Time	24hrs ☐	48hrs ☐	Standard ☑	Date Required By:	2 Byth Street Stafford QLD Australia 4053
	36hrs ☐	5 Days ☐			

Report Format	PDF ☑	EXCEL ☑	ESDAT ☑	EQUIS ☐	
COC point of contact for info:	Greg Whitmore		Phone	0490735572	

GOLDER ASSOCIATES PTY LTD	Report Recipient:	Greg Whitmore ✓ Phone: 61490735572	Email: GWhitmore@golder.com.au
Brisbane Office		James Comley ✓ Phone: 61423079188	Email: jcomley@golder.com.au
147 Coronation Drive ph: 07 3721 5400	Invoice Recipient:	Accounts Payable ✓ Phone: 03 8862 3628	Email: auaccounts@golder.com.au
MILTON QLD 4064 fax: 07 3721 5401		Greg Whitmore ✓ Phone: 61490735572	Email: GWhitmore@golder.com.au

Comments/Special Instructions:

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINERS	Level of Contamination (low, high/unknown)	ON HOLD	28 PFAS including PFOA/PFOS and 6:2 FTS (LOR 0.5-2.0ug/kg)							Comments
1	QAQC202				Biota	Vial	Unknown		x							
2	QAQC203				Biota	Vial	Unknown		x							
3	QAQC204				Biota	Vial	Unknown		x							
4	QAQC205				Biota	Vial	Unknown		x							
5	QAQC206				Biota	Vial	Unknown		x							
6	QAQC207				Biota	Vial	Unknown		x							
7	QAQC208				Biota	Vial	Unknown		x							
8	QAQC209				Biota	Vial	Unknown		x							
								0	8	0	0	0	0	0	0	

Environmental Division
Sydney
Work Order Reference
ES1825269

Telephone : +61-2-8784 8555

SAMPLE MATRIX = Soil/Sediment/Fill/Water/Other

SAMPLE TYPE = Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR), Grab Sample (GS)

HIGH CONCENTRATION: circle expected parameters in analysis list

WATER CONTAINER CODES P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

	NAME	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	RYAN G.		GMGT	23/8/18	100PM
RECEIVED BY	DALE K			23/8/18	1500
RELEASED BY					
RECEIVED BY	Vishal		ALS SYD	28/08/18	11:30AM

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:
SAMPLES CRYOGENICALLY BLENDED

RL3
SNT004
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1825269**	Page	: 1 of 6
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Sydney
Contact	: MR GREG WHITMORE	Contact	: Customer Services ES
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: 18100235	Date Samples Received	: 28-Aug-2018
Order number	:	Date Analysis Commenced	: 28-Aug-2018
C-O-C number	: ----	Issue Date	: 03-Sep-2018
Sampler	: ----		
Site	: ----		
Quote number	: EN/002/18 National BQ		
No. of samples received	: 8		
No. of samples analysed	: 8		

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*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Franco Lentini		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: **BIOTA**

				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: 1901749)									
ES1825269-001	QAQC202	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg	<1	<1	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg	<1	<1	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg	<1	<1	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg	<1	<1	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg	<1	<1	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	1	µg/kg	<2	<2	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1901749)									
ES1825269-001	QAQC202	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	1	µg/kg	<2	<2	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg	<1	<1	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg	<1	<1	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg	<1	<1	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg	<1	<1	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg	<1	<1	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg	<1	<1	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	1	µg/kg	<2	<2	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	1	µg/kg	<2	<2	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg	<2	<2	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg	<5	<5	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1901749)									
ES1825269-001	QAQC202	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	1	µg/kg	<5	<5	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg	<1	<1	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg	<1	<1	0.00	No Limit

Sub-Matrix: **BIOTA**

				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: 1901749) - continued									
ES1825269-001	QAQC202	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	2	µg/kg	<5	<5	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg	<2	<2	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg	<2	<2	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg	<2	<2	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 1901749)									
ES1825269-001	QAQC202	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg	<2	<2	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg	<2	<2	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg	<2	<2	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg	<2	<2	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 1901749)									
ES1825269-001	QAQC202	EP231X: Sum of PFAS	---	1	µg/kg	<1	<1	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: **BIOTA**

				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: 1901749)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg	<1	5 µg/kg	106	50	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg	<1	5 µg/kg	125	50	130
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg	<1	5 µg/kg	82.0	50	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg	<1	5 µg/kg	122	50	130
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg	<1	5 µg/kg	113	50	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	1	µg/kg	<1	5 µg/kg	117	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1901749)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg	<5	25 µg/kg	108	50	130
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	1	µg/kg	<1	5 µg/kg	119	50	130
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg	<1	5 µg/kg	109	50	130
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg	<1	5 µg/kg	123	50	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg	<1	5 µg/kg	88.0	50	130
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg	<1	5 µg/kg	100	50	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg	<1	5 µg/kg	102	50	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg	<1	5 µg/kg	122	50	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	1	µg/kg	<1	5 µg/kg	66.4	50	130
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	1	µg/kg	<1	5 µg/kg	76.4	50	130
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg	<2	12.5 µg/kg	89.0	50	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1901749)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	1	µg/kg	<1	5 µg/kg	80.0	50	130
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	2	µg/kg	<2	12.5 µg/kg	100	50	130
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg	<2	12.5 µg/kg	83.8	50	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg	<2	12.5 µg/kg	75.4	50	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg	<2	12.5 µg/kg	79.0	50	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg	<1	5 µg/kg	92.8	50	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg	<1	5 µg/kg	88.8	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1901749)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg	<2	5 µg/kg	89.6	50	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg	<2	5 µg/kg	86.4	50	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg	<2	5 µg/kg	121	50	130

Sub-Matrix: **BIOTA**

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: 1901749) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg	<2	5 µg/kg	106	50	130
EP231P: PFAS Sums (QCLot: 1901749)								
EP231X: Sum of PFAS	----	1	µg/kg	<1	----	----	----	----

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: **BIOTA**

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: 1901749)							
ES1825269-002	QAQC203	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	5 µg/kg	66.0	30	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	5 µg/kg	104	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	5 µg/kg	62.0	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	5 µg/kg	86.8	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	5 µg/kg	127	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	5 µg/kg	80.0	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1901749)							
ES1825269-002	QAQC203	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	25 µg/kg	62.8	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	5 µg/kg	86.0	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	5 µg/kg	64.4	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	5 µg/kg	84.0	30	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	5 µg/kg	67.6	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	5 µg/kg	79.2	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	5 µg/kg	78.0	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	5 µg/kg	108	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	5 µg/kg	56.0	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	5 µg/kg	65.2	50	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	12.5 µg/kg	84.8	50	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1901749)							
ES1825269-002	QAQC203	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	5 µg/kg	53.2	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	12.5 µg/kg	67.2	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	12.5 µg/kg	84.0	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	12.5 µg/kg	72.3	30	130

Sub-Matrix: **BIOTA**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1901749) - continued							
ES1825269-002	QAQC203	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	12.5 µg/kg	75.4	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	5 µg/kg	76.8	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	5 µg/kg	92.0	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1901749)							
ES1825269-002	QAQC203	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	5 µg/kg	64.0	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	5 µg/kg	115	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	5 µg/kg	113	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	5 µg/kg	73.6	50	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1825269**	Page	: 1 of 5
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Sydney
Contact	: MR GREG WHITMORE	Telephone	: +61-2-8784 8555
Project	: 18100235	Date Samples Received	: 28-Aug-2018
Site	: ----	Issue Date	: 03-Sep-2018
Sampler	: ----	No. of samples received	: 8
Order number	:	No. of samples analysed	: 8

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Analysis Holding Time Compliance

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

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

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

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

Matrix: **BIOTA**

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
Biota Sample Pre-Preparation							
HDPE Soil Jar (Biota-PP)							
QAQC202, QAQC203, QAQC204, QAQC205, QAQC206, QAQC207, QAQC208, QAQC209	**23-Aug-2018**	**28-Aug-2018**	----	----	**----**	----	----
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231-PFOS-SP)							
QAQC202, QAQC203, QAQC204, QAQC205, QAQC206, QAQC207, QAQC208, QAQC209	**23-Aug-2018**	**29-Aug-2018**	19-Feb-2019	✓	**29-Aug-2018**	08-Oct-2018	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X)							
QAQC202, QAQC203, QAQC204, QAQC205, QAQC206, QAQC207, QAQC208, QAQC209	**23-Aug-2018**	**29-Aug-2018**	19-Feb-2019	✓	**29-Aug-2018**	08-Oct-2018	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X)							
QAQC202, QAQC203, QAQC204, QAQC205, QAQC206, QAQC207, QAQC208, QAQC209	**23-Aug-2018**	**29-Aug-2018**	19-Feb-2019	✓	**29-Aug-2018**	08-Oct-2018	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X)							
QAQC202, QAQC203, QAQC204, QAQC205, QAQC206, QAQC207, QAQC208, QAQC209	**23-Aug-2018**	**29-Aug-2018**	19-Feb-2019	✓	**29-Aug-2018**	08-Oct-2018	✓

Matrix: **BIOTA**

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)								
QAQC202,	QAQC203,	**23-Aug-2018**	**29-Aug-2018**	19-Feb-2019	✓	**29-Aug-2018**	08-Oct-2018	✓
QAQC204,	QAQC205,							
QAQC206,	QAQC207,							
QAQC208,	QAQC209							

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: **BIOTA**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	8	**12.50**	**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
PFOS - Linear/Branched Speciation	EP231-PFOS-SP	BIOTA	n-house: Linear PFOS is determined by quantiation of the separate linear peak using linear PFOS. Branched PFOS is determined as the difference between total PFOS (determined using a mixed linear/branched standard) and linear PFOS.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	BIOTA	In-House. A sample extract is analysed by LC/MSMS, ESI Negative Mode using MRM. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. 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. This method complies with the quality control definitions as stated in QSM 5.1. Data is reviewed in line with the DQOs as stated in QSM5.1

Preparation Methods	Method	Matrix	Method Descriptions
Prep-Preparation for Biota Analysis	* Biota-PP	BIOTA	A sample is prepared from whole or particular tissues/organs, identified, homogenised and the total weight of prepared sample recorded.
Sample Preparation for PFAS in Biota	EP231-PR	BIOTA	In-house. A sample is mixed with water and a complexing reagent and twice extracted with MTBE. Sample cleanup is employed as required.

APPENDIX E

Laboratory certificates: sediment samples

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No:	18100235	Phase:	6000	Lab Name:	Eurofins Brisbane
Site ID No.:	n/a	Site Location:		Quote No.	EB2076COC
Sampled By:	James Comley				
Turnaround Time	24hrs ☐ 48hrs ☐ Standard ☑ Date Required By: 1st Aug 18				131 Stradbroke Rise, Moorooka QLD, Australia, 4105
Report Format	PDF ☑ EXCEL ☑ ESDAT ☑ EQUIS ☐				
COC point of contact for info:	Greg Whitmore	Phone	84937335572		

GOLDER ASSOCIATES PTY LTD			Report Recipient:	Greg Whitmore	Phone:	61437335572	Email:
Brisbane Office				James Comley	Phone:	61427079184	Email:
147 Coronation Drive	ph: 07 3721 5400		Invoice Recipient:	Accounts Payable	Phone:	07 3552 3000	Email:
MILTON QLD 4064	fax: 07 3721 5401			Greg Whitmore	Phone:	61437335572	Email:

Comments/Special Instructions:

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINERS	Level of Contamination (low,high/unknown)	ON HOLD	28 PFAS including PFOA/PFOS and 6:2 FTS (LOR 0.5-2.0ug/kg)										Comments
	BT01 Prawn(2) 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove tissue from shell, Record wet weight of tissue, Composite tissue from individuals
	BT01 Prawn 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Composite tissue from individuals, Retain remaining carcass
	BT01 Catfish 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	BT01 Mudcrab(2) 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Split sample: analyse primary- label split as OAQC207 -forward to ALS, Retain remaining tissue and carapace
	BT01 Mudcrab 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining tissue and carapace
	BT01 Prawn(2) 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion, Record wet weight of tissue, Split sample: analyse primary- label split as OAQC204 - forward to ALS, Retain remaining tissue and carapace
	BT01 Prawn 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion, Record wet weight of tissue, Composite tissue from individuals, Retain remaining tissue and carapace
	BT01DS Catfish 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	BT01DS Jewfish(2) 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	BT01DS Jewfish 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	BT01DS Mudcrab 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Composite tissue from individuals, Retain remaining tissue and carapace
	BT01DS Mullet 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Composite tissue from individuals, Retain remaining carcass
	BT01DS Mullet 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	BT01DS Mullet 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	BT01DS Mullet 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	BT01DS Oyster 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion, Record wet weight of tissue, Composite tissue from individuals, Split sample: analyse primary- label split as OAQC209 -forward to ALS, Retain remaining tissue and carapace
	BT01 Catfish 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove tissue from shell, Record wet weight of tissue, Retain tissue and shell
	BT01 Crayfish 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove tissue from shell, Record wet weight of tissue, Composite tissue from individuals, Retain remaining tissue
	BT01 Mudcrab 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining tissue and carapace
	BT01 Prawn 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove tissue from shell, Composite tissue from individuals, Record wet weight of tissue, Retain remaining tissue and shell
	BT02 Barramundi 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove tissue from shell, Composite tissue from individuals, Record wet weight of tissue, Retain remaining tissue and shell
	BT02 Scampi(2) 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining tissue and carapace
	BT02 Scampi(2) 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Composite tissue from individuals, Retain remaining tissue and carapace
	BT03 Catfish 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove tissue from shell, Record wet weight of tissue, Composite tissue from individuals, Retain tissue and shells
	BT03 Mudcrab 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Split sample: analyse primary- label split as OAQC208 -forward to ALS, Retain remaining tissue and carapace
							TOTAL	0	25	0	0	0	0	0	0	0	0	0	

SAMPLE MATRIX = Soil/Sediment/FA/Water/Other SAMPLE TYPE = Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR), Grab Sample (GS) HIGH CONCENTRATION: circle expected parameters in analysis list

WATER CONTAINER CODES: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airtight Unpreserved Plastic V = VOA Vial HCl Preserved; VS = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airtight Unpreserved Vial SC = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

	NAME	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	JAMES Comley		GOLDER	27/7	12:00
RECEIVED BY	Steven Mm		Eurofins	27/7	12:00
RELEASED BY					
RECEIVED BY					

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

THIS FORM IS TO BE SIGNED BY GOLDER STAFF, COURIER/S, LABORATORY ON RECEIPT OF SAMPLES.

RL3
SNE24
Feb 2011

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No:	18100335	Phase:	6000	Lab Quote:	Eurofins Ballarat
Site ID No.:	n.a.	Site Location:		Quote No.	SMPWORK
Sampled By:	James Conley				
Turnaround Time	24hrs ☐ 48hrs ☐	Alters ☐ 5 Days ☐	Standard ☒	Date Required By:	LTA Analytical Data Alternate CoA's Essential Only
Report Format	PDF ☒	EXCEL ☒	EDAT ☒	EQUIS ☐	
COC point of contact for lab	Greg Wilkinson	Phone	0499213572		

Comments/Special Instructions:

GOLDER ASSOCIATES PTY LTD			Report Recipient:	Greg Wilkinson	Phone: 0499213572	Email: GWilkinson@golder.com.au
Brisbane Office				James Conley	Phone: 0412337184	Email: jconley@golder.com.au
147 Coronation Drive	ph: 07 3721 5400		Invoice Recipient:	Accounts Payable	Phone: 03 8820 5576	Email: auinvoices@golder.com.au
MILTON QLD 4064	fax 07 3721 5401			Greg Wilkinson	Phone: 0499213572	Email: GWilkinson@golder.com.au

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINERS	Level of Concentration (low/medium/other)	ON HOLD	28 PFAS (including PFOS and PFHxS) (LOR is 0.5ug/kg)										Comments
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Remove tissue from shell, Record wet weight of tissue, Composite tissue from individuals, Retain remaining tissue and shell
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Composite tissue from individuals, Retain remaining tissue and carapace
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Composite tissue from individuals, Retain remaining tissue and carapace
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Remove tissue from shell, Composite tissue from individuals, Record wet weight of tissue, Split sample: analyse primary- label split as QA/QC25 - forward to ALS, Retain remaining tissue
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Remove tissue from shell, Record wet weight of tissue, Composite tissue from individuals, Retain tissue and shells
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Composite tissue from individuals, Record wet weight of tissue, Retain remaining carcass
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining tissue and carapace
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Composite tissue from individuals, Retain remaining tissue and carapace
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Composite tissue from individuals, Record wet weight of tissue, Retain remaining carcass
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining tissue and carapace
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining tissue and carapace
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining tissue and carapace
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Composite tissue from individuals, Record wet weight of tissue, Retain remaining carcass
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining tissue and carapace
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Composite tissue from individuals, Retain remaining carcass
	[illegible]								x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
TOTAL								0	25	0	0	0	0	0	0	0	0	0	

SAMPLE MATRIX = Soil/Sediment/Air/Water/Other

SAMPLE TYPE = Composite(C)/Discrete(DC)/Derived(DS)/Core(CR)/ Grab Sample (GS)

HIGH CONCENTRATION: circle expected parameters in analysis list

WATER CONTAINER CODES: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VS = VOA Vial Sodium Bisulphate Preserved; VA = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

	NAME	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	JAMES CONLEY	[signature]	GOLDER	27/7	12:45
RECEIVED BY	[signature]	[signature]	EUROFINS	27/7	12:45
RELEASED BY					
RECEIVED BY					

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No:	18100235	Client:	6900	EAN Account:	EarthSafe Ecotoxics
Site ID No.:	n/a	Site Location:		Quote No.:	EW1940GOL
Sampled By:	James Cordey				
Turnaround Time:	24hrs ☐ 48hrs ☐ Standard ☒ Date Required By:				17 Hartley Teakle Road, Port Adelaide, SA 5015
	36hrs ☐ 5 Days ☐				
Report Format:	PDF ☒ EXCEL ☒ EXCAT ☒ EDUS ☐				
COC point of contact for info:	Greg Wilkinson	Phone:	0400735372		

GOLDER ASSOCIATES PTY LTD			Report Recipient:	Greg Wilkinson	Phone:	0400735372	Email:	GWilkinson@golder.com.au
Brisbane Office				James Cordey	Phone:	0412337188	Email:	jcordey@golder.com.au
147 Coronation Drive	ph 07 3721 5400		Invoice Recipient:	Accounts Payable	Phone:	08 8362 0000	Email:	invoices@golder.com.au
MILTON QLD 4064	fax 07 3721 5401			Greg Wilkinson	Phone:	0400735372	Email:	GWilkinson@golder.com.au

Comments/Special Instructions:

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINERS	Level of Contamination (Low/Mod/Unknown)	ON HOLD	28 PFAS including PFOA/PFOS and 6:2 FTS (EDN 0.4.5.0.0.0)									Comments
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining tissue and carapace
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Split sample, analyse primary-label split as QADCCC3 -forward to ALS, Retain remaining tissue and carapace
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Composite tissue from individuals, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Composite tissue from individuals, Retain remaining tissue and carapace
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Composite tissue from individuals, Retain remaining tissue and carapace
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Split sample, analyse primary-label split as QADCCC3 -forward to ALS, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
							TOTAL	0	22	0	0	0	0	0	0	0	0	

SAMPLE MATRIX = Soil/Sediment/Water/Other SAMPLE TYPE = Composite(C)/Discrete(DC)/Duplicate(CC)/Core(CR)/ Grab Sample(GS) HIGH CONCENTRATION: circle expected parameters or analytes list

WATER CONTAINER CODES: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VS = VOA Vial Sodium Bisulphate Preserved; VA = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

	NAME	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	JAMES CORDEY	Jordey	GOLDER	27/7	12:00
RECEIVED BY	Fedex		FedEx	27/7	12:30
RELEASED BY					
RECEIVED BY					

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

513
2nd Rev
Feb 2021

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No:	18100235	Phase	6000	Lab Name:	Envirolab Brisbane
Site ID No.:	n/a	Site Location:		Quote No.	EB220CGOL
Sampled By:	James Comley				
Turnaround Time	24hrs ☐ 48hrs ☐ Standard ☑ Date Required By:			12/13 Smallwood Place, Murarrie, Qld, Australia, 4172	
	36hrs ☐ 5 Days ☐				
Report Format	PDF ☐ EXCEL ☑ ESDAT ☑ EDUS ☐				
COC point of contact for labs:	Greg Whitmore	Phone	0490735372		

GOLDER ASSOCIATES PTY LTD			Report Recipient:	Greg Whitmore	Phone:	61409735372	Email:	GWhitmore@golder.com.au
Brisbane Office				James Comley	Phone:	61403373169	Email:	jcomley@golder.com.au
147 Coronation Drive	ph. 07 3721 5400		Invoice Recipient:	Accounts Payable	Phone:	07 3721 5400	Email:	auinvoice@golder.com.au
MILTON QLD 4064	fax 07 3721 5401			Greg Whitmore	Phone:	61409735372	Email:	GWhitmore@golder.com.au

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINER	Level of Contamination (low, high/unknown)	OH HOLD	28 PFAS including PFOA/PFOS and 6:2 FTS (LOR 0.5-2.0ug/kg)	28 PFAS including PFOA/PFOS and 6:2 FTS (LOR 5-10 ug/kg)	28 PFAS including 9/PFOA/PFOS and 6:2 FTS Ultra Trace						Comments
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining tissue and carapace
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Composite tissue from individuals, Retain remaining tissue and carapace
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Split sample: analyse primary label split as QAQC108 -forward to ALS, Retain remaining carcass
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining tissue and carapace
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Water	Amber	Unknown				x						
							TOTAL	0	12	12	1	0	0	0	0	0	12	0	0	0

SAMPLE MATRIX = Soil/Sediment/Fill/Water/Other

SAMPLE TYPE = Composite(C)/Discrete(D)/Grab/Duplicate(DUP)/Core(CR)/Grab Sample (GS)

HIGH CONCENTRATION: once expected parameters in analysis list

WATER CONTAINER CODES: P = Unpreserved Plastic N = Nitric Preserved Plastic ORC = Nitric Preserved ORC SH = Sodium Hydroxide/Cd Preserved S = Sodium Hydroxide Preserved Plastic AG = Amber Glass Unpreserved AP = Airfreight Unpreserved Plastic V = VOA Vial HCl Preserved VB = VOA Vial Sodium Bisulphate Preserved VS = VOA Vial Sulfuric Preserved AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass H = HCl preserved Plastic HS = HCl preserved Speciation bottle SP = Sulfuric Preserved Plastic F = Formaldehyde Preserved Glass Z = Zinc Acetate Preserved Bottle E = EDTA Preserved Bottle ST = Sterile Bottle ASS = Plastic Bag for Acid Sulphate Soils B = Unpreserved Bag

	NAME	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	James Comley	[signature]	GOLDER	27/7	12:00
RECEIVED BY	[illegible]	[signature]	EVRL	27/7	12:00
RELEASED BY					
RECEIVED BY					

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS
ENV004
Feb 2016

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**Golder Associates Pty Ltd (Qld)**
Contact name:	Greg Whitmore
Project ID:	18100235
COC number:	Not provided
Turn around time:	15 Day
Date/Time received:	Jul 27, 2018 3:00 PM
Eurofins | mgt reference:	**612811**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 5.5 degrees Celsius.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☒ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☑ Sample containers for volatile analysis received with zero headspace.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Notes

SD10 not received.

Contact notes

If you have any questions with respect to these samples please contact:

Ryan Gilbert on Phone : or by e.mail: RyanGilbert@eurofins.com

Results will be delivered electronically via e.mail to Greg Whitmore - GWhitmore@golder.com.au.

ABN– 50 005 085 521
e.mail : EnviroSales@eurofins.com
web : www.eurofins.com.au

Melbourne
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NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name: Golder Associates Pty Ltd (Qld)
Address: 147 Coronation Dve
Milton
QLD 4064

Project Name:
Project ID: 18100235

Order No.:
Report #: 612811
Phone: (07) 3721 5400
Fax: (07) 3721 5401

Received: Jul 27, 2018 3:00 PM
Due: Aug 17, 2018
Priority: 15 Day
Contact Name: Greg Whitmore

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						CANCELLED	Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)	Per- and Polyfluoroalkyl Substances (PFASs) - Ultra Trace
Melbourne Laboratory - NATA Site # 1254 & 14271									
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794						X	X	X	X
Perth Laboratory - NATA Site # 23736									
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	SD03	Jul 18, 2018		Sediment	B18-JI34034		X	X	
2	SD05	Jul 18, 2018		Sediment	B18-JI34035		X	X	
3	SD06	Jul 18, 2018		Sediment	B18-JI34036		X	X	
4	SD07	Jul 18, 2018		Sediment	B18-JI34037		X	X	
5	SD08	Jul 18, 2018		Sediment	B18-JI34038		X	X	
6	SD09	Jul 18, 2018		Sediment	B18-JI34039		X	X	
7	SD11	Jul 18, 2018		Sediment	B18-JI34040		X	X	
8	SD02	Jul 18, 2018		Sediment	B18-JI34041		X	X	
9	SD01	Jul 18, 2018		Sediment	B18-JI34042		X	X	

eurofins | mgt

ABN– 50 005 085 521
e.mail : EnviroSales@eurofins.com
web : www.eurofins.com.au

Melbourne
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Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name: Golder Associates Pty Ltd (Qld)
Address: 147 Coronation Dve
Milton
QLD 4064

Project Name:
Project ID: 18100235

Order No.:
Report #: 612811
Phone: (07) 3721 5400
Fax: (07) 3721 5401

Received: Jul 27, 2018 3:00 PM
Due: Aug 17, 2018
Priority: 15 Day
Contact Name: Greg Whitmore

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						CANCELLED	Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)	Per- and Polyfluoroalkyl Substances (PFASs) - Ultra Trace
Melbourne Laboratory - NATA Site # 1254 & 14271									
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794						X	X	X	X
Perth Laboratory - NATA Site # 23736									
10	SD04	Jul 18, 2018		Sediment	B18-JI34043		X	X	
11	SD10	Jul 18, 2018		Sediment	B18-JI34044	X			
12	QAQC100	Jul 18, 2018		Sediment	B18-JI34045		X	X	
13	QAQC201	Jul 18, 2018		Water	B18-JI34046				X
Test Counts						1	11	11	1

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Golder Associates Pty Ltd
147 Coronation Dve
Milton
QLD 4064

Attention: **Greg Whitmore**

Report **612811-S**
Project name
Project ID 18100235
Received Date Jul 27, 2018

Client Sample ID			**SD03**	**SD05**	**SD06**	**SD07**
Sample Matrix			**Sediment**	**Sediment**	**Sediment**	**Sediment**
Eurofins | mgt Sample No.			**B18-JI34034**	**B18-JI34035**	**B18-JI34036**	**B18-JI34037**
Date Sampled			**Jul 18, 2018**	**Jul 18, 2018**	**Jul 18, 2018**	**Jul 18, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanoic acid (PFPeA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanoic acid (PFHxA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanoic acid (PFHpA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanoic acid (PFOA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorononanoic acid (PFNA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanoic acid (PFDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroundecanoic acid (PFUnDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorododecanoic acid (PFDoDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotridecanoic acid (PFTrDA)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotetradecanoic acid (PFTeDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
13C4-PFBA (surr.)	1	%	80	75	70	76
13C5-PFPeA (surr.)	1	%	85	82	73	81
13C5-PFHxA (surr.)	1	%	76	74	68	73
13C4-PFHpA (surr.)	1	%	82	82	75	81
13C8-PFOA (surr.)	1	%	110	104	95	100
13C5-PFNA (surr.)	1	%	88	83	80	82
13C6-PFDA (surr.)	1	%	100	95	85	91
13C2-PFUnDA (surr.)	1	%	99	96	90	89
13C2-PFDoDA (surr.)	1	%	112	106	105	112
13C2-PFTeDA (surr.)	1	%	118	108	109	112
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
13C8-FOSA (surr.)	1	%	117	111	108	105
D3-N-MeFOSA (surr.)	1	%	110	99	106	107
D5-N-EtFOSA (surr.)	1	%	123	115	112	116

Client Sample ID			SD03	SD05	SD06	SD07
Sample Matrix			Sediment	Sediment	Sediment	Sediment
Eurofins | mgt Sample No.			B18-JI34034	B18-JI34035	B18-JI34036	B18-JI34037
Date Sampled			Jul 18, 2018	Jul 18, 2018	Jul 18, 2018	Jul 18, 2018
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances						
D7-N-MeFOSE (surr.)	1	%	115	113	100	110
D9-N-EtFOSE (surr.)	1	%	97	91	87	91
D5-N-EtFOSAA (surr.)	1	%	158	155	143	171
D3-N-MeFOSAA (surr.)	1	%	152	141	132	166
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanesulfonic acid (PFPeS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanesulfonic acid (PFHxS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanesulfonic acid (PFHpS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanesulfonic acid (PFOS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanesulfonic acid (PFDS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
13C3-PFBS (surr.)	1	%	91	84	83	88
18O2-PFHxS (surr.)	1	%	93	98	94	93
13C8-PFOS (surr.)	1	%	147	147	138	132
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
13C2-4:2 FTSA (surr.)	1	%	49	44	38	45
13C2-6:2 FTSA (surr.)	1	%	75	57	46	67
13C2-8:2 FTSA (surr.)	1	%	161	147	123	148
PFASs Summations						
Sum (PFHxS + PFOS)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of US EPA PFAS (PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of WA DWER PFAS (n=10)*	10	ug/kg	< 10	< 10	< 10	< 10
Sum of PFASs (n=28)*	50	ug/kg	< 50	< 50	< 50	< 50
% Moisture	1	%	24	29	39	28

Client Sample ID			SD08	SD09	SD11	SD02
Sample Matrix			Sediment	Sediment	Sediment	Sediment
Eurofins | mgt Sample No.			B18-JI34038	B18-JI34039	B18-JI34040	B18-JI34041
Date Sampled			Jul 18, 2018	Jul 18, 2018	Jul 18, 2018	Jul 18, 2018
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanoic acid (PFPeA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanoic acid (PFHxA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanoic acid (PFHpA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanoic acid (PFOA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorononanoic acid (PFNA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanoic acid (PFDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroundecanoic acid (PFUnDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5

Client Sample ID			SD08	SD09	SD11	SD02
Sample Matrix			Sediment	Sediment	Sediment	Sediment
Eurofins | mgt Sample No.			B18-JI34038	B18-JI34039	B18-JI34040	B18-JI34041
Date Sampled			Jul 18, 2018	Jul 18, 2018	Jul 18, 2018	Jul 18, 2018
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorododecanoic acid (PFDoDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotridecanoic acid (PFTrDA)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotetradecanoic acid (PFTeDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
13C4-PFBA (surr.)	1	%	78	76	78	82
13C5-PFPeA (surr.)	1	%	78	73	82	85
13C5-PFHxA (surr.)	1	%	77	74	78	79
13C4-PFHpA (surr.)	1	%	80	86	84	82
13C8-PFOA (surr.)	1	%	107	110	106	113
13C5-PFNA (surr.)	1	%	83	80	83	81
13C6-PFDA (surr.)	1	%	102	89	93	93
13C2-PFUnDA (surr.)	1	%	100	99	98	95
13C2-PFDoDA (surr.)	1	%	108	109	116	108
13C2-PFTeDA (surr.)	1	%	106	109	104	100
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
13C8-FOSA (surr.)	1	%	109	107	113	112
D3-N-MeFOSA (surr.)	1	%	109	106	107	107
D5-N-EtFOSA (surr.)	1	%	114	119	122	121
D7-N-MeFOSE (surr.)	1	%	104	105	109	111
D9-N-EtFOSE (surr.)	1	%	91	88	99	97
D5-N-EtFOSAA (surr.)	1	%	144	139	144	151
D3-N-MeFOSAA (surr.)	1	%	136	154	164	155
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanesulfonic acid (PFPeS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanesulfonic acid (PFHxS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanesulfonic acid (PFHpS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanesulfonic acid (PFOS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanesulfonic acid (PFDS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
13C3-PFBS (surr.)	1	%	88	84	87	92
18O2-PFHxS (surr.)	1	%	99	99	98	95
13C8-PFOS (surr.)	1	%	143	139	145	145
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	5	ug/kg	< 5	< 5	< 5	< 5

Client Sample ID			SD08	SD09	SD11	SD02
Sample Matrix			Sediment	Sediment	Sediment	Sediment
Eurofins | mgt Sample No.			B18-JI34038	B18-JI34039	B18-JI34040	B18-JI34041
Date Sampled			Jul 18, 2018	Jul 18, 2018	Jul 18, 2018	Jul 18, 2018
Test/Reference	LOR	Unit				
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
13C2-4:2 FTSA (surr.)	1	%	47	46	48	54
13C2-6:2 FTSA (surr.)	1	%	60	70	70	59
13C2-8:2 FTSA (surr.)	1	%	143	138	153	156
PFASs Summations						
Sum (PFHxS + PFOS)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of US EPA PFAS (PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of WA DWER PFAS (n=10)*	10	ug/kg	< 10	< 10	< 10	< 10
Sum of PFASs (n=28)*	50	ug/kg	< 50	< 50	< 50	< 50
% Moisture	1	%	30	24	22	23

Client Sample ID			SD01	SD04	QAQC100
Sample Matrix			Sediment	Sediment	Sediment
Eurofins | mgt Sample No.			B18-JI34042	B18-JI34043	B18-JI34045
Date Sampled			Jul 18, 2018	Jul 18, 2018	Jul 18, 2018
Test/Reference	LOR	Unit			
Perfluoroalkyl carboxylic acids (PFCAs)					
Perfluorobutanoic acid (PFBA)[N11]	5	ug/kg	< 5	< 5	< 5
Perfluoropentanoic acid (PFPeA)[N11]	5	ug/kg	< 5	< 5	< 5
Perfluorohexanoic acid (PFHxA)[N11]	5	ug/kg	< 5	< 5	< 5
Perfluoroheptanoic acid (PFHpA)[N11]	5	ug/kg	< 5	< 5	< 5
Perfluorooctanoic acid (PFOA)[N11]	5	ug/kg	< 5	< 5	< 5
Perfluorononanoic acid (PFNA)[N11]	5	ug/kg	< 5	< 5	< 5
Perfluorodecanoic acid (PFDA)[N11]	5	ug/kg	< 5	< 5	< 5
Perfluoroundecanoic acid (PFUnDA)[N11]	5	ug/kg	< 5	< 5	< 5
Perfluorododecanoic acid (PFDoDA)[N11]	5	ug/kg	< 5	< 5	< 5
Perfluorotridecanoic acid (PFTrDA)[N15]	5	ug/kg	< 5	< 5	< 5
Perfluorotetradecanoic acid (PFTeDA)[N11]	5	ug/kg	< 5	< 5	< 5
13C4-PFBA (surr.)	1	%	76	82	80
13C5-PFPeA (surr.)	1	%	77	86	86
13C5-PFHxA (surr.)	1	%	74	80	79
13C4-PFHpA (surr.)	1	%	77	87	85
13C8-PFOA (surr.)	1	%	106	111	109
13C5-PFNA (surr.)	1	%	80	87	85
13C6-PFDA (surr.)	1	%	98	92	90
13C2-PFUnDA (surr.)	1	%	90	98	95
13C2-PFDoDA (surr.)	1	%	104	103	110
13C2-PFTeDA (surr.)	1	%	98	97	103
Perfluoroalkyl sulfonamido substances					
Perfluorooctane sulfonamide (FOSA)[N11]	5	ug/kg	< 5	< 5	< 5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	5	ug/kg	< 5	< 5	< 5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	5	ug/kg	< 5	< 5	< 5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	5	ug/kg	< 5	< 5	< 5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	5	ug/kg	< 5	< 5	< 5

Client Sample ID			SD01	SD04	QAQC100
Sample Matrix			Sediment	Sediment	Sediment
Eurofins | mgt Sample No.			B18-JI34042	B18-JI34043	B18-JI34045
Date Sampled			Jul 18, 2018	Jul 18, 2018	Jul 18, 2018
Test/Reference	LOR	Unit			
Perfluoroalkyl sulfonamido substances					
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10
13C8-FOSA (surr.)	1	%	109	113	109
D3-N-MeFOSA (surr.)	1	%	108	110	109
D5-N-EtFOSA (surr.)	1	%	126	126	115
D7-N-MeFOSE (surr.)	1	%	102	98	103
D9-N-EtFOSE (surr.)	1	%	92	97	90
D5-N-EtFOSAA (surr.)	1	%	137	143	142
D3-N-MeFOSAA (surr.)	1	%	133	142	150
Perfluoroalkyl sulfonic acids (PFSAs)					
Perfluorobutanesulfonic acid (PFBS)[N11]	5	ug/kg	< 5	< 5	< 5
Perfluoropentanesulfonic acid (PFPeS)[N15]	5	ug/kg	< 5	< 5	< 5
Perfluorohexanesulfonic acid (PFHxS)[N11]	5	ug/kg	< 5	< 5	< 5
Perfluoroheptanesulfonic acid (PFHpS)[N15]	5	ug/kg	< 5	< 5	< 5
Perfluorooctanesulfonic acid (PFOS)[N11]	5	ug/kg	< 5	< 5	< 5
Perfluorodecanesulfonic acid (PFDS)[N15]	5	ug/kg	< 5	< 5	< 5
13C3-PFBS (surr.)	1	%	88	86	90
18O2-PFHxS (surr.)	1	%	92	98	99
13C8-PFOS (surr.)	1	%	151	154	152
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	10	ug/kg	< 10	< 10	< 10
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	5	ug/kg	< 5	< 5	< 5
13C2-4:2 FTSA (surr.)	1	%	39	51	49
13C2-6:2 FTSA (surr.)	1	%	53	61	59
13C2-8:2 FTSA (surr.)	1	%	137	140	148
PFASs Summations					
Sum (PFHxS + PFOS)*	5	ug/kg	< 5	< 5	< 5
Sum of US EPA PFAS (PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5
Sum of WA DWER PFAS (n=10)*	10	ug/kg	< 10	< 10	< 10
Sum of PFASs (n=28)*	50	ug/kg	< 50	< 50	< 50
% Moisture	1	%	56	23	26

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

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

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Brisbane	Jul 30, 2018	180 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Brisbane	Jul 30, 2018	180 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Brisbane	Jul 30, 2018	180 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Brisbane	Jul 30, 2018	180 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
% Moisture	Brisbane	Jul 30, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

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NATA # 1261 Site # 18217

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NATA # 1261 Site # 20794

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Site # 23736

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Address: 147 Coronation Dve
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QLD 4064

Project Name:
Project ID: 18100235

Order No.:
Report #: 612811
Phone: (07) 3721 5400
Fax: (07) 3721 5401

Received: Jul 27, 2018 3:00 PM
Due: Aug 17, 2018
Priority: 15 Day
Contact Name: Greg Whitmore

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						CANCELLED	Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)	Per- and Polyfluoroalkyl Substances (PFASs) - Ultra Trace
Melbourne Laboratory - NATA Site # 1254 & 14271									
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794						X	X	X	X
Perth Laboratory - NATA Site # 23736									
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	SD03	Jul 18, 2018		Sediment	B18-JI34034		X	X	
2	SD05	Jul 18, 2018		Sediment	B18-JI34035		X	X	
3	SD06	Jul 18, 2018		Sediment	B18-JI34036		X	X	
4	SD07	Jul 18, 2018		Sediment	B18-JI34037		X	X	
5	SD08	Jul 18, 2018		Sediment	B18-JI34038		X	X	
6	SD09	Jul 18, 2018		Sediment	B18-JI34039		X	X	
7	SD11	Jul 18, 2018		Sediment	B18-JI34040		X	X	
8	SD02	Jul 18, 2018		Sediment	B18-JI34041		X	X	
9	SD01	Jul 18, 2018		Sediment	B18-JI34042		X	X	

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NATA # 1261 Site # 20794

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Received: Jul 27, 2018 3:00 PM
Due: Aug 17, 2018
Priority: 15 Day
Contact Name: Greg Whitmore

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						CANCELLED	Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)	Per- and Polyfluoroalkyl Substances (PFASs) - Ultra Trace
Melbourne Laboratory - NATA Site # 1254 & 14271									
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794						X	X	X	X
Perth Laboratory - NATA Site # 23736									
10	SD04	Jul 18, 2018		Sediment	B18-JI34043		X	X	
11	SD10	Jul 18, 2018		Sediment	B18-JI34044	X			
12	QAQC100	Jul 18, 2018		Sediment	B18-JI34045		X	X	
13	QAQC201	Jul 18, 2018		Water	B18-JI34046				X
Test Counts						1	11	11	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

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

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

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

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

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/kg	< 5			5	Pass	
Perfluoropentanoic acid (PFPeA)	ug/kg	< 5			5	Pass	
Perfluorohexanoic acid (PFHxA)	ug/kg	< 5			5	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/kg	< 5			5	Pass	
Perfluorooctanoic acid (PFOA)	ug/kg	< 5			5	Pass	
Perfluorononanoic acid (PFNA)	ug/kg	< 5			5	Pass	
Perfluorodecanoic acid (PFDA)	ug/kg	< 5			5	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/kg	< 5			5	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/kg	< 5			5	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/kg	< 5			5	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/kg	< 5			5	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/kg	< 5			5	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/kg	< 5			5	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/kg	< 5			5	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/kg	< 5			5	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	ug/kg	< 5			5	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/kg	< 10			10	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/kg	< 10			10	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/kg	< 5			5	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/kg	< 5			5	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	< 5			5	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	< 5			5	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/kg	< 5			5	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/kg	< 5			5	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/kg	< 5			5	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	ug/kg	< 10			10	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/kg	< 5			5	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/kg	< 5			5	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	112			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	123			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	108			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	122			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	102			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	110			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	114			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	128			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	110			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	124			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	113			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluorooctane sulfonamide (FOSA)	%	117			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	106			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	120			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	113			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	134			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	118			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	105			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	105			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	109			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	122			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	119			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	114			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	127			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	113			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	122			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	108			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	110			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	B18-JI34038	CP	%	96			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	B18-JI34038	CP	%	102			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	B18-JI34038	CP	%	90			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-JI34038	CP	%	92			50-150	Pass	
Perfluorooctanoic acid (PFOA)	B18-JI34038	CP	%	94			50-150	Pass	
Perfluorononanoic acid (PFNA)	B18-JI34038	CP	%	93			50-150	Pass	
Perfluorodecanoic acid (PFDA)	B18-JI34038	CP	%	90			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-JI34038	CP	%	93			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-JI34038	CP	%	92			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-JI34038	CP	%	105			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-JI34038	CP	%	103			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	B18-JI34038	CP	%	102			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-JI34038	CP	%	96			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-JI34038	CP	%	97			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-JI34038	CP	%	91			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-JI34038	CP	%	112			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-JI34038	CP	%	90			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-JI34038	CP	%	84			50-150	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	B18-JI34038	CP	%	84			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-JI34038	CP	%	100			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-JI34038	CP	%	111			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-JI34038	CP	%	117			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-JI34038	CP	%	91			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-JI34038	CP	%	102			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-JI34038	CP	%	114			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-JI34038	CP	%	91			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-JI34038	CP	%	91			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-JI34038	CP	%	115			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B18-JI34034	CP	%	24	24	<1	30%	Pass	
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-JI34037	CP	ug/kg	< 10	< 10	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-JI34037	CP	ug/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-JI34037	CP	ug/kg	< 10	< 10	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-JI34037	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B18-JI34045	CP	%	26	25	4.0	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised By

Ryan Gilbert	Analytical Services Manager
Jonathon Angell	Senior Analyst-Organic (QLD)
Steven Trout	Senior Analyst-Metal (QLD)



Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

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

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SAMPLE CHAIN OF CUSTODY DOCUMENTATION

(DAY

Sheet of

Project No:	18100235	Phase:	6000	Lab Name:	Eurofins Brisbane
Site ID No.:	n/a	Site Location:		Quote No.	EN0769GOL
Sampled By:	James Comley				
Turnaround Time	24hrs ☐ 36hrs ☐	48hrs ☐ 5 Days ☐	Standard ☑	Date Required By: 17-Aug-18	1/21 Smallwood Place, Murarrie, QLD, Australia, 4172
Report Format	PDF ☑	EXCEL ☑	ESDAT ☑	EQUIS ☐	
COC point of contact for info:	Greg Whitmore		Phone	0490735572	

GOLDER ASSOCIATES PTY LTD			Report Recipient:	Greg Whitmore	Phone: 61490735572 Email: GWhitmore@golder.com.au
Brisbane Office				James Comley	Phone: 61423079188 Email: jcomley@golder.com.au
147 Coronation Drive	ph: 07 3721 5400		Invoice Recipient:	Accounts Payable	Phone: 03 8862 3628 Email: apaccountsau@golder.com.au
MILTON QLD 4064	fax: 07 3721 5401			Greg Whitmore	Phone: 61490735572 Email: GWhitmore@golder.com.au

Comments/Special Instructions:

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINERS	Level of Contamination (low, high/unknown)	ON HOLD	28 PFAS including PFOA/PFOS and 6:2 FTS (LOR 0.5-2.0ug/kg)	28 PFAS including PFOA/PFOS and 6:2 FTS (LOR 5-10 ug/kg)	28 PFAS Including PFOA/PFOS and 6:2 FTS Ultra Trace								Comments
	SD10		22-Jul		Sediment	Ziplock/tub	Unknown			X									
							TOTAL	0	0	1	0	0	0	0	0	0	0	0	0

SAMPLE MATRIX = Soil/Sediment/Fill/Water/Other SAMPLE TYPE = Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR), Grab Sample (GS) HIGH CONCENTRATION: circle expected parameters in analysis list

WATER CONTAINER CODES P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

	NAME	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY					
RECEIVED BY	DANA.		EMEA	23/8	3PM
RELEASED BY					
RECEIVED BY					

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

SAMPLE MISPLACED AT LAB.
INITIALLY RECIEVED 27/7.

RL3
SNT004
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**Golder Associates Pty Ltd (Qld)**
Contact name:	Greg Whitmore
Project name:	18100235
Project ID:	6000
COC number:	Not provided
Turn around time:	1 Day
Date/Time received:	Aug 23, 2018 3:00 PM
Eurofins | mgt reference:	**613763**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 6 degrees Celsius.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Ryan Gilbert on Phone : or by e.mail: RyanGilbert@eurofins.com

Results will be delivered electronically via e.mail to Greg Whitmore - GWhitmore@golder.com.au.

eurofins | mgt

ABN– 50 005 085 521
e.mail : EnviroSales@eurofins.com
web : www.eurofins.com.au

Melbourne
2-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name: Golder Associates Pty Ltd (Qld)
Address: 147 Coronation Dve
Milton
QLD 4064

Project Name: 18100235
Project ID: 6000

Order No.:
Report #: 613763
Phone: (07) 3721 5400
Fax: (07) 3721 5401

Received: Aug 23, 2018 3:00 PM
Due: Aug 24, 2018
Priority: 1 Day
Contact Name: Greg Whitmore

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	SD10	Jul 22, 2018		Soil	B18-Au29331	X	X
Test Counts						1	1

Certificate of Analysis

Golder Associates Pty Ltd
147 Coronation Dve
Milton
QLD 4064

NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Greg Whitmore**

Report **613763-S**
Project name 18100235
Project ID 6000
Received Date Aug 23, 2018

Client Sample ID			**SD10**
Sample Matrix			**Soil**
Eurofins | mgt Sample No.			**B18-Au29331**
Date Sampled			**Jul 22, 2018**
Test/Reference	LOR	Unit	
Perfluoroalkyl carboxylic acids (PFCAs)			
Perfluorobutanoic acid (PFBA)[N11]	5	ug/kg	< 5
Perfluoropentanoic acid (PFPeA)[N11]	5	ug/kg	< 5
Perfluorohexanoic acid (PFHxA)[N11]	5	ug/kg	< 5
Perfluoroheptanoic acid (PFHpA)[N11]	5	ug/kg	< 5
Perfluorooctanoic acid (PFOA)[N11]	5	ug/kg	< 5
Perfluorononanoic acid (PFNA)[N11]	5	ug/kg	< 5
Perfluorodecanoic acid (PFDA)[N11]	5	ug/kg	< 5
Perfluoroundecanoic acid (PFUnDA)[N11]	5	ug/kg	< 5
Perfluorododecanoic acid (PFDoDA)[N11]	5	ug/kg	< 5
Perfluorotridecanoic acid (PFTrDA)[N15]	5	ug/kg	< 5
Perfluorotetradecanoic acid (PFTeDA)[N11]	5	ug/kg	< 5
13C4-PFBA (surr.)	1	%	85
13C5-PFPeA (surr.)	1	%	114
13C5-PFHxA (surr.)	1	%	114
13C4-PFHpA (surr.)	1	%	89
13C8-PFOA (surr.)	1	%	96
13C5-PFNA (surr.)	1	%	84
13C6-PFDA (surr.)	1	%	111
13C2-PFUnDA (surr.)	1	%	116
13C2-PFDoDA (surr.)	1	%	130
13C2-PFTeDA (surr.)	1	%	98
Perfluoroalkyl sulfonamido substances			
Perfluorooctane sulfonamide (FOSA)[N11]	5	ug/kg	< 5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	5	ug/kg	< 5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	5	ug/kg	< 5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	5	ug/kg	< 5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	5	ug/kg	< 5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	10	ug/kg	< 10
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	10	ug/kg	< 10
13C8-FOSA (surr.)	1	%	115
D3-N-MeFOSA (surr.)	1	%	85
D5-N-EtFOSA (surr.)	1	%	108

Client Sample ID			SD10
Sample Matrix			Soil
Eurofins | mgt Sample No.			B18-Au29331
Date Sampled			Jul 22, 2018
Test/Reference	LOR	Unit	
Perfluoroalkyl sulfonamido substances			
D7-N-MeFOSE (surr.)	1	%	79
D9-N-EtFOSE (surr.)	1	%	75
D5-N-EtFOSAA (surr.)	1	%	126
D3-N-MeFOSAA (surr.)	1	%	137
Perfluoroalkyl sulfonic acids (PFSAs)			
Perfluorobutanesulfonic acid (PFBS)[N11]	5	ug/kg	< 5
Perfluoropentanesulfonic acid (PFPeS)[N15]	5	ug/kg	< 5
Perfluorohexanesulfonic acid (PFHxS)[N11]	5	ug/kg	< 5
Perfluoroheptanesulfonic acid (PFHpS)[N15]	5	ug/kg	< 5
Perfluorooctanesulfonic acid (PFOS)[N11]	5	ug/kg	< 5
Perfluorodecanesulfonic acid (PFDS)[N15]	5	ug/kg	< 5
13C3-PFBS (surr.)	1	%	90
18O2-PFHxS (surr.)	1	%	101
13C8-PFOS (surr.)	1	%	102
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	5	ug/kg	< 5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	10	ug/kg	< 10
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	5	ug/kg	< 5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	5	ug/kg	< 5
13C2-4:2 FTSA (surr.)	1	%	88
13C2-6:2 FTSA (surr.)	1	%	81
13C2-8:2 FTSA (surr.)	1	%	101
PFASs Summations			
Sum (PFHxS + PFOS)*	5	ug/kg	< 5
Sum of US EPA PFAS (PFOS + PFOA)*	5	ug/kg	< 5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	5	ug/kg	< 5
Sum of WA DWER PFAS (n=10)*	10	ug/kg	< 10
Sum of PFASs (n=28)*	50	ug/kg	< 50
% Moisture	1	%	25

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

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

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Brisbane	Aug 23, 2018	180 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Brisbane	Aug 23, 2018	180 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Brisbane	Aug 23, 2018	180 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Brisbane	Aug 23, 2018	180 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
% Moisture	Brisbane	Aug 23, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

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NATA # 1261
Site # 1254 & 14271

Sydney
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Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**		**Received:**	Aug 23, 2018 3:00 PM
Address:	147 Coronation Dve Milton QLD 4064	**Report #:**	613763	**Due:**	Aug 24, 2018
		Phone:	(07) 3721 5400	**Priority:**	1 Day
		Fax:	(07) 3721 5401	**Contact Name:**	Greg Whitmore
Project Name:	18100235				
Project ID:	6000				

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	SD10	Jul 22, 2018		Soil	B18-Au29331	X	X
Test Counts						1	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

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

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

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

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

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/kg	< 5			5	Pass	
Perfluoropentanoic acid (PFPeA)	ug/kg	< 5			5	Pass	
Perfluorohexanoic acid (PFHxA)	ug/kg	< 5			5	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/kg	< 5			5	Pass	
Perfluorooctanoic acid (PFOA)	ug/kg	< 5			5	Pass	
Perfluorononanoic acid (PFNA)	ug/kg	< 5			5	Pass	
Perfluorodecanoic acid (PFDA)	ug/kg	< 5			5	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/kg	< 5			5	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/kg	< 5			5	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/kg	< 5			5	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/kg	< 5			5	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/kg	< 5			5	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/kg	< 5			5	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/kg	< 5			5	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/kg	< 5			5	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	ug/kg	< 5			5	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/kg	< 10			10	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/kg	< 10			10	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/kg	< 5			5	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/kg	< 5			5	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	< 5			5	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	< 5			5	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/kg	< 5			5	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/kg	< 5			5	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/kg	< 5			5	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	ug/kg	< 10			10	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/kg	< 5			5	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/kg	< 5			5	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	107			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	114			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	105			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	102			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	103			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	102			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	104			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	115			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	97			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	103			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	99			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluorooctane sulfonamide (FOSA)	%	94			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	106			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	139			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	126			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	94			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	96			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	110			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	88			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	111			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	104			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	127			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	105			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	92			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	103			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	108			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	99			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	135			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	S18-Au23925	NCP	%	101			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	S18-Au23925	NCP	%	108			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	S18-Au23925	NCP	%	106			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	S18-Au23925	NCP	%	101			50-150	Pass	
Perfluorooctanoic acid (PFOA)	S18-Au23925	NCP	%	100			50-150	Pass	
Perfluorononanoic acid (PFNA)	S18-Au23925	NCP	%	100			50-150	Pass	
Perfluorodecanoic acid (PFDA)	S18-Au23925	NCP	%	104			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	S18-Au23925	NCP	%	111			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	S18-Au23925	NCP	%	94			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	S18-Au23925	NCP	%	99			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S18-Au23925	NCP	%	103			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	S18-Au23925	NCP	%	96			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S18-Au23925	NCP	%	97			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S18-Au23925	NCP	%	130			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	S18-Au23925	NCP	%	117			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	S18-Au23925	NCP	%	95			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S18-Au23925	NCP	%	97			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S18-Au23925	NCP	%	107			50-150	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	S18-Au23925	NCP	%	90			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S18-Au23925	NCP	%	114			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S18-Au23925	NCP	%	101			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S18-Au23925	NCP	%	128			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	S18-Au23925	NCP	%	111			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	S18-Au23925	NCP	%	85			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S18-Au23925	NCP	%	97			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	S18-Au23925	NCP	%	99			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S18-Au23925	NCP	%	99			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S18-Au23925	NCP	%	134			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-Au28691	NCP	ug/kg	< 10	< 10	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-Au28691	NCP	ug/kg	< 10	< 10	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-Au28691	NCP	ug/kg	< 10	< 10	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-Au28691	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B18-Au29331	CP	%	25	21	17	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised By

Ryan Gilbert	Analytical Services Manager
Jonathon Angell	Senior Analyst-Organic (QLD)
Steven Trout	Senior Analyst-Metal (QLD)



Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

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

Eurofins | mgt shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins | mgt be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

APPENDIX F

Laboratory certificates: biota tissue samples

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No:	18100235	Phase:	6000	Lab Name:	Eurofins Brisbane
Site ID No.:	n/a	Site Location:		Quote No.	EB2076COC
Sampled By:	James Comley				
Turnaround Time	24hrs ☐ 48hrs ☐ Standard ☑ Date Required By: 1st Aug 18				131 Stradbroke Rise, Moorooka QLD, Australia, 4105
Report Format	PDF ☑ EXCEL ☑ ESDAT ☑ EQUIS ☐				
COC point of contact for info:	Greg Whitmore	Phone	84937335572		

GOLDER ASSOCIATES PTY LTD			Report Recipient:	Greg Whitmore	Phone:	61437335572	Email:
Brisbane Office				James Comley	Phone:	61427079184	Email:
147 Coronation Drive	ph: 07 3721 5400		Invoice Recipient:	Accounts Payable	Phone:	07 3552 3000	Email:
MILTON QLD 4064	fax: 07 3721 5401			Greg Whitmore	Phone:	61437335572	Email:

Comments/Special Instructions:

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINERS	Level of Contamination (low,high/unknown)	ON HOLD	28 PFAS including PFOA/PFOS and 6:2 FTS (LOR 0.5-2.0ug/kg)										Comments
	BT01 Prawn(2) 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove tissue from shell, Record wet weight of tissue, Composite tissue from individuals
	BT01 Prawn 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Composite tissue from individuals, Retain remaining carcass
	BT01 Catfish 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	BT01 Mudcrab(2) 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Split sample: analyse primary- label split as OAQC207 -forward to ALS, Retain remaining tissue and carapace
	BT01 Mudcrab 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining tissue and carapace
	BT01 Prawn(2) 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion, Record wet weight of tissue, Split sample: analyse primary- label split as OAQC204 - forward to ALS, Retain remaining tissue and carapace
	BT01 Prawn 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion, Record wet weight of tissue, Composite tissue from individuals, Retain remaining tissue and carapace
	BT01DS Catfish 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	BT01DS Jewfish(2) 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	BT01DS Jewfish 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	BT01DS Mudcrab 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Composite tissue from individuals, Retain remaining tissue and carapace
	BT01DS Mullet 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Composite tissue from individuals, Retain remaining carcass
	BT01DS Mullet 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	BT01DS Mullet 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	BT01DS Mullet 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	BT01DS Oyster 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion, Record wet weight of tissue, Composite tissue from individuals, Split sample: analyse primary- label split as OAQC209 -forward to ALS, Retain remaining tissue and carapace
	BT01 Catfish 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove tissue from shell, Record wet weight of tissue, Retain tissue and shell
	BT01 Crayfish 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove tissue from shell, Record wet weight of tissue, Composite tissue from individuals, Retain remaining tissue
	BT01 Mudcrab 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining tissue and carapace
	BT01 Prawn 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove tissue from shell, Composite tissue from individuals, Record wet weight of tissue, Retain remaining tissue and shell
	BT02 Barramundi 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove tissue from shell, Composite tissue from individuals, Record wet weight of tissue, Retain remaining tissue and shell
	BT02 Scampi(2) 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining tissue and carapace
	BT02 Scampi(2) 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Composite tissue from individuals, Retain remaining tissue and carapace
	BT03 Catfish 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove tissue from shell, Record wet weight of tissue, Composite tissue from individuals, Retain tissue and shells
	BT03 Mudcrab 24/07/18		24.Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Split sample: analyse primary- label split as OAQC208 -forward to ALS, Retain remaining tissue and carapace
							TOTAL	0	25	0	0	0	0	0	0	0	0	0	

SAMPLE MATRIX = Soil/Sediment/FA/Water/Other SAMPLE TYPE = Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR), Grab Sample (GS) HIGH CONCENTRATION: circle expected parameters in analysis list

WATER CONTAINER CODES: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airtight Unpreserved Plastic V = VOA Vial HCl Preserved; VS = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airtight Unpreserved Vial SC = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

	NAME	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	JAMES Comley		GOLDER	27/7	12:00
RECEIVED BY	Steven Mm		Eurofins	27/7	12:00
RELEASED BY					
RECEIVED BY					

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

THIS FORM IS TO BE SIGNED BY GOLDER STAFF, COURIER/S, LABORATORY ON RECEIPT OF SAMPLES.

RL3
SNE24
Feb 2011

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No:	18100335	Phase:	6000	Lab Quote:	Eurofins Kelvinbore
Site ID No.:	n.a.	Site Location:		Quote No.	SMPWQ01
Sampled By:	James Conley				
Turnaround Time	24hrs ☐ 48hrs ☐	Mins ☐ 3 Days ☐	Standard ☒	Date Required By	LTA Smithers/Chris Morrow, GHD, Emma Lisle
Report Format	PDF ☒	EXCEL ☒	EDAT ☒	EQUIS ☐	
COC point of contact for lists	Greg Wilkinson		Phone	0499213572	

GOLDER ASSOCIATES PTY LTD

Brisbane Office		Report Recipient:	Greg Wilkinson	Phone:	0499213572	Email:	LTA Smithers/Chris Morrow, GHD, Emma Lisle
147 Coronation Drive	SA: 07 3721 5400	Invoice Recipient:	James Conley	Phone:	0422278184	Email:	jconley@golder.com.au
MILTON QLD 4064	fax 07 3721 5401		Accounts Payable	Phone:	03 8820 5576	Email:	ausinvoices@ghd.com.au
			Greg Wilkinson	Phone:	0499213572	Email:	LTA Smithers/Chris Morrow, GHD, Emma Lisle

Comments/Special Instructions:

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINERS	Level of Contamination (Low, Medium or High)	ON HOLD	28 PFAS (including PFOS and PFHxS) (LOR is 0.5ug/kg)										Comments
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove tissue from shell, Record wet weight of tissue, Composite tissue from individuals, Retain remaining tissue and shell
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Composite tissue from individuals, Retain remaining tissue and carapace
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Composite tissue from individuals, Retain remaining tissue and carapace
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove tissue from shell, Composite tissue from individuals, Record wet weight of tissue, Split sample: analyse primary- label split as QA/QC25 - forward to ALS, Retain remaining tissue
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove tissue from shell, Record wet weight of tissue, Composite tissue from individuals, Retain tissue and shells
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Composite tissue from individuals, Record wet weight of tissue, Retain remaining carcass
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining tissue and carapace
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Composite tissue from individuals, Retain remaining tissue and carapace
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Composite tissue from individuals, Record wet weight of tissue, Retain remaining carcass
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining tissue and carapace
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining tissue and carapace
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining tissue and carapace
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Composite tissue from individuals, Record wet weight of tissue, Retain remaining carcass
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining tissue and carapace
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Composite tissue from individuals, Retain remaining carcass
	[illegible]		[illegible]						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
TOTAL								0	25	0	0	0	0	0	0	0	0	0	

SAMPLE MATRIX = Soil/Sediment/Air/Water/Other SAMPLE TYPE = Composite(C)/Discrete(DC)/Grab(G)/Core(CR) Grab Sample (GS) HIGH CONCENTRATION: circle expected parameters in analysis list

WATER CONTAINER CODES: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORD = Nitric Preserved EAC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VS = VOA Vial Sodium Bisulphate Preserved; VA = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

	NAME	ORGANISATION	COMPANY	DATE	TIME
RELEASED BY	JAMES CONLEY	[illegible]	GOLDER	27/7	12:45
RECEIVED BY	[illegible]	[illegible]	EUROFINS	27/7	12:45
RELEASED BY					
RECEIVED BY					

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIERS; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No:	18100235	Client:	6900	EAN Account:	EarthSafe Ecotoxics
Site ID No.:	n/a	Site Location:		Quote No.:	EW1940GOL
Sampled By:	James Cordey				
Turnaround Time:	24hrs ☐ 48hrs ☐ Standard ☒ Date Required By:				17 Hartley Teakle Road, Port Adelaide, SA 5015
	36hrs ☐ 5 Days ☐				
Report Format:	PDF ☒ EXCEL ☒ EXCAT ☒ EDUS ☐				
COC point of contact for info:	Greg Wilkinson	Phone:	0400735372		

GOLDER ASSOCIATES PTY LTD			Report Recipient:	Greg Wilkinson	Phone:	0400735372	Email:	GWilkinson@golder.com.au
Brisbane Office				James Cordey	Phone:	0412337188	Email:	jcordey@golder.com.au
147 Coronation Drive	ph 07 3721 5400		Invoice Recipient:	Accounts Payable	Phone:	08 8362 0000	Email:	invoices@golder.com.au
MILTON QLD 4064	fax 07 3721 5401			Greg Wilkinson	Phone:	0400735372	Email:	GWilkinson@golder.com.au

Comments/Special Instructions:

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINERS	Level of Contamination (Low/Mod/Unknown)	ON HOLD	28 PFAS including PFOA/PFOS and 6:2 FTS (EDN 0.4.5.0.0.0)									Comments
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining tissue and carapace
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Split sample, analyse primary-label split as QADCCC3 -forward to ALS, Retain remaining tissue and carapace
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Composite tissue from individuals, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Composite tissue from individuals, Retain remaining tissue and carapace
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Composite tissue from individuals, Retain remaining tissue and carapace
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Split sample, analyse primary-label split as QADCCC3 -forward to ALS, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining carcass
					Biota		Unknown		x									Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
							TOTAL	0	22	0	0	0	0	0	0	0	0	

SAMPLE MATRIX = Soil/Sediment/Water/Other SAMPLE TYPE = Composite(C)/Discrete(DC)/Duplicate(CC)/Core(CR)/ Grab Sample(GS) HIGH CONCENTRATION: circle expected parameters or analytes list

WATER CONTAINER CODES: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VS = VOA Vial Sodium Bisulphate Preserved; VA = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

	NAME	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	JAMES CORDEY	Jordey	GOLDER	27/7	12:00
RECEIVED BY	Fedex		FedEx	27/7	12:30
RELEASED BY					
RECEIVED BY					

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

813
ENVAus
Feb 2021

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No:	18100235	Phase	6000	Lab Name:	Envirolab Brisbane
Site ID No.:	n/a	Site Location:		Quote No.	EB220CGOL
Sampled By:	James Comley				
Turnaround Time	24hrs ☐ 48hrs ☐ Standard ☑ Date Required By:			12/13 Smallwood Place, Murarrie, Qld, Australia, 4172	
	36hrs ☐ 5 Days ☐				
Report Format	PDF ☐ EXCEL ☑ ESDAT ☑ EDUS ☐				
COC point of contact for labs:	Greg Whitmore	Phone	0490735372		

GOLDER ASSOCIATES PTY LTD			Report Recipient:	Greg Whitmore	Phone:	61409735372	Email:	GWhitmore@golder.com.au
Brisbane Office				James Comley	Phone:	61403373169	Email:	jcomley@golder.com.au
147 Coronation Drive	ph. 07 3721 5400		Invoice Recipient:	Accounts Payable	Phone:	07 3721 5400	Email:	auinvoice@golder.com.au
MILTON QLD 4064	fax 07 3721 5401			Greg Whitmore	Phone:	61409735372	Email:	GWhitmore@golder.com.au

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINER	Level of Contamination (low, high/unknown)	OH HOLD	28 PFAS including PFOA/PFOS and 6:2 FTS (LOR 0.5-2.0ug/kg)	28 PFAS including PFOA/PFOS and 6:2 FTS (LOR 5-10 ug/kg)	28 PFAS including 9/PFOA/PFOS and 6:2 FTS Ultra Trace						Comments
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining tissue and carapace
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Composite tissue from individuals, Retain remaining tissue and carapace
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Split sample: analyse primary label split as QAQC108 -forward to ALS, Retain remaining carcass
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	[illegible]				Biota	Zip bag	Unknown		x								Photograph prior to dissection, PFAS-free DI water rinse, Remove carapace - extract edible portion from body and claws, Record wet weight of tissue, Retain remaining tissue and carapace
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Sediment	Zip lock bag	Unknown			x							
	[illegible]				Water	Amber	Unknown				x						
							TOTAL	0	12	12	1	0	0	0	0	0	12	0	0	0

SAMPLE MATRIX = Soil/Sediment/Fill/Water/Other

SAMPLE TYPE = Composite(C)/Discrete(D)/Grab/Duplicate(DUP)/Core(CR)/Grab Sample (GS)

HIGH CONCENTRATION: once expected parameters in analysis list

WATER CONTAINER CODES: P = Unpreserved Plastic N = Nitric Preserved Plastic ORC = Nitric Preserved ORC SH = Sodium Hydroxide/Cd Preserved S = Sodium Hydroxide Preserved Plastic AG = Amber Glass Unpreserved AP = Airfreight Unpreserved Plastic V = VOA Vial HCl Preserved VB = VOA Vial Sodium Bisulphate Preserved VS = VOA Vial Sulfuric Preserved AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass H = HCl preserved Plastic HS = HCl preserved Speciation bottle SP = Sulfuric Preserved Plastic F = Formaldehyde Preserved Glass Z = Zinc Acetate Preserved Bottle E = EDTA Preserved Bottle ST = Sterile Bottle ASS = Plastic Bag for Acid Sulphate Soils B = Unpreserved Bag

	NAME	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	James Comley	[signature]	GOLDER	27/7	12:00
RECEIVED BY	[illegible]	[signature]	EVRL	27/7	12:00
RELEASED BY					
RECEIVED BY					

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS
ENV004
Feb 2016

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

Melbourne
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Oakleigh Vic 3166
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Site # 1254 & 14271

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Brisbane
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NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**Golder Associates Pty Ltd (Qld)**
Contact name:	Greg Whitmore
Project ID:	18100235
COC number:	6000
Turn around time:	15 Day
Date/Time received:	Jul 27, 2018 3:00 PM
Eurofins | mgt reference:	**609830**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☑ Sample containers for volatile analysis received with zero headspace.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Ryan Gilbert on Phone : or by e.mail: RyanGilbert@eurofins.com

Results will be delivered electronically via e.mail to Greg Whitmore - GWhitmore@golder.com.au.

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Site # 23736

Company Name: Golder Associates Pty Ltd (Qld)
Address: 147 Coronation Dve
Milton
QLD 4064

Project Name:
Project ID: 18100235

Order No.:
Report #: 609830
Phone: (07) 3721 5400
Fax: (07) 3721 5401

Received: Jul 27, 2018 3:00 PM
Due: Aug 17, 2018
Priority: 15 Day
Contact Name: Greg Whitmore

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						CANCELLED	Initial Weight	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
External Laboratory								
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
1	BT08_MULLET(2)_19/07/18	Jul 19, 2018		Fish	B18-Au00742		X	X
2	BT01_BREAM(2)_24/07/18	Jul 24, 2018		Fish	B18-JI33668		X	X
3	BT01_BREAM_24/07/18	Jul 24, 2018		Fish	B18-JI33669		X	X
4	BT01_CATFISH_24/07/18	Jul 24, 2018		Fish	B18-JI33670		X	X
5	BT01_MUDCRAB(2)_24/07/18	Jul 24, 2018		Crustacean	B18-JI33671		X	X

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Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
6	BT01_MUDCRAB_24/07/18	Jul 24, 2018		Crustacean	B18-JI33672		X	X
7	BT01_PRAWN(2)_24/07/18	Jul 24, 2018		Crustacean	B18-JI33673		X	X
8	BT01_PRAWN_24/07/18	Jul 24, 2018		Crustacean	B18-JI33674		X	X
9	BT01DS_CATFISH_23/07/18	Jul 23, 2018		Fish	B18-JI33675		X	X
10	BT01DS_JAVLINFISH(2)_23/07/18	Jul 23, 2018		Fish	B18-JI33676		X	X
11	BT01DS_JAVLINFISH_23/07/18	Jul 23, 2018		Fish	B18-JI33677		X	X
12	BT01DS_MUD	Jul 23, 2018		Crustacean	B18-JI33678		X	X

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Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
	CRAB_23/07/18							
13	BT01DS_MULLET_23/07/18	Jul 23, 2018		Fish	B18-JI33969	X		
14	BT01DS_ROCKCOD_23/07/18	Jul 23, 2018		Fish	B18-JI33970		X	X
15	BT01US_MULLET_23/07/18	Jul 23, 2018		Fish	B18-JI33971		X	X
16	BT01US_ROCKCOD_23/07/18	Jul 23, 2018		Fish	B18-JI33972		X	X
17	BT01US_SHRIMP_23/07/18	Jul 23, 2018		Crustacean	B18-JI33973		X	X
18	BT02_COCKL	Jul 23, 2018		Crustacean	B18-JI33974		X	X

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Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
	E_23/07/18							
19	BT02_GASTROPOD_23/07/18	Jul 23, 2018		Crustacean	B18-JI33975		X	X
20	BT02_MUDCRAB_20/07/18	Jul 20, 2018		Crustacean	B18-JI33976		X	X
21	BT02_SWIMMER(2)_22/07/18	Jul 22, 2018		Crustacean	B18-JI33977		X	X
22	BT03_COCKLE_19/07/18	Jul 19, 2018		Crustacean	B18-JI33978		X	X
23	BT03_MUDCRAB_19/07/18	Jul 19, 2018		Crustacean	B18-JI33979		X	X
24	BT03_ROCKOYSTER_19/07/	Jul 19, 2018		Crustacean	B18-JI33980		X	X

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Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
	18							
25	BT03_SWIMMER_19/07/18	Jul 19, 2018		Crustacean	B18-JI33981		X	X
26	BT03A_MILKFISH_20/07/18	Jul 20, 2018		Fish	B18-JI33982		X	X
27	BT04_SWIMMER_21/07/18	Jul 21, 2018		Crustacean	B18-JI33983		X	X
28	BT05_CATFISH_20/07/18	Jul 20, 2018		Fish	B18-JI33984		X	X
29	BT05_COCKLE_19/07/18	Jul 19, 2018		Crustacean	B18-JI33985		X	X
30	BT05_GASTROPOD_19/07/18	Jul 19, 2018		Crustacean	B18-JI33986		X	X

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Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
31	BT05_GRUNTER_20/07/18	Jul 19, 2018		Fish	B18-JI33987		X	X
32	BT05_MUDCRAB_20/07/18	Jul 19, 2018		Crustacean	B18-JI33988		X	X
33	BT05_SWIMMER_20/07/18	Jul 19, 2018		Crustacean	B18-JI33989		X	X
34	BT05_TRUMPETER_20/07/18	Jul 19, 2018		Fish	B18-JI33990		X	X
35	BT06_BREAM(2)_25/07/18	Jul 25, 2018		Fish	B18-JI33991		X	X
36	BT06_BREAM_25/07/18	Jul 25, 2018		Fish	B18-JI33992		X	X
37	BT06_MUDCRAB(2)_18/07/1	Jul 18, 2018		Crustacean	B18-JI33993		X	X

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Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
	8							
38	BT06_MUDCRAB(3)_18/07/18	Jul 18, 2018		Crustacean	B18-JI33994		X	X
39	BT06_MUDCRAB_18/07/18	Jul 18, 2018		Crustacean	B18-JI33995		X	X
40	BT06_SHARK_18/07/18	Jul 21, 2018		Fish	B18-JI33996		X	X
41	BT06_SNAPPER_18/07/18	Jul 18, 2018		Fish	B18-JI33997		X	X
42	BT06_SWIMMER_18/07/18	Jul 18, 2018		Crustacean	B18-JI33998		X	X
43	BT07_CATFISH_17/07/18	Jul 17, 2018		Fish	B18-JI33999		X	X

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Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
44	BT07_GRUNTER_24/07/18	Jul 24, 2018		Fish	B18-JI34000		X	X
45	BT07_JAVELINFISH_24/07/18	Jul 24, 2018		Fish	B18-JI34001		X	X
46	BT07_MUDCRAB(2)_17/07/18	Jul 17, 2018		Crustacean	B18-JI34002		X	X
47	BT07_MUDCRAB_24/07/18	Jul 24, 2018		Crustacean	B18-JI34003		X	X
48	BT07_MULLET(2)_16/07/18	Jul 16, 2018		Fish	B18-JI34004		X	X
49	BT07_MULLET_24/07/18	Jul 24, 2018		Fish	B18-JI34005		X	X
50	BT07_SCAT(2	Jul 16, 2018		Fish	B18-JI34006	X		

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Company Name: Golder Associates Pty Ltd (Qld)
Address: 147 Coronation Dve
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Project Name:
Project ID: 18100235

Order No.:
Report #: 609830
Phone: (07) 3721 5400
Fax: (07) 3721 5401

Received: Jul 27, 2018 3:00 PM
Due: Aug 17, 2018
Priority: 15 Day
Contact Name: Greg Whitmore

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						CANCELLED	Initial Weight	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
	)_16/07/18							
51	BT07_SCAT_16/07/18	Jul 16, 2018		Fish	B18-JI34007	X		
52	BT07_SNAPPER_16/07/18	Jul 16, 2018		Fish	B18-JI34008		X	X
53	BT08_CATFISH(2)_16/07/18	Jul 16, 2018		Fish	B18-JI34009		X	X
54	BT08_CATFISH_19/07/18	Jul 19, 2018		Fish	B18-JI34010		X	X
55	BT08_JAVELINFISH_19/07/18	Jul 19, 2018		Fish	B18-JI34011	X		
56	BT08_MUDCRAB_17/07/18	Jul 17, 2018		Crustacean	B18-JI34012		X	X

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Sample Detail						CANCELLED	Initial Weight	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
57	BT08_MULLET(3)_19/07/18	Jul 19, 2018		Fish	B18-JI34013	X		
58	BT08_MULLET_19/07/18	Jul 19, 2018		Fish	B18-JI34014		X	X
59	BT09_CATFISH_19/07/18	Jul 19, 2018		Fish	B18-JI34015		X	X
60	BT09_MUDCRAB_19/07/18	Jul 19, 2018		Crustacean	B18-JI34016		X	X
61	BT09_ROCKCOD_19/07/18	Jul 19, 2018		Fish	B18-JI34017		X	X
62	BT10_CATFISH(2)_22/07/18	Jul 22, 2018		Fish	B18-JI34018		X	X
63	BT10_CATFISH_22/07/18	Jul 22, 2018		Fish	B18-JI34019		X	X

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Sample Detail						CANCELLED	Initial Weight	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
64	BT10_MUDCRAB_22/07/18	Jul 22, 2018		Crustacean	B18-JI34020		X	X
65	BT10_MULLET_22/07/18	Jul 22, 2018		Fish	B18-JI34021		X	X
66	BT10_SCAT_22/07/18	Jul 22, 2018		Fish	B18-JI34022		X	X
67	BT10_SWIMMER(2)_22/07/18	Jul 22, 2018		Crustacean	B18-JI34023		X	X
68	BT10_SWIMMER_22/07/18	Jul 22, 2018		Crustacean	B18-JI34024		X	X
69	BT11_HERRING_18/07/18	Jul 18, 2018		Fish	B18-JI34025		X	X
70	BT11_CATFISH_18/07/18	Jul 18, 2018		Fish	B18-JI34026	X		

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Sample Detail						CANCELLED	Initial Weight	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
71	BT11_MULLET(2)_18/07/18	Jul 18, 2018		Fish	B18-JI34027		X	X
72	BT11_MULLET(3)_18/07/18	Jul 18, 2018		Fish	B18-JI34028		X	X
73	BT11_MULLET(4)_18/07/18	Jul 18, 2018		Fish	B18-JI34029	X		
74	BT11_MULLET_18/07/18	Jul 18, 2018		Fish	B18-JI34030		X	X
75	BT11_SALMON(2)_18/07/18	Jul 18, 2018		Fish	B18-JI34031	X		
76	BT11_SALMON_18/07/18	Jul 18, 2018		Fish	B18-JI34032		X	X
77	BT11_SWIMMER_18/07/18	Jul 18, 2018		Crustacean	B18-JI34033		X	X

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Company Name: Golder Associates Pty Ltd (Qld)
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Project Name:
Project ID: 18100235

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Report #: 609830
Phone: (07) 3721 5400
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Received: Jul 27, 2018 3:00 PM
Due: Aug 17, 2018
Priority: 15 Day
Contact Name: Greg Whitmore

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						CANCELLED	Initial Weight	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
78	BT02_PIPPY_23/07/18	Jul 23, 2018		Crustacean	B18-JI34073		X	X
79	BT02_ROCKOYSTER_23/07/18	Jul 23, 2018		Crustacean	B18-JI34074		X	X
80	BT02_SWIMMER(3)_22/07/18	Jul 22, 2018		Crustacean	B18-JI34075		X	X
81	BT06_DMULLET_21/07/18	Jul 21, 2018		Fish	B18-JI34076		X	X
82	BT06_MULLET_21/07/18	Jul 21, 2018		Fish	B18-JI34077		X	X
83	BT06_SILVERBIDDY_21/07/18	Jul 21, 2018		Fish	B18-JI34078		X	X

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Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**		**Received:**	Jul 27, 2018 3:00 PM
Address:	147 Coronation Dve Milton QLD 4064	**Report #:**	609830	**Due:**	Aug 17, 2018
		Phone:	(07) 3721 5400	**Priority:**	15 Day
		Fax:	(07) 3721 5401	**Contact Name:**	Greg Whitmore
Project Name:					
Project ID:	18100235				

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						CANCELLED	Initial Weight	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
84	BT09_BREAM_19/07/18	Jul 19, 2018		Fish	B18-JI34079		X	X
Test Counts						8	76	76

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Golder Associates Pty Ltd
147 Coronation Dve
Milton
QLD 4064

Attention: **Greg Whitmore**

Report **609830-S**
Project name
Project ID 18100235
Received Date Jul 27, 2018

Client Sample ID			**BT01_BREAM(2)_24/07/18**	**BT01_BREAM_24/07/18**	**BT01_CATFISH_24/07/18**	**BT01_MUDCRAB(2)_24/07/18**
Sample Matrix			**Fish**	**Fish**	**Fish**	**Crustacean**
Eurofins | mgt Sample No.			**B18-JI33668**	**B18-JI33669**	**B18-JI33670**	**B18-JI33671**
Date Sampled			**Jul 24, 2018**	**Jul 24, 2018**	**Jul 24, 2018**	**Jul 24, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanoic acid (PFPeA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanoic acid (PFHxA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroheptanoic acid (PFHpA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanoic acid (PFOA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorononanoic acid (PFNA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorodecanoic acid (PFDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroundecanoic acid (PFUnDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorododecanoic acid (PFDoDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotridecanoic acid (PFTrDA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C4-PFBA (surr.)	1	%	66	70	77	62
13C5-PFPeA (surr.)	1	%	75	79	95	73
13C5-PFHxA (surr.)	1	%	129	137	173	26
13C4-PFHpA (surr.)	1	%	112	114	135	31
13C8-PFOA (surr.)	1	%	111	104	122	120
13C5-PFNA (surr.)	1	%	96	100	122	129
13C6-PFDA (surr.)	1	%	108	105	129	120
13C2-PFUnDA (surr.)	1	%	113	115	150	131
13C2-PFDoDA (surr.)	1	%	127	138	145	111
13C2-PFTeDA (surr.)	1	%	79	100	78	84
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C8-FOSA (surr.)	1	%	106	106	136	93
D3-N-MeFOSA (surr.)	1	%	70	70	88	60

Client Sample ID			BT01_BREAM(2)_24/07/18	BT01_BREAM_24/07/18	BT01_CATFISH_24/07/18	BT01_MUDCRAB(2)_24/07/18
Sample Matrix			**Fish**	**Fish**	**Fish**	**Crustacean**
Eurofins | mgt Sample No.			**B18-JI33668**	**B18-JI33669**	**B18-JI33670**	**B18-JI33671**
Date Sampled			**Jul 24, 2018**	**Jul 24, 2018**	**Jul 24, 2018**	**Jul 24, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances						
D5-N-EtFOSA (surr.)	1	%	19	14	27	INT
D7-N-MeFOSE (surr.)	1	%	95	70	140	109
D9-N-EtFOSE (surr.)	1	%	84	84	103	72
D5-N-EtFOSAA (surr.)	1	%	167	182	INT	INT
D3-N-MeFOSAA (surr.)	1	%	133	129	186	162
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanesulfonic acid (PFOS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluorodecanesulfonic acid (PFDS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C3-PFBS (surr.)	1	%	123	128	151	56
18O2-PFHxS (surr.)	1	%	108	120	135	124
13C8-PFOS (surr.)	1	%	107	97	142	108
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C2-4:2 FTSA (surr.)	1	%	100	116	156	41
13C2-6:2 FTSA (surr.)	1	%	175	195	INT	114
13C2-8:2 FTSA (surr.)	1	%	189	196	INT	INT
PFASs Summations						
Sum (PFHxS + PFOS)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of US EPA PFAS (PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of WA DWER PFAS (n=10)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of PFASs (n=28)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BT01_MUDCRAB_24/07/18	BT01_PRAWN(2)_24/07/18	BT01_PRAWN_24/07/18	BT01DS_CATFISH_23/07/18
Sample Matrix			**Crustacean**	**Crustacean**	**Crustacean**	**Fish**
Eurofins | mgt Sample No.			**B18-JI33672**	**B18-JI33673**	**B18-JI33674**	**B18-JI33675**
Date Sampled			**Jul 24, 2018**	**Jul 24, 2018**	**Jul 24, 2018**	**Jul 23, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanoic acid (PFPeA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanoic acid (PFHxA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroheptanoic acid (PFHpA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanoic acid (PFOA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorononanoic acid (PFNA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorodecanoic acid (PFDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroundecanoic acid (PFUnDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BT01_MUDCRAB_24/07/18	BT01_PRAWN(2)_24/07/18	BT01_PRAWN_24/07/18	BT01DS_CATFISH_23/07/18
Sample Matrix			**Crustacean**	**Crustacean**	**Crustacean**	**Fish**
Eurofins | mgt Sample No.			**B18-JI33672**	**B18-JI33673**	**B18-JI33674**	**B18-JI33675**
Date Sampled			**Jul 24, 2018**	**Jul 24, 2018**	**Jul 24, 2018**	**Jul 23, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorododecanoic acid (PFDoDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotridecanoic acid (PFTrDA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C4-PFBA (surr.)	1	%	60	74	84	64
13C5-PFPeA (surr.)	1	%	70	86	87	77
13C5-PFHxA (surr.)	1	%	18	109	118	135
13C4-PFHpA (surr.)	1	%	23	94	101	97
13C8-PFOA (surr.)	1	%	71	93	108	101
13C5-PFNA (surr.)	1	%	89	101	114	82
13C6-PFDA (surr.)	1	%	95	133	152	104
13C2-PFUnDA (surr.)	1	%	103	104	120	109
13C2-PFDoDA (surr.)	1	%	106	75	98	118
13C2-PFTeDA (surr.)	1	%	70	47	47	93
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C8-FOSA (surr.)	1	%	87	76	98	89
D3-N-MeFOSA (surr.)	1	%	57	81	80	66
D5-N-EtFOSA (surr.)	1	%	12	60	63	INT
D7-N-MeFOSE (surr.)	1	%	93	56	58	94
D9-N-EtFOSE (surr.)	1	%	70	57	34	82
D5-N-EtFOSAA (surr.)	1	%	159	80	142	153
D3-N-MeFOSAA (surr.)	1	%	118	91	129	126
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanesulfonic acid (PFOS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluorodecanesulfonic acid (PFDS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C3-PFBS (surr.)	1	%	34	170	INT	121
18O2-PFHxS (surr.)	1	%	94	111	120	108
13C8-PFOS (surr.)	1	%	91	108	117	107
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BT01_MUDCRAB_24/07/18	BT01_PRAWN(2)_24/07/18	BT01_PRAWN_24/07/18	BT01DS_CATFISH_23/07/18
Sample Matrix			**Crustacean**	**Crustacean**	**Crustacean**	**Fish**
Eurofins | mgt Sample No.			**B18-JI33672**	**B18-JI33673**	**B18-JI33674**	**B18-JI33675**
Date Sampled			**Jul 24, 2018**	**Jul 24, 2018**	**Jul 24, 2018**	**Jul 23, 2018**
Test/Reference	LOR	Unit				
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
13C2-4:2 FTSA (surr.)	1	%	57	57	70	138
13C2-6:2 FTSA (surr.)	1	%	33	67	84	INT
13C2-8:2 FTSA (surr.)	1	%	INT	117	INT	INT
PFASs Summations						
Sum (PFHxS + PFOS)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of US EPA PFAS (PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of WA DWER PFAS (n=10)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of PFASs (n=28)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BT01DS_JAVLINFISH(2)_23/07/18	BT01DS_JAVLINFISH_23/07/18	BT01DS_MUDCRAB_23/07/18	BT01DS_ROCKCOD_23/07/18
Sample Matrix			**Fish**	**Fish**	**Crustacean**	**Fish**
Eurofins | mgt Sample No.			**B18-JI33676**	**B18-JI33677**	**B18-JI33678**	**B18-JI33970**
Date Sampled			**Jul 23, 2018**	**Jul 23, 2018**	**Jul 23, 2018**	**Jul 23, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanoic acid (PFPeA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanoic acid (PFHxA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroheptanoic acid (PFHpA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanoic acid (PFOA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorononanoic acid (PFNA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorodecanoic acid (PFDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroundecanoic acid (PFUnDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorododecanoic acid (PFDoDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotridecanoic acid (PFTrDA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C4-PFBA (surr.)	1	%	72	67	66	90
13C5-PFPeA (surr.)	1	%	80	83	74	96
13C5-PFHxA (surr.)	1	%	28	138	15	171
13C4-PFHpA (surr.)	1	%	29	108	16	118
13C8-PFOA (surr.)	1	%	91	107	55	119
13C5-PFNA (surr.)	1	%	105	94	67	96
13C6-PFDA (surr.)	1	%	125	111	89	103
13C2-PFUnDA (surr.)	1	%	99	93	86	100
13C2-PFDoDA (surr.)	1	%	94	92	91	88
13C2-PFTeDA (surr.)	1	%	61	123	110	66
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BT01DS_JAVLINFISH(2)_23/07/18	BT01DS_JAVLINFISH_23/07/18	BT01DS_MUDCRAB_23/07/18	BT01DS_ROCKCOD_23/07/18
Sample Matrix			**Fish**	**Fish**	**Crustacean**	**Fish**
Eurofins | mgt Sample No.			**B18-JI33676**	**B18-JI33677**	**B18-JI33678**	**B18-JI33970**
Date Sampled			**Jul 23, 2018**	**Jul 23, 2018**	**Jul 23, 2018**	**Jul 23, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances						
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C8-FOSA (surr.)	1	%	86	107	54	110
D3-N-MeFOSA (surr.)	1	%	100	47	15	64
D5-N-EtFOSA (surr.)	1	%	84	INT	INT	34
D7-N-MeFOSE (surr.)	1	%	64	59	53	99
D9-N-EtFOSE (surr.)	1	%	55	42	21	80
D5-N-EtFOSAA (surr.)	1	%	117	164	157	160
D3-N-MeFOSAA (surr.)	1	%	99	96	82	148
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanesulfonic acid (PFOS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluorodecanesulfonic acid (PFDS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C3-PFBS (surr.)	1	%	81	117	27	117
18O2-PFHxS (surr.)	1	%	115	127	74	123
13C8-PFOS (surr.)	1	%	126	107	65	103
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C2-4:2 FTSA (surr.)	1	%	35	144	65	INT
13C2-6:2 FTSA (surr.)	1	%	51	INT	21	INT
13C2-8:2 FTSA (surr.)	1	%	113	INT	INT	INT
PFASs Summations						
Sum (PFHxS + PFOS)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of US EPA PFAS (PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of WA DWER PFAS (n=10)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of PFASs (n=28)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BT01US_MULLET_23/07/18	BT01US_ROCKCOD_23/07/18	BT01US_SHRIMP_23/07/18	BT02_COCKLE_23/07/18
Sample Matrix			**Fish**	**Fish**	**Crustacean**	**Crustacean**
Eurofins | mgt Sample No.			**B18-JI33971**	**B18-JI33972**	**B18-JI33973**	**B18-JI33974**
Date Sampled			**Jul 23, 2018**	**Jul 23, 2018**	**Jul 23, 2018**	**Jul 23, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
Perfluoropentanoic acid (PFPeA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
Perfluorohexanoic acid (PFHxA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
Perfluoroheptanoic acid (PFHpA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
Perfluorooctanoic acid (PFOA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
Perfluorononanoic acid (PFNA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
Perfluorodecanoic acid (PFDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
Perfluoroundecanoic acid (PFUnDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
Perfluorododecanoic acid (PFDoDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
Perfluorotridecanoic acid (PFTrDA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
13C4-PFBA (surr.)	1	%	84	79	77	-
13C5-PFPeA (surr.)	1	%	81	102	74	-
13C5-PFHxA (surr.)	1	%	94	179	91	-
13C4-PFHpA (surr.)	1	%	81	130	80	-
13C8-PFOA (surr.)	1	%	76	137	90	-
13C5-PFNA (surr.)	1	%	74	106	95	-
13C6-PFDA (surr.)	1	%	76	119	102	-
13C2-PFUnDA (surr.)	1	%	81	111	99	-
13C2-PFDoDA (surr.)	1	%	78	101	84	-
13C2-PFTeDA (surr.)	1	%	68	74	62	-
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
13C8-FOSA (surr.)	1	%	81	120	73	-
D3-N-MeFOSA (surr.)	1	%	72	70	88	-
D5-N-EtFOSA (surr.)	1	%	77	32	87	-
D7-N-MeFOSE (surr.)	1	%	45	112	54	-
D9-N-EtFOSE (surr.)	1	%	50	88	59	-
D5-N-EtFOSAA (surr.)	1	%	72	179	86	-
D3-N-MeFOSAA (surr.)	1	%	85	152	105	-
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	-
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
Perfluorooctanesulfonic acid (PFOS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	-
Perfluorodecanesulfonic acid (PFDS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
13C3-PFBS (surr.)	1	%	81	145	INT	-
18O2-PFHxS (surr.)	1	%	78	124	92	-
13C8-PFOS (surr.)	1	%	78	119	90	-

Client Sample ID			BT01US_MULLET_23/07/18	BT01US_ROCKCOD_23/07/18	BT01US_SHRIMP_23/07/18	BT02_COCKLE_23/07/18
Sample Matrix			**Fish**	**Fish**	**Crustacean**	**Crustacean**
Eurofins | mgt Sample No.			**B18-JI33971**	**B18-JI33972**	**B18-JI33973**	**B18-JI33974**
Date Sampled			**Jul 23, 2018**	**Jul 23, 2018**	**Jul 23, 2018**	**Jul 23, 2018**
Test/Reference	LOR	Unit				
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
13C2-4:2 FTSA (surr.)	1	%	74	193	70	-
13C2-6:2 FTSA (surr.)	1	%	69	INT	83	-
13C2-8:2 FTSA (surr.)	1	%	98	INT	144	-
PFASs Summations						
Sum (PFHxS + PFOS)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
Sum of US EPA PFAS (PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
Sum of WA DWER PFAS (n=10)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
Sum of PFASs (n=28)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	-
Initial Weight	0.01	kg	-	-	-	[G03]I/S

Client Sample ID			BT02_GASTROPOD_23/07/18	BT02_MUDCRAB_20/07/18	BT02_SWIMMER(2)_22/07/18	BT03_COCKLE_19/07/18
Sample Matrix			**Crustacean**	**Crustacean**	**Crustacean**	**Crustacean**
Eurofins | mgt Sample No.			**B18-JI33975**	**B18-JI33976**	**B18-JI33977**	**B18-JI33978**
Date Sampled			**Jul 23, 2018**	**Jul 20, 2018**	**Jul 22, 2018**	**Jul 19, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanoic acid (PFPeA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanoic acid (PFHxA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroheptanoic acid (PFHpA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanoic acid (PFOA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorononanoic acid (PFNA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorodecanoic acid (PFDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroundecanoic acid (PFUnDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorododecanoic acid (PFDoDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotridecanoic acid (PFTrDA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C4-PFBA (surr.)	1	%	87	72	77	76
13C5-PFPeA (surr.)	1	%	82	80	94	71
13C5-PFHxA (surr.)	1	%	97	28	44	100
13C4-PFHpA (surr.)	1	%	85	29	78	86
13C8-PFOA (surr.)	1	%	67	91	98	65
13C5-PFNA (surr.)	1	%	66	105	108	87
13C6-PFDA (surr.)	1	%	69	125	136	89
13C2-PFUnDA (surr.)	1	%	74	99	96	80
13C2-PFDoDA (surr.)	1	%	74	94	82	84
13C2-PFTeDA (surr.)	1	%	50	61	58	61

Client Sample ID			BT02_GASTROPOD_23/07/18	BT02_MUDCRAB_20/07/18	BT02_SWIMMER(2)_22/07/18	BT03_COCKLE_19/07/18
Sample Matrix			**Crustacean**	**Crustacean**	**Crustacean**	**Crustacean**
Eurofins | mgt Sample No.			**B18-JI33975**	**B18-JI33976**	**B18-JI33977**	**B18-JI33978**
Date Sampled			**Jul 23, 2018**	**Jul 20, 2018**	**Jul 22, 2018**	**Jul 19, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C8-FOSA (surr.)	1	%	47	86	81	69
D3-N-MeFOSA (surr.)	1	%	56	100	99	78
D5-N-EtFOSA (surr.)	1	%	56	84	81	80
D7-N-MeFOSE (surr.)	1	%	42	64	69	47
D9-N-EtFOSE (surr.)	1	%	44	55	57	47
D5-N-EtFOSAA (surr.)	1	%	70	117	112	97
D3-N-MeFOSAA (surr.)	1	%	68	99	107	73
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanesulfonic acid (PFOS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluorodecanesulfonic acid (PFDS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C3-PFBS (surr.)	1	%	79	81	81	81
18O2-PFHxS (surr.)	1	%	73	115	114	87
13C8-PFOS (surr.)	1	%	64	126	118	86
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C2-4:2 FTSA (surr.)	1	%	83	35	36	99
13C2-6:2 FTSA (surr.)	1	%	105	51	72	116
13C2-8:2 FTSA (surr.)	1	%	73	113	113	122
PFASs Summations						
Sum (PFHxS + PFOS)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of US EPA PFAS (PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of WA DWER PFAS (n=10)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of PFASs (n=28)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BT03_MUDCRAB_19/07/18	BT03_ROCKOYSTER_19/07/18	BT03_SWIMMER_19/07/18	BT03A_MILKFISH_20/07/18
Sample Matrix			**Crustacean**	**Crustacean**	**Crustacean**	**Fish**
Eurofins | mgt Sample No.			**B18-JI33979**	**B18-JI33980**	**B18-JI33981**	**B18-JI33982**
Date Sampled			**Jul 19, 2018**	**Jul 19, 2018**	**Jul 19, 2018**	**Jul 20, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanoic acid (PFPeA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanoic acid (PFHxA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroheptanoic acid (PFHpA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanoic acid (PFOA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorononanoic acid (PFNA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorodecanoic acid (PFDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroundecanoic acid (PFUnDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorododecanoic acid (PFDoDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotridecanoic acid (PFTrDA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C4-PFBA (surr.)	1	%	79	89	70	69
13C5-PFPeA (surr.)	1	%	93	107	34	47
13C5-PFHxA (surr.)	1	%	73	146	23	61
13C4-PFHpA (surr.)	1	%	54	79	68	53
13C8-PFOA (surr.)	1	%	95	69	59	41
13C5-PFNA (surr.)	1	%	108	56	96	71
13C6-PFDA (surr.)	1	%	117	69	101	78
13C2-PFUnDA (surr.)	1	%	98	86	96	82
13C2-PFDoDA (surr.)	1	%	87	85	89	93
13C2-PFTeDA (surr.)	1	%	56	102	68	92
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C8-FOSA (surr.)	1	%	90	76	74	61
D3-N-MeFOSA (surr.)	1	%	71	38	92	60
D5-N-EtFOSA (surr.)	1	%	55	INT	91	64
D7-N-MeFOSE (surr.)	1	%	58	50	51	42
D9-N-EtFOSE (surr.)	1	%	45	41	61	25
D5-N-EtFOSAA (surr.)	1	%	111	INT	93	53
D3-N-MeFOSAA (surr.)	1	%	102	80	102	53
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanesulfonic acid (PFOS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluorodecanesulfonic acid (PFDS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C3-PFBS (surr.)	1	%	99	113	36	65
18O2-PFHxS (surr.)	1	%	115	113	90	78
13C8-PFOS (surr.)	1	%	122	85	102	88

Client Sample ID			BT03_MUDCRAB_19/07/18	BT03_ROCKOYSTER_19/07/18	BT03_SWIMMER_19/07/18	BT03A_MILKFISH_20/07/18
Sample Matrix			**Crustacean**	**Crustacean**	**Crustacean**	**Fish**
Eurofins | mgt Sample No.			**B18-JI33979**	**B18-JI33980**	**B18-JI33981**	**B18-JI33982**
Date Sampled			**Jul 19, 2018**	**Jul 19, 2018**	**Jul 19, 2018**	**Jul 20, 2018**
Test/Reference	LOR	Unit				
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C2-4:2 FTSA (surr.)	1	%	50	INT	20	66
13C2-6:2 FTSA (surr.)	1	%	68	INT	79	102
13C2-8:2 FTSA (surr.)	1	%	99	196	118	142
PFASs Summations						
Sum (PFHxS + PFOS)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of US EPA PFAS (PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of WA DWER PFAS (n=10)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of PFASs (n=28)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BT04_SWIMMER_21/07/18	BT05_CATFISH_20/07/18	BT05_COCKLE_19/07/18	BT05_GASTROPOD_19/07/18
Sample Matrix			**Crustacean**	**Fish**	**Crustacean**	**Crustacean**
Eurofins | mgt Sample No.			**B18-JI33983**	**B18-JI33984**	**B18-JI33985**	**B18-JI33986**
Date Sampled			**Jul 21, 2018**	**Jul 20, 2018**	**Jul 19, 2018**	**Jul 19, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanoic acid (PFPeA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanoic acid (PFHxA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroheptanoic acid (PFHpA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanoic acid (PFOA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	0.5
Perfluorononanoic acid (PFNA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorodecanoic acid (PFDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroundecanoic acid (PFUnDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorododecanoic acid (PFDoDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotridecanoic acid (PFTrDA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C4-PFBA (surr.)	1	%	66	82	85	54
13C5-PFPeA (surr.)	1	%	58	72	68	75
13C5-PFHxA (surr.)	1	%	42	104	93	103
13C4-PFHpA (surr.)	1	%	54	96	74	96
13C8-PFOA (surr.)	1	%	95	97	40	91
13C5-PFNA (surr.)	1	%	104	97	86	88
13C6-PFDA (surr.)	1	%	109	96	88	92
13C2-PFUnDA (surr.)	1	%	96	96	83	98
13C2-PFDoDA (surr.)	1	%	100	89	95	100
13C2-PFTeDA (surr.)	1	%	77	75	70	77

Client Sample ID			BT04_SWIMMER_21/07/18	BT05_CATFISH_20/07/18	BT05_COCKLE_19/07/18	BT05_GASTROPOD_19/07/18
Sample Matrix			**Crustacean**	**Fish**	**Crustacean**	**Crustacean**
Eurofins | mgt Sample No.			**B18-JI33983**	**B18-JI33984**	**B18-JI33985**	**B18-JI33986**
Date Sampled			**Jul 21, 2018**	**Jul 20, 2018**	**Jul 19, 2018**	**Jul 19, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C8-FOSA (surr.)	1	%	84	84	32	78
D3-N-MeFOSA (surr.)	1	%	100	90	74	88
D5-N-EtFOSA (surr.)	1	%	93	83	72	79
D7-N-MeFOSE (surr.)	1	%	57	57	42	52
D9-N-EtFOSE (surr.)	1	%	43	61	25	60
D5-N-EtFOSAA (surr.)	1	%	153	99	113	103
D3-N-MeFOSAA (surr.)	1	%	97	95	77	82
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	0.4
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanesulfonic acid (PFOS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluorodecanesulfonic acid (PFDS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C3-PFBS (surr.)	1	%	76	90	78	88
18O2-PFHxS (surr.)	1	%	109	97	83	94
13C8-PFOS (surr.)	1	%	111	90	81	87
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C2-4:2 FTSA (surr.)	1	%	39	95	90	84
13C2-6:2 FTSA (surr.)	1	%	82	100	119	71
13C2-8:2 FTSA (surr.)	1	%	130	124	153	106
PFASs Summations						
Sum (PFHxS + PFOS)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of US EPA PFAS (PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	0.5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	0.9
Sum of WA DWER PFAS (n=10)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	0.9
Sum of PFASs (n=28)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	0.9

Client Sample ID			BT05_GRUNTER_20/07/18	BT05_MUDCRAB_20/07/18	BT05_SWIMMER_20/07/18	BT05_TRUMPETER_20/07/18
Sample Matrix			**Fish**	**Crustacean**	**Crustacean**	**Fish**
Eurofins | mgt Sample No.			**B18-JI33987**	**B18-JI33988**	**B18-JI33989**	**B18-JI33990**
Date Sampled			**Jul 19, 2018**	**Jul 19, 2018**	**Jul 19, 2018**	**Jul 19, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanoic acid (PFPeA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanoic acid (PFHxA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroheptanoic acid (PFHpA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanoic acid (PFOA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorononanoic acid (PFNA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorodecanoic acid (PFDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroundecanoic acid (PFUnDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorododecanoic acid (PFDoDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotridecanoic acid (PFTrDA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C4-PFBA (surr.)	1	%	79	80	66	67
13C5-PFPeA (surr.)	1	%	67	106	64	92
13C5-PFHxA (surr.)	1	%	91	83	53	141
13C4-PFHpA (surr.)	1	%	86	88	65	97
13C8-PFOA (surr.)	1	%	77	146	94	97
13C5-PFNA (surr.)	1	%	83	134	100	50
13C6-PFDA (surr.)	1	%	85	138	108	111
13C2-PFUnDA (surr.)	1	%	91	134	96	122
13C2-PFDoDA (surr.)	1	%	94	118	97	151
13C2-PFTeDA (surr.)	1	%	70	79	83	133
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C8-FOSA (surr.)	1	%	82	113	77	126
D3-N-MeFOSA (surr.)	1	%	84	72	97	42
D5-N-EtFOSA (surr.)	1	%	75	18	82	INT
D7-N-MeFOSE (surr.)	1	%	50	127	53	79
D9-N-EtFOSE (surr.)	1	%	50	94	60	58
D5-N-EtFOSAA (surr.)	1	%	104	INT	107	INT
D3-N-MeFOSAA (surr.)	1	%	76	180	107	161
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanesulfonic acid (PFOS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluorodecanesulfonic acid (PFDS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C3-PFBS (surr.)	1	%	82	175	53	129
18O2-PFHxS (surr.)	1	%	93	138	104	122
13C8-PFOS (surr.)	1	%	90	121	98	122

Client Sample ID			BT05_GRUNTER_20/07/18	BT05_MUDCRAB_20/07/18	BT05_SWIMMER_20/07/18	BT05_TRUMPETER_20/07/18
Sample Matrix			**Fish**	**Crustacean**	**Crustacean**	**Fish**
Eurofins | mgt Sample No.			**B18-JI33987**	**B18-JI33988**	**B18-JI33989**	**B18-JI33990**
Date Sampled			**Jul 19, 2018**	**Jul 19, 2018**	**Jul 19, 2018**	**Jul 19, 2018**
Test/Reference	LOR	Unit				
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C2-4:2 FTSA (surr.)	1	%	80	104	58	182
13C2-6:2 FTSA (surr.)	1	%	101	INT	90	INT
13C2-8:2 FTSA (surr.)	1	%	109	INT	137	INT
PFASs Summations						
Sum (PFHxS + PFOS)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of US EPA PFAS (PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of WA DWER PFAS (n=10)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of PFASs (n=28)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BT06_BREAM(2)_25/07/18	BT06_BREAM_25/07/18	BT06_MUDCRAB(2)_18/07/18	BT06_MUDCRAB(3)_18/07/18
Sample Matrix			**Fish**	**Fish**	**Crustacean**	**Crustacean**
Eurofins | mgt Sample No.			**B18-JI33991**	**B18-JI33992**	**B18-JI33993**	**B18-JI33994**
Date Sampled			**Jul 25, 2018**	**Jul 25, 2018**	**Jul 18, 2018**	**Jul 18, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanoic acid (PFPeA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanoic acid (PFHxA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroheptanoic acid (PFHpA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanoic acid (PFOA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorononanoic acid (PFNA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorodecanoic acid (PFDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroundecanoic acid (PFUnDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorododecanoic acid (PFDoDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotridecanoic acid (PFTrDA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C4-PFBA (surr.)	1	%	83	88	76	77
13C5-PFPeA (surr.)	1	%	69	76	72	100
13C5-PFHxA (surr.)	1	%	97	103	60	72
13C4-PFHpA (surr.)	1	%	87	97	78	60
13C8-PFOA (surr.)	1	%	82	96	84	111
13C5-PFNA (surr.)	1	%	83	98	96	120
13C6-PFDA (surr.)	1	%	78	100	96	115
13C2-PFUnDA (surr.)	1	%	84	99	94	121
13C2-PFDoDA (surr.)	1	%	77	95	85	102
13C2-PFTeDA (surr.)	1	%	54	70	53	63

Client Sample ID			BT06_BREAM(2)_25/07/18	BT06_BREAM_25/07/18	BT06_MUDCRAB(2)_18/07/18	BT06_MUDCRAB(3)_18/07/18
Sample Matrix			**Fish**	**Fish**	**Crustacean**	**Crustacean**
Eurofins | mgt Sample No.			**B18-JI33991**	**B18-JI33992**	**B18-JI33993**	**B18-JI33994**
Date Sampled			**Jul 25, 2018**	**Jul 25, 2018**	**Jul 18, 2018**	**Jul 18, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C8-FOSA (surr.)	1	%	77	92	71	113
D3-N-MeFOSA (surr.)	1	%	80	93	82	70
D5-N-EtFOSA (surr.)	1	%	64	85	67	23
D7-N-MeFOSE (surr.)	1	%	44	52	54	107
D9-N-EtFOSE (surr.)	1	%	51	52	53	77
D5-N-EtFOSAA (surr.)	1	%	91	103	92	186
D3-N-MeFOSAA (surr.)	1	%	63	50	101	131
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanesulfonic acid (PFOS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluorodecanesulfonic acid (PFDS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C3-PFBS (surr.)	1	%	90	95	64	78
18O2-PFHxS (surr.)	1	%	94	97	98	124
13C8-PFOS (surr.)	1	%	78	97	92	108
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C2-4:2 FTSA (surr.)	1	%	90	88	83	128
13C2-6:2 FTSA (surr.)	1	%	90	95	80	120
13C2-8:2 FTSA (surr.)	1	%	118	122	132	INT
PFASs Summations						
Sum (PFHxS + PFOS)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of US EPA PFAS (PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of WA DWER PFAS (n=10)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of PFASs (n=28)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BT06_MUDCRAB_18/07/18	BT06_SHARK_18/07/18	BT06_SNAPPER_18/07/18	BT06_SWIMMER_18/07/18
Sample Matrix			Crustacean	Fish	Fish	Crustacean
Eurofins | mgt Sample No.			B18-JI33995	B18-JI33996	B18-JI33997	B18-JI33998
Date Sampled			Jul 18, 2018	Jul 21, 2018	Jul 18, 2018	Jul 18, 2018
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanoic acid (PFPeA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanoic acid (PFHxA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroheptanoic acid (PFHpA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanoic acid (PFOA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorononanoic acid (PFNA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorodecanoic acid (PFDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroundecanoic acid (PFUnDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorododecanoic acid (PFDoDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotridecanoic acid (PFTrDA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C4-PFBA (surr.)	1	%	40	67	79	60
13C5-PFPeA (surr.)	1	%	45	87	62	56
13C5-PFHxA (surr.)	1	%	13	135	92	52
13C4-PFHpA (surr.)	1	%	10	113	80	83
13C8-PFOA (surr.)	1	%	61	124	73	143
13C5-PFNA (surr.)	1	%	71	109	71	121
13C6-PFDA (surr.)	1	%	75	116	73	128
13C2-PFUnDA (surr.)	1	%	73	106	77	128
13C2-PFDoDA (surr.)	1	%	66	96	77	117
13C2-PFTeDA (surr.)	1	%	49	61	61	104
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C8-FOSA (surr.)	1	%	52	115	72	100
D3-N-MeFOSA (surr.)	1	%	68	67	76	22
D5-N-EtFOSA (surr.)	1	%	55	27	65	25
D7-N-MeFOSE (surr.)	1	%	45	109	47	INT
D9-N-EtFOSE (surr.)	1	%	47	85	52	INT
D5-N-EtFOSAA (surr.)	1	%	67	190	79	INT
D3-N-MeFOSAA (surr.)	1	%	69	152	61	143
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanesulfonic acid (PFOS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluorodecanesulfonic acid (PFDS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C3-PFBS (surr.)	1	%	23	127	86	98
18O2-PFHxS (surr.)	1	%	81	128	80	111
13C8-PFOS (surr.)	1	%	77	128	73	108

Client Sample ID			BT06_MUDCRAB_18/07/18	BT06_SHARK_18/07/18	BT06_SNAPPER_18/07/18	BT06_SWIMMER_18/07/18
Sample Matrix			**Crustacean**	**Fish**	**Fish**	**Crustacean**
Eurofins | mgt Sample No.			**B18-JI33995**	**B18-JI33996**	**B18-JI33997**	**B18-JI33998**
Date Sampled			**Jul 18, 2018**	**Jul 21, 2018**	**Jul 18, 2018**	**Jul 18, 2018**
Test/Reference	LOR	Unit				
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C2-4:2 FTSA (surr.)	1	%	20	128	84	34
13C2-6:2 FTSA (surr.)	1	%	47	186	66	82
13C2-8:2 FTSA (surr.)	1	%	71	INT	90	130
PFASs Summations						
Sum (PFHxS + PFOS)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of US EPA PFAS (PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of WA DWER PFAS (n=10)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of PFASs (n=28)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BT07_CATFISH_17/07/18	BT07_GRUNTER_24/07/18	BT07_JAVELINFISH_24/07/18	BT07_MUDCRAB(2)_17/07/18
Sample Matrix			**Fish**	**Fish**	**Fish**	**Crustacean**
Eurofins | mgt Sample No.			**B18-JI33999**	**B18-JI34000**	**B18-JI34001**	**B18-JI34002**
Date Sampled			**Jul 17, 2018**	**Jul 24, 2018**	**Jul 24, 2018**	**Jul 17, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	0.6
Perfluoropentanoic acid (PFPeA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanoic acid (PFHxA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroheptanoic acid (PFHpA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanoic acid (PFOA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorononanoic acid (PFNA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorodecanoic acid (PFDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroundecanoic acid (PFUnDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorododecanoic acid (PFDoDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotridecanoic acid (PFTrDA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C4-PFBA (surr.)	1	%	112	108	48	75
13C5-PFPeA (surr.)	1	%	139	118	113	84
13C5-PFHxA (surr.)	1	%	154	109	151	25
13C4-PFHpA (surr.)	1	%	182	143	169	11
13C8-PFOA (surr.)	1	%	128	102	152	49
13C5-PFNA (surr.)	1	%	108	106	121	104
13C6-PFDA (surr.)	1	%	134	128	120	124
13C2-PFUnDA (surr.)	1	%	144	116	108	128
13C2-PFDoDA (surr.)	1	%	131	111	104	115
13C2-PFTeDA (surr.)	1	%	121	72	98	94

Client Sample ID			BT07_CATFISH_17/07/18	BT07_GRUNTER_24/07/18	BT07_JAVELINFISH_24/07/18	BT07_MUDCRAB(2)_17/07/18
Sample Matrix			**Fish**	**Fish**	**Fish**	**Crustacean**
Eurofins | mgt Sample No.			**B18-JI33999**	**B18-JI34000**	**B18-JI34001**	**B18-JI34002**
Date Sampled			**Jul 17, 2018**	**Jul 24, 2018**	**Jul 24, 2018**	**Jul 17, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C8-FOSA (surr.)	1	%	99	135	130	54
D3-N-MeFOSA (surr.)	1	%	93	123	115	45
D5-N-EtFOSA (surr.)	1	%	93	122	120	60
D7-N-MeFOSE (surr.)	1	%	33	110	84	26
D9-N-EtFOSE (surr.)	1	%	52	86	84	34
D5-N-EtFOSAA (surr.)	1	%	INT	INT	187	138
D3-N-MeFOSAA (surr.)	1	%	194	135	107	125
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanesulfonic acid (PFOS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluorodecanesulfonic acid (PFDS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C3-PFBS (surr.)	1	%	181	158	178	41
18O2-PFHxS (surr.)	1	%	116	112	105	84
13C8-PFOS (surr.)	1	%	101	115	100	102
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C2-4:2 FTSA (surr.)	1	%	178	106	171	176
13C2-6:2 FTSA (surr.)	1	%	123	131	128	39
13C2-8:2 FTSA (surr.)	1	%	133	164	167	139
PFASs Summations						
Sum (PFHxS + PFOS)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of US EPA PFAS (PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of WA DWER PFAS (n=10)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	0.6
Sum of PFASs (n=28)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	0.6

Client Sample ID			BT07_MUDCRAB_24/07/18	BT07_MULLET(2)_16/07/18	BT07_MULLET_24/07/18	BT07_SNAPPER_16/07/18
Sample Matrix			**Crustacean**	**Fish**	**Fish**	**Fish**
Eurofins | mgt Sample No.			**B18-JI34003**	**B18-JI34004**	**B18-JI34005**	**B18-JI34008**
Date Sampled			**Jul 24, 2018**	**Jul 16, 2018**	**Jul 24, 2018**	**Jul 16, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanoic acid (PFPeA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanoic acid (PFHxA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroheptanoic acid (PFHpA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanoic acid (PFOA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorononanoic acid (PFNA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorodecanoic acid (PFDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroundecanoic acid (PFUnDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorododecanoic acid (PFDoDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotridecanoic acid (PFTrDA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C4-PFBA (surr.)	1	%	79	79	82	104
13C5-PFPeA (surr.)	1	%	74	80	61	114
13C5-PFHxA (surr.)	1	%	12	86	52	121
13C4-PFHpA (surr.)	1	%	29	49	54	164
13C8-PFOA (surr.)	1	%	96	80	63	97
13C5-PFNA (surr.)	1	%	105	73	75	103
13C6-PFDA (surr.)	1	%	122	90	97	112
13C2-PFUnDA (surr.)	1	%	125	102	98	96
13C2-PFDoDA (surr.)	1	%	117	81	99	88
13C2-PFTeDA (surr.)	1	%	83	73	100	66
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C8-FOSA (surr.)	1	%	119	39	51	125
D3-N-MeFOSA (surr.)	1	%	103	17	45	112
D5-N-EtFOSA (surr.)	1	%	106	INT	55	111
D7-N-MeFOSE (surr.)	1	%	45	34	22	89
D9-N-EtFOSE (surr.)	1	%	58	14	15	79
D5-N-EtFOSAA (surr.)	1	%	INT	116	134	171
D3-N-MeFOSAA (surr.)	1	%	121	82	98	99
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.5	ug/kg	< 0.5	< 0.5	0.6	< 0.5
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanesulfonic acid (PFOS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluorodecanesulfonic acid (PFDS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C3-PFBS (surr.)	1	%	35	137	136	148
18O2-PFHxS (surr.)	1	%	112	96	90	99
13C8-PFOS (surr.)	1	%	112	86	86	95

Client Sample ID			BT07_MUDCRAB_24/07/18	BT07_MULLET(2)_16/07/18	BT07_MULLET_24/07/18	BT07_SNAPPER_16/07/18
Sample Matrix			**Crustacean**	**Fish**	**Fish**	**Fish**
Eurofins | mgt Sample No.			**B18-JI34003**	**B18-JI34004**	**B18-JI34005**	**B18-JI34008**
Date Sampled			**Jul 24, 2018**	**Jul 16, 2018**	**Jul 24, 2018**	**Jul 16, 2018**
Test/Reference	LOR	Unit				
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C2-4:2 FTSA (surr.)	1	%	36	116	110	138
13C2-6:2 FTSA (surr.)	1	%	65	88	88	107
13C2-8:2 FTSA (surr.)	1	%	124	156	174	81
PFASs Summations						
Sum (PFHxS + PFOS)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of US EPA PFAS (PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of WA DWER PFAS (n=10)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of PFASs (n=28)*	0.5	ug/kg	< 0.5	< 0.5	0.6	< 0.5

Client Sample ID			BT08_CATFISH(2)_16/07/18	BT08_CATFISH_19/07/18	BT08_MUDCRAB_17/07/18	BT08_MULLET_19/07/18
Sample Matrix			**Fish**	**Fish**	**Crustacean**	**Fish**
Eurofins | mgt Sample No.			**B18-JI34009**	**B18-JI34010**	**B18-JI34012**	**B18-JI34014**
Date Sampled			**Jul 16, 2018**	**Jul 19, 2018**	**Jul 17, 2018**	**Jul 19, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanoic acid (PFPeA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanoic acid (PFHxA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroheptanoic acid (PFHpA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanoic acid (PFOA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorononanoic acid (PFNA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorodecanoic acid (PFDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroundecanoic acid (PFUnDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorododecanoic acid (PFDoDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotridecanoic acid (PFTrDA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C4-PFBA (surr.)	1	%	95	68	72	92
13C5-PFPeA (surr.)	1	%	108	89	92	89
13C5-PFHxA (surr.)	1	%	129	161	64	96
13C4-PFHpA (surr.)	1	%	160	120	64	104
13C8-PFOA (surr.)	1	%	135	130	113	104
13C5-PFNA (surr.)	1	%	101	115	116	95
13C6-PFDA (surr.)	1	%	110	130	129	115
13C2-PFUnDA (surr.)	1	%	108	134	133	128
13C2-PFDoDA (surr.)	1	%	91	133	123	116
13C2-PFTeDA (surr.)	1	%	57	76	76	123

Client Sample ID			BT08_CATFISH(2)_16/07/18	BT08_CATFISH_19/07/18	BT08_MUDCRAB_17/07/18	BT08_MULLET_19/07/18
Sample Matrix			**Fish**	**Fish**	**Crustacean**	**Fish**
Eurofins | mgt Sample No.			**B18-JI34009**	**B18-JI34010**	**B18-JI34012**	**B18-JI34014**
Date Sampled			**Jul 16, 2018**	**Jul 19, 2018**	**Jul 17, 2018**	**Jul 19, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C8-FOSA (surr.)	1	%	112	137	126	58
D3-N-MeFOSA (surr.)	1	%	106	78	68	25
D5-N-EtFOSA (surr.)	1	%	102	22	16	26
D7-N-MeFOSE (surr.)	1	%	71	130	123	32
D9-N-EtFOSE (surr.)	1	%	72	99	88	INT
D5-N-EtFOSAA (surr.)	1	%	166	INT	INT	INT
D3-N-MeFOSAA (surr.)	1	%	140	186	172	145
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanesulfonic acid (PFOS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluorodecanesulfonic acid (PFDS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C3-PFBS (surr.)	1	%	148	138	76	143
18O2-PFHxS (surr.)	1	%	100	132	134	94
13C8-PFOS (surr.)	1	%	84	129	133	75
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C2-4:2 FTSA (surr.)	1	%	129	159	132	134
13C2-6:2 FTSA (surr.)	1	%	89	INT	126	105
13C2-8:2 FTSA (surr.)	1	%	81	INT	INT	139
PFASs Summations						
Sum (PFHxS + PFOS)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of US EPA PFAS (PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of WA DWER PFAS (n=10)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of PFASs (n=28)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BT09_CATFISH_19/07/18	BT09_MUDCRAB_19/07/18	BT09_ROCKCOD_19/07/18	BT10_CATFISH(2)_22/07/18
Sample Matrix			**Fish**	**Crustacean**	**Fish**	**Fish**
Eurofins | mgt Sample No.			**B18-JI34015**	**B18-JI34016**	**B18-JI34017**	**B18-JI34018**
Date Sampled			**Jul 19, 2018**	**Jul 19, 2018**	**Jul 19, 2018**	**Jul 22, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanoic acid (PFPeA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanoic acid (PFHxA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroheptanoic acid (PFHpA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanoic acid (PFOA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorononanoic acid (PFNA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorodecanoic acid (PFDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroundecanoic acid (PFUnDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorododecanoic acid (PFDoDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotridecanoic acid (PFTrDA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C4-PFBA (surr.)	1	%	102	61	63	59
13C5-PFPeA (surr.)	1	%	121	82	84	81
13C5-PFHxA (surr.)	1	%	136	40	143	130
13C4-PFHpA (surr.)	1	%	168	54	109	90
13C8-PFOA (surr.)	1	%	140	102	112	103
13C5-PFNA (surr.)	1	%	103	97	91	76
13C6-PFDA (surr.)	1	%	116	112	92	101
13C2-PFUnDA (surr.)	1	%	107	112	103	102
13C2-PFDoDA (surr.)	1	%	101	103	88	107
13C2-PFTeDA (surr.)	1	%	57	72	70	92
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C8-FOSA (surr.)	1	%	104	106	105	92
D3-N-MeFOSA (surr.)	1	%	111	55	62	68
D5-N-EtFOSA (surr.)	1	%	116	INT	26	INT
D7-N-MeFOSE (surr.)	1	%	105	100	97	98
D9-N-EtFOSE (surr.)	1	%	77	74	79	81
D5-N-EtFOSAA (surr.)	1	%	179	INT	159	145
D3-N-MeFOSAA (surr.)	1	%	148	138	140	126
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanesulfonic acid (PFOS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluorodecanesulfonic acid (PFDS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C3-PFBS (surr.)	1	%	160	53	124	123
18O2-PFHxS (surr.)	1	%	100	121	119	124
13C8-PFOS (surr.)	1	%	89	109	105	111

Client Sample ID			BT09_CATFISH_19/07/18	BT09_MUDCRAB_19/07/18	BT09_ROCKCOD_19/07/18	BT10_CATFISH(2)_22/07/18
Sample Matrix			**Fish**	**Crustacean**	**Fish**	**Fish**
Eurofins | mgt Sample No.			**B18-JI34015**	**B18-JI34016**	**B18-JI34017**	**B18-JI34018**
Date Sampled			**Jul 19, 2018**	**Jul 19, 2018**	**Jul 19, 2018**	**Jul 22, 2018**
Test/Reference	LOR	Unit				
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C2-4:2 FTSA (surr.)	1	%	155	99	136	132
13C2-6:2 FTSA (surr.)	1	%	109	50	197	INT
13C2-8:2 FTSA (surr.)	1	%	93	INT	169	INT
PFASs Summations						
Sum (PFHxS + PFOS)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of US EPA PFAS (PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of WA DWER PFAS (n=10)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of PFASs (n=28)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BT10_CATFISH_22/07/18	BT10_MUDCRAB_22/07/18	BT10_MULLET_22/07/18	BT10_SCAT_22/07/18
Sample Matrix			**Fish**	**Crustacean**	**Fish**	**Fish**
Eurofins | mgt Sample No.			**B18-JI34019**	**B18-JI34020**	**B18-JI34021**	**B18-JI34022**
Date Sampled			**Jul 22, 2018**	**Jul 22, 2018**	**Jul 22, 2018**	**Jul 22, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanoic acid (PFPeA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanoic acid (PFHxA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroheptanoic acid (PFHpA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanoic acid (PFOA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorononanoic acid (PFNA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorodecanoic acid (PFDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroundecanoic acid (PFUnDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorododecanoic acid (PFDoDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotridecanoic acid (PFTrDA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C4-PFBA (surr.)	1	%	50	60	118	115
13C5-PFPeA (surr.)	1	%	63	100	97	128
13C5-PFHxA (surr.)	1	%	100	16	112	147
13C4-PFHpA (surr.)	1	%	78	24	135	187
13C8-PFOA (surr.)	1	%	78	59	120	141
13C5-PFNA (surr.)	1	%	74	127	106	105
13C6-PFDA (surr.)	1	%	78	128	115	123
13C2-PFUnDA (surr.)	1	%	89	119	122	111
13C2-PFDoDA (surr.)	1	%	90	108	121	60
13C2-PFTeDA (surr.)	1	%	58	66	88	59

Client Sample ID			BT10_CATFISH_22/07/18	BT10_MUDCRAB_22/07/18	BT10_MULLET_22/07/18	BT10_SCAT_22/07/18
Sample Matrix			**Fish**	**Crustacean**	**Fish**	**Fish**
Eurofins | mgt Sample No.			**B18-JI34019**	**B18-JI34020**	**B18-JI34021**	**B18-JI34022**
Date Sampled			**Jul 22, 2018**	**Jul 22, 2018**	**Jul 22, 2018**	**Jul 22, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C8-FOSA (surr.)	1	%	88	125	109	139
D3-N-MeFOSA (surr.)	1	%	54	88	39	112
D5-N-EtFOSA (surr.)	1	%	INT	113	58	120
D7-N-MeFOSE (surr.)	1	%	82	98	46	92
D9-N-EtFOSE (surr.)	1	%	66	61	20	82
D5-N-EtFOSAA (surr.)	1	%	180	INT	INT	INT
D3-N-MeFOSAA (surr.)	1	%	118	131	179	167
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanesulfonic acid (PFOS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluorodecanesulfonic acid (PFDS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C3-PFBS (surr.)	1	%	85	38	164	183
18O2-PFHxS (surr.)	1	%	97	76	104	109
13C8-PFOS (surr.)	1	%	80	100	87	75
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C2-4:2 FTSA (surr.)	1	%	106	71	165	174
13C2-6:2 FTSA (surr.)	1	%	138	53	137	157
13C2-8:2 FTSA (surr.)	1	%	158	114	168	104
PFASs Summations						
Sum (PFHxS + PFOS)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of US EPA PFAS (PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of WA DWER PFAS (n=10)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of PFASs (n=28)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BT10_SWIMMER(2)_22/07/18	BT10_SWIMMER_22/07/18	BT11_HERRING_18/07/18	BT11_MULLET(2)_18/07/18
Sample Matrix			**Crustacean**	**Crustacean**	**Fish**	**Fish**
Eurofins | mgt Sample No.			**B18-JI34023**	**B18-JI34024**	**B18-JI34025**	**B18-JI34027**
Date Sampled			**Jul 22, 2018**	**Jul 22, 2018**	**Jul 18, 2018**	**Jul 18, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanoic acid (PFPeA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanoic acid (PFHxA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroheptanoic acid (PFHpA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanoic acid (PFOA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorononanoic acid (PFNA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorodecanoic acid (PFDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroundecanoic acid (PFUnDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorododecanoic acid (PFDoDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotridecanoic acid (PFTrDA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C4-PFBA (surr.)	1	%	44	28	63	117
13C5-PFPeA (surr.)	1	%	INT	INT	87	120
13C5-PFHxA (surr.)	1	%	36	23	143	152
13C4-PFHpA (surr.)	1	%	55	35	111	168
13C8-PFOA (surr.)	1	%	126	127	121	161
13C5-PFNA (surr.)	1	%	103	97	96	113
13C6-PFDA (surr.)	1	%	110	112	115	126
13C2-PFUnDA (surr.)	1	%	127	125	131	138
13C2-PFDoDA (surr.)	1	%	109	90	131	140
13C2-PFTeDA (surr.)	1	%	77	75	119	133
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C8-FOSA (surr.)	1	%	106	92	137	105
D3-N-MeFOSA (surr.)	1	%	47	55	77	37
D5-N-EtFOSA (surr.)	1	%	44	40	INT	54
D7-N-MeFOSE (surr.)	1	%	24	64	94	35
D9-N-EtFOSE (surr.)	1	%	28	46	86	10
D5-N-EtFOSAA (surr.)	1	%	INT	INT	INT	INT
D3-N-MeFOSAA (surr.)	1	%	164	184	146	180
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanesulfonic acid (PFOS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluorodecanesulfonic acid (PFDS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C3-PFBS (surr.)	1	%	78	72	134	174
18O2-PFHxS (surr.)	1	%	100	97	138	117
13C8-PFOS (surr.)	1	%	78	84	130	93

Client Sample ID			BT10_SWIMMER(2)_22/07/18	BT10_SWIMMER_22/07/18	BT11_HERRING_18/07/18	BT11_MULLET(2)_18/07/18
Sample Matrix			Crustacean	Crustacean	Fish	Fish
Eurofins | mgt Sample No.			B18-JI34023	B18-JI34024	B18-JI34025	B18-JI34027
Date Sampled			Jul 22, 2018	Jul 22, 2018	Jul 18, 2018	Jul 18, 2018
Test/Reference	LOR	Unit				
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C2-4:2 FTSA (surr.)	1	%	20	13	147	186
13C2-6:2 FTSA (surr.)	1	%	83	104	INT	119
13C2-8:2 FTSA (surr.)	1	%	124	143	INT	133
PFASs Summations						
Sum (PFHxS + PFOS)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of US EPA PFAS (PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of WA DWER PFAS (n=10)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of PFASs (n=28)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BT11_MULLET(3)_18/07/18	BT11_MULLET_18/07/18	BT11_SALMON_18/07/18	BT11_SWIMMER_18/07/18
Sample Matrix			Fish	Fish	Fish	Crustacean
Eurofins | mgt Sample No.			B18-JI34028	B18-JI34030	B18-JI34032	B18-JI34033
Date Sampled			Jul 18, 2018	Jul 18, 2018	Jul 18, 2018	Jul 18, 2018
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanoic acid (PFPeA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanoic acid (PFHxA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroheptanoic acid (PFHpA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanoic acid (PFOA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorononanoic acid (PFNA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorodecanoic acid (PFDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroundecanoic acid (PFUnDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorododecanoic acid (PFDoDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotridecanoic acid (PFTrDA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C4-PFBA (surr.)	1	%	65	65	74	71
13C5-PFPeA (surr.)	1	%	88	90	95	94
13C5-PFHxA (surr.)	1	%	138	139	150	142
13C4-PFHpA (surr.)	1	%	113	107	108	101
13C8-PFOA (surr.)	1	%	117	118	115	98
13C5-PFNA (surr.)	1	%	103	96	104	90
13C6-PFDA (surr.)	1	%	111	113	108	100
13C2-PFUnDA (surr.)	1	%	122	116	111	102
13C2-PFDoDA (surr.)	1	%	140	131	111	93
13C2-PFTeDA (surr.)	1	%	128	114	103	87

Client Sample ID			BT11_MULLET (3)_18/07/18	BT11_MULLET _18/07/18	BT11_SALMO N_18/07/18	BT11_SWIMME R_18/07/18
Sample Matrix			**Fish**	**Fish**	**Fish**	**Crustacean**
Eurofins | mgt Sample No.			**B18-JI34028**	**B18-JI34030**	**B18-JI34032**	**B18-JI34033**
Date Sampled			**Jul 18, 2018**	**Jul 18, 2018**	**Jul 18, 2018**	**Jul 18, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C8-FOSA (surr.)	1	%	128	128	135	126
D3-N-MeFOSA (surr.)	1	%	22	25	75	66
D5-N-EtFOSA (surr.)	1	%	INT	INT	12	12
D7-N-MeFOSE (surr.)	1	%	86	105	110	104
D9-N-EtFOSE (surr.)	1	%	31	40	88	83
D5-N-EtFOSAA (surr.)	1	%	INT	INT	INT	182
D3-N-MeFOSAA (surr.)	1	%	158	159	119	117
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanesulfonic acid (PFOS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluorodecanesulfonic acid (PFDS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C3-PFBS (surr.)	1	%	123	120	128	117
18O2-PFHxS (surr.)	1	%	138	132	136	135
13C8-PFOS (surr.)	1	%	116	118	106	101
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C2-4:2 FTSA (surr.)	1	%	141	169	194	11
13C2-6:2 FTSA (surr.)	1	%	INT	INT	INT	16
13C2-8:2 FTSA (surr.)	1	%	INT	INT	INT	137
PFASs Summations						
Sum (PFHxS + PFOS)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of US EPA PFAS (PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of WA DWER PFAS (n=10)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of PFASs (n=28)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BT02_PIPPY_23/07/18	BT02_ROCKOYSTER_23/07/18	BT02_SWIMMER(3)_22/07/18	BT06_DMULLET_21/07/18
Sample Matrix			**Crustacean**	**Crustacean**	**Crustacean**	**Fish**
Eurofins | mgt Sample No.			**B18-JI34073**	**B18-JI34074**	**B18-JI34075**	**B18-JI34076**
Date Sampled			**Jul 23, 2018**	**Jul 23, 2018**	**Jul 22, 2018**	**Jul 21, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanoic acid (PFPeA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanoic acid (PFHxA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroheptanoic acid (PFHpA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanoic acid (PFOA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorononanoic acid (PFNA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorodecanoic acid (PFDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroundecanoic acid (PFUnDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorododecanoic acid (PFDoDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotridecanoic acid (PFTrDA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C4-PFBA (surr.)	1	%	95	88	65	70
13C5-PFPeA (surr.)	1	%	88	63	86	90
13C5-PFHxA (surr.)	1	%	105	97	65	138
13C4-PFHpA (surr.)	1	%	92	77	74	104
13C8-PFOA (surr.)	1	%	90	54	111	110
13C5-PFNA (surr.)	1	%	84	76	107	95
13C6-PFDA (surr.)	1	%	75	81	127	101
13C2-PFUnDA (surr.)	1	%	74	82	107	108
13C2-PFDoDA (surr.)	1	%	74	93	103	115
13C2-PFTeDA (surr.)	1	%	67	68	115	121
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C8-FOSA (surr.)	1	%	58	56	81	118
D3-N-MeFOSA (surr.)	1	%	64	61	59	38
D5-N-EtFOSA (surr.)	1	%	64	61	INT	INT
D7-N-MeFOSE (surr.)	1	%	49	45	76	105
D9-N-EtFOSE (surr.)	1	%	52	45	64	58
D5-N-EtFOSAA (surr.)	1	%	65	91	175	184
D3-N-MeFOSAA (surr.)	1	%	71	76	123	119
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanesulfonic acid (PFOS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluorodecanesulfonic acid (PFDS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C3-PFBS (surr.)	1	%	87	74	69	116
18O2-PFHxS (surr.)	1	%	89	83	144	139
13C8-PFOS (surr.)	1	%	70	80	94	108

Client Sample ID			BT02_PIPPY_23/07/18	BT02_ROCKOYSTER_23/07/18	BT02_SWIMMER(3)_22/07/18	BT06_DMULLET_21/07/18
Sample Matrix			**Crustacean**	**Crustacean**	**Crustacean**	**Fish**
Eurofins | mgt Sample No.			**B18-JI34073**	**B18-JI34074**	**B18-JI34075**	**B18-JI34076**
Date Sampled			**Jul 23, 2018**	**Jul 23, 2018**	**Jul 22, 2018**	**Jul 21, 2018**
Test/Reference	LOR	Unit				
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C2-4:2 FTSA (surr.)	1	%	94	94	106	162
13C2-6:2 FTSA (surr.)	1	%	85	111	114	INT
13C2-8:2 FTSA (surr.)	1	%	103	120	INT	INT
PFASs Summations						
Sum (PFHxS + PFOS)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of US EPA PFAS (PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of WA DWER PFAS (n=10)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of PFASs (n=28)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BT06_MULLET_21/07/18	BT06_SILVERBIDDY_21/07/18	BT09_BREAM_19/07/18
Sample Matrix			**Fish**	**Fish**	**Fish**
Eurofins | mgt Sample No.			**B18-JI34077**	**B18-JI34078**	**B18-JI34079**
Date Sampled			**Jul 21, 2018**	**Jul 21, 2018**	**Jul 19, 2018**
Test/Reference	LOR	Unit			
Perfluoroalkyl carboxylic acids (PFCAs)					
Perfluorobutanoic acid (PFBA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
Perfluoropentanoic acid (PFPeA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
Perfluorohexanoic acid (PFHxA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
Perfluoroheptanoic acid (PFHpA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
Perfluorooctanoic acid (PFOA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
Perfluorononanoic acid (PFNA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
Perfluorodecanoic acid (PFDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
Perfluoroundecanoic acid (PFUnDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
Perfluorododecanoic acid (PFDoDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
Perfluorotridecanoic acid (PFTrDA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
13C4-PFBA (surr.)	1	%	72	68	84
13C5-PFPeA (surr.)	1	%	89	90	107
13C5-PFHxA (surr.)	1	%	127	136	132
13C4-PFHpA (surr.)	1	%	102	96	112
13C8-PFOA (surr.)	1	%	107	95	107
13C5-PFNA (surr.)	1	%	92	85	102
13C6-PFDA (surr.)	1	%	87	99	106
13C2-PFUnDA (surr.)	1	%	98	116	121
13C2-PFDoDA (surr.)	1	%	97	143	148
13C2-PFTeDA (surr.)	1	%	70	147	135

Client Sample ID			BT06_MULLET_21/07/18	BT06_SILVER BIDDY_21/07/18	BT09_BREAM_19/07/18
Sample Matrix			**Fish**	**Fish**	**Fish**
Eurofins | mgt Sample No.			**B18-JI34077**	**B18-JI34078**	**B18-JI34079**
Date Sampled			**Jul 21, 2018**	**Jul 21, 2018**	**Jul 19, 2018**
Test/Reference	LOR	Unit			
Perfluoroalkyl sulfonamido substances					
Perfluorooctane sulfonamide (FOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
13C8-FOSA (surr.)	1	%	118	115	101
D3-N-MeFOSA (surr.)	1	%	58	30	25
D5-N-EtFOSA (surr.)	1	%	23	INT	INT
D7-N-MeFOSE (surr.)	1	%	94	54	43
D9-N-EtFOSE (surr.)	1	%	79	16	13
D5-N-EtFOSAA (surr.)	1	%	149	INT	INT
D3-N-MeFOSAA (surr.)	1	%	124	116	154
Perfluoroalkyl sulfonic acids (PFSAs)					
Perfluorobutanesulfonic acid (PFBS)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
Perfluorooctanesulfonic acid (PFOS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3
Perfluorodecanesulfonic acid (PFDS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
13C3-PFBS (surr.)	1	%	110	115	118
18O2-PFHxS (surr.)	1	%	123	134	145
13C8-PFOS (surr.)	1	%	101	95	86
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5
13C2-4:2 FTSA (surr.)	1	%	INT	174	INT
13C2-6:2 FTSA (surr.)	1	%	INT	INT	INT
13C2-8:2 FTSA (surr.)	1	%	INT	INT	INT
PFASs Summations					
Sum (PFHxS + PFOS)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5
Sum of US EPA PFAS (PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5
Sum of WA DWER PFAS (n=10)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5
Sum of PFASs (n=28)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

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

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Brisbane	Jul 30, 2018	180 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Brisbane	Jul 30, 2018	180 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Brisbane	Jul 30, 2018	180 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Brisbane	Jul 30, 2018	180 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Initial Weight	Brisbane	Jul 30, 2018	0 Day

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NATA # 1261 Site # 18217

Brisbane
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Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
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Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name: Golder Associates Pty Ltd (Qld)
Address: 147 Coronation Dve
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QLD 4064

Project Name:
Project ID: 18100235

Order No.:
Report #: 609830
Phone: (07) 3721 5400
Fax: (07) 3721 5401

Received: Jul 27, 2018 3:00 PM
Due: Aug 17, 2018
Priority: 15 Day
Contact Name: Greg Whitmore

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						CANCELLED	Initial Weight	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
External Laboratory								
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
1	BT08_MULLET(2)_19/07/18	Jul 19, 2018		Fish	B18-Au00742		X	X
2	BT01_BREAM(2)_24/07/18	Jul 24, 2018		Fish	B18-JI33668		X	X
3	BT01_BREAM_24/07/18	Jul 24, 2018		Fish	B18-JI33669		X	X
4	BT01_CATFISH_24/07/18	Jul 24, 2018		Fish	B18-JI33670		X	X
5	BT01_MUDCRAB(2)_24/07/18	Jul 24, 2018		Crustacean	B18-JI33671		X	X

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Sample Detail						CANCELLED	Initial Weight	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
6	BT01_MUDCRAB_24/07/18	Jul 24, 2018		Crustacean	B18-JI33672		X	X
7	BT01_PRAWN(2)_24/07/18	Jul 24, 2018		Crustacean	B18-JI33673		X	X
8	BT01_PRAWN_24/07/18	Jul 24, 2018		Crustacean	B18-JI33674		X	X
9	BT01DS_CATFISH_23/07/18	Jul 23, 2018		Fish	B18-JI33675		X	X
10	BT01DS_JAVLINFISH(2)_23/07/18	Jul 23, 2018		Fish	B18-JI33676		X	X
11	BT01DS_JAVLINFISH_23/07/18	Jul 23, 2018		Fish	B18-JI33677		X	X
12	BT01DS_MUD	Jul 23, 2018		Crustacean	B18-JI33678		X	X

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Sample Detail						CANCELLED	Initial Weight	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
	CRAB_23/07/18							
13	BT01DS_MULLET_23/07/18	Jul 23, 2018		Fish	B18-JI33969	X		
14	BT01DS_ROCKCOD_23/07/18	Jul 23, 2018		Fish	B18-JI33970		X	X
15	BT01US_MULLET_23/07/18	Jul 23, 2018		Fish	B18-JI33971		X	X
16	BT01US_ROCKCOD_23/07/18	Jul 23, 2018		Fish	B18-JI33972		X	X
17	BT01US_SHRIMP_23/07/18	Jul 23, 2018		Crustacean	B18-JI33973		X	X
18	BT02_COCKL	Jul 23, 2018		Crustacean	B18-JI33974		X	X

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Contact Name: Greg Whitmore

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						CANCELLED	Initial Weight	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
	E_23/07/18							
19	BT02_GASTROPOD_23/07/18	Jul 23, 2018		Crustacean	B18-JI33975		X	X
20	BT02_MUDCRAB_20/07/18	Jul 20, 2018		Crustacean	B18-JI33976		X	X
21	BT02_SWIMMER(2)_22/07/18	Jul 22, 2018		Crustacean	B18-JI33977		X	X
22	BT03_COCKLE_19/07/18	Jul 19, 2018		Crustacean	B18-JI33978		X	X
23	BT03_MUDCRAB_19/07/18	Jul 19, 2018		Crustacean	B18-JI33979		X	X
24	BT03_ROCKOYSTER_19/07/	Jul 19, 2018		Crustacean	B18-JI33980		X	X

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Priority: 15 Day
Contact Name: Greg Whitmore

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Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
	18							
25	BT03_SWIMMER_19/07/18	Jul 19, 2018		Crustacean	B18-JI33981		X	X
26	BT03A_MILKFISH_20/07/18	Jul 20, 2018		Fish	B18-JI33982		X	X
27	BT04_SWIMMER_21/07/18	Jul 21, 2018		Crustacean	B18-JI33983		X	X
28	BT05_CATFISH_20/07/18	Jul 20, 2018		Fish	B18-JI33984		X	X
29	BT05_COCKLE_19/07/18	Jul 19, 2018		Crustacean	B18-JI33985		X	X
30	BT05_GASTROPOD_19/07/18	Jul 19, 2018		Crustacean	B18-JI33986		X	X

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Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
31	BT05_GRUNTER_20/07/18	Jul 19, 2018		Fish	B18-JI33987		X	X
32	BT05_MUDCRAB_20/07/18	Jul 19, 2018		Crustacean	B18-JI33988		X	X
33	BT05_SWIMMER_20/07/18	Jul 19, 2018		Crustacean	B18-JI33989		X	X
34	BT05_TRUMPETER_20/07/18	Jul 19, 2018		Fish	B18-JI33990		X	X
35	BT06_BREAM(2)_25/07/18	Jul 25, 2018		Fish	B18-JI33991		X	X
36	BT06_BREAM_25/07/18	Jul 25, 2018		Fish	B18-JI33992		X	X
37	BT06_MUDCRAB(2)_18/07/1	Jul 18, 2018		Crustacean	B18-JI33993		X	X

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Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
	8							
38	BT06_MUDCRAB(3)_18/07/18	Jul 18, 2018		Crustacean	B18-JI33994		X	X
39	BT06_MUDCRAB_18/07/18	Jul 18, 2018		Crustacean	B18-JI33995		X	X
40	BT06_SHARK_18/07/18	Jul 21, 2018		Fish	B18-JI33996		X	X
41	BT06_SNAPPER_18/07/18	Jul 18, 2018		Fish	B18-JI33997		X	X
42	BT06_SWIMMER_18/07/18	Jul 18, 2018		Crustacean	B18-JI33998		X	X
43	BT07_CATFISH_17/07/18	Jul 17, 2018		Fish	B18-JI33999		X	X

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Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
44	BT07_GRUNTER_24/07/18	Jul 24, 2018		Fish	B18-JI34000		X	X
45	BT07_JAVELINFISH_24/07/18	Jul 24, 2018		Fish	B18-JI34001		X	X
46	BT07_MUDCRAB(2)_17/07/18	Jul 17, 2018		Crustacean	B18-JI34002		X	X
47	BT07_MUDCRAB_24/07/18	Jul 24, 2018		Crustacean	B18-JI34003		X	X
48	BT07_MULLET(2)_16/07/18	Jul 16, 2018		Fish	B18-JI34004		X	X
49	BT07_MULLET_24/07/18	Jul 24, 2018		Fish	B18-JI34005		X	X
50	BT07_SCAT(2	Jul 16, 2018		Fish	B18-JI34006	X		

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Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
	)_16/07/18							
51	BT07_SCAT_16/07/18	Jul 16, 2018		Fish	B18-JI34007	X		
52	BT07_SNAPPER_16/07/18	Jul 16, 2018		Fish	B18-JI34008		X	X
53	BT08_CATFISH(2)_16/07/18	Jul 16, 2018		Fish	B18-JI34009		X	X
54	BT08_CATFISH_19/07/18	Jul 19, 2018		Fish	B18-JI34010		X	X
55	BT08_JAVELINFISH_19/07/18	Jul 19, 2018		Fish	B18-JI34011	X		
56	BT08_MUDCRAB_17/07/18	Jul 17, 2018		Crustacean	B18-JI34012		X	X

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Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
57	BT08_MULLET(3)_19/07/18	Jul 19, 2018		Fish	B18-JI34013	X		
58	BT08_MULLET_19/07/18	Jul 19, 2018		Fish	B18-JI34014		X	X
59	BT09_CATFISH_19/07/18	Jul 19, 2018		Fish	B18-JI34015		X	X
60	BT09_MUDCRAB_19/07/18	Jul 19, 2018		Crustacean	B18-JI34016		X	X
61	BT09_ROCKCOD_19/07/18	Jul 19, 2018		Fish	B18-JI34017		X	X
62	BT10_CATFISH(2)_22/07/18	Jul 22, 2018		Fish	B18-JI34018		X	X
63	BT10_CATFISH_22/07/18	Jul 22, 2018		Fish	B18-JI34019		X	X

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Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
64	BT10_MUDCRAB_22/07/18	Jul 22, 2018		Crustacean	B18-JI34020		X	X
65	BT10_MULLET_22/07/18	Jul 22, 2018		Fish	B18-JI34021		X	X
66	BT10_SCAT_22/07/18	Jul 22, 2018		Fish	B18-JI34022		X	X
67	BT10_SWIMMER(2)_22/07/18	Jul 22, 2018		Crustacean	B18-JI34023		X	X
68	BT10_SWIMMER_22/07/18	Jul 22, 2018		Crustacean	B18-JI34024		X	X
69	BT11_HERRING_18/07/18	Jul 18, 2018		Fish	B18-JI34025		X	X
70	BT11_CATFISH_18/07/18	Jul 18, 2018		Fish	B18-JI34026	X		

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Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
71	BT11_MULLET(2)_18/07/18	Jul 18, 2018		Fish	B18-JI34027		X	X
72	BT11_MULLET(3)_18/07/18	Jul 18, 2018		Fish	B18-JI34028		X	X
73	BT11_MULLET(4)_18/07/18	Jul 18, 2018		Fish	B18-JI34029	X		
74	BT11_MULLET_18/07/18	Jul 18, 2018		Fish	B18-JI34030		X	X
75	BT11_SALMON(2)_18/07/18	Jul 18, 2018		Fish	B18-JI34031	X		
76	BT11_SALMON_18/07/18	Jul 18, 2018		Fish	B18-JI34032		X	X
77	BT11_SWIMMER_18/07/18	Jul 18, 2018		Crustacean	B18-JI34033		X	X

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Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
78	BT02_PIPPY_23/07/18	Jul 23, 2018		Crustacean	B18-JI34073		X	X
79	BT02_ROCKOYSTER_23/07/18	Jul 23, 2018		Crustacean	B18-JI34074		X	X
80	BT02_SWIMMER(3)_22/07/18	Jul 22, 2018		Crustacean	B18-JI34075		X	X
81	BT06_DMULLET_21/07/18	Jul 21, 2018		Fish	B18-JI34076		X	X
82	BT06_MULLET_21/07/18	Jul 21, 2018		Fish	B18-JI34077		X	X
83	BT06_SILVERBIDDY_21/07/18	Jul 21, 2018		Fish	B18-JI34078		X	X

Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**		**Received:**	Jul 27, 2018 3:00 PM
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		Phone:	(07) 3721 5400	**Priority:**	15 Day
		Fax:	(07) 3721 5401	**Contact Name:**	Greg Whitmore
Project Name:					
Project ID:	18100235				

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						CANCELLED	Initial Weight	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794						X	X	X
Perth Laboratory - NATA Site # 23736								
84	BT09_BREAM_19/07/18	Jul 19, 2018		Fish	B18-JI34079		X	X
Test Counts						8	76	76

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

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

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

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

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

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/kg	< 0.5			0.5	Pass	
Perfluoropentanoic acid (PFPeA)	ug/kg	< 0.5			0.5	Pass	
Perfluorohexanoic acid (PFHxA)	ug/kg	< 0.5			0.5	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/kg	< 0.5			0.5	Pass	
Perfluorooctanoic acid (PFOA)	ug/kg	< 0.5			0.5	Pass	
Perfluorononanoic acid (PFNA)	ug/kg	< 0.5			0.5	Pass	
Perfluorodecanoic acid (PFDA)	ug/kg	< 0.5			0.5	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/kg	< 0.5			0.5	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/kg	< 0.5			0.5	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/kg	< 0.5			0.5	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/kg	< 0.5			0.5	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/kg	< 0.5			0.5	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/kg	< 0.5			0.5	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/kg	< 0.5			0.5	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/kg	< 0.5			0.5	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	ug/kg	< 0.5			0.5	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/kg	< 0.5			0.5	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/kg	< 0.5			0.5	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/kg	< 0.5			0.5	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/kg	< 0.5			0.5	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	< 0.3			0.3	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	< 0.5			0.5	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/kg	< 0.3			0.3	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/kg	< 0.5			0.5	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/kg	< 0.5			0.5	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	ug/kg	< 0.5			0.5	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/kg	< 0.5			0.5	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/kg	< 0.5			0.5	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	106			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	112			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	98			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	96			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	93			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	98			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	98			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	108			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	91			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	62			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	99			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluorooctane sulfonamide (FOSA)	%	103			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	134			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	97			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	87			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	112			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	94			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	101			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	104			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	77			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	101			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	127			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	103			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	93			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	96			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	103			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	105			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	93			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	B18-JI33673	CP	%	101			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	B18-JI33673	CP	%	104			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	B18-JI33673	CP	%	102			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-JI33673	CP	%	101			50-150	Pass	
Perfluorooctanoic acid (PFOA)	B18-JI33673	CP	%	98			50-150	Pass	
Perfluorononanoic acid (PFNA)	B18-JI33673	CP	%	98			50-150	Pass	
Perfluorodecanoic acid (PFDA)	B18-JI33673	CP	%	108			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-JI33673	CP	%	109			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-JI33673	CP	%	103			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-JI33673	CP	%	72			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-JI33673	CP	%	107			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	B18-JI33673	CP	%	102			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-JI33673	CP	%	102			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-JI33673	CP	%	87			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-JI33673	CP	%	109			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-JI33673	CP	%	101			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-JI33673	CP	%	113			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-JI33673	CP	%	98			50-150	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	B18-JI33673	CP	%	70			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-JI33673	CP	%	89			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-JI33673	CP	%	95			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-JI33673	CP	%	86			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-JI33673	CP	%	99			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-JI33673	CP	%	67			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-JI33673	CP	%	96			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-JI33673	CP	%	92			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-JI33673	CP	%	98			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-JI33673	CP	%	60			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	B18-JI33977	CP	%	104			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	B18-JI33977	CP	%	105			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	B18-JI33977	CP	%	103			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-JI33977	CP	%	103			50-150	Pass	
Perfluorooctanoic acid (PFOA)	B18-JI33977	CP	%	98			50-150	Pass	
Perfluorononanoic acid (PFNA)	B18-JI33977	CP	%	102			50-150	Pass	
Perfluorodecanoic acid (PFDA)	B18-JI33977	CP	%	105			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-JI33977	CP	%	111			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-JI33977	CP	%	102			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-JI33977	CP	%	88			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-JI33977	CP	%	108			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	B18-JI33977	CP	%	98			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-JI33977	CP	%	94			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-JI33977	CP	%	95			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-JI33977	CP	%	112			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-JI33977	CP	%	112			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-JI33977	CP	%	120			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-JI33977	CP	%	96			50-150	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	B18-JI33977	CP	%	81			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-JI33977	CP	%	84			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-JI33977	CP	%	98			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-JI33977	CP	%	92			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-JI33977	CP	%	99			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-JI33977	CP	%	70			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-JI33977	CP	%	96			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-JI33977	CP	%	98			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-JI33977	CP	%	93			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-JI33977	CP	%	67			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	B18-JI33984	CP	%	107			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	B18-JI33984	CP	%	119			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	B18-JI33984	CP	%	105			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-JI33984	CP	%	104			50-150	Pass	
Perfluorooctanoic acid (PFOA)	B18-JI33984	CP	%	106			50-150	Pass	
Perfluorononanoic acid (PFNA)	B18-JI33984	CP	%	107			50-150	Pass	
Perfluorodecanoic acid (PFDA)	B18-JI33984	CP	%	106			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-JI33984	CP	%	113			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-JI33984	CP	%	113			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-JI33984	CP	%	95			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-JI33984	CP	%	112			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	B18-JI33984	CP	%	106			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-JI33984	CP	%	110			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-JI33984	CP	%	115			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-JI33984	CP	%	125			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-JI33984	CP	%	112			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-JI33984	CP	%	110			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-JI33984	CP	%	103			50-150	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	B18-JI33984	CP	%	95			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-JI33984	CP	%	101			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-JI33984	CP	%	101			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-JI33984	CP	%	100			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-JI33984	CP	%	110			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-JI33984	CP	%	103			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-JI33984	CP	%	100			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-JI33984	CP	%	117			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-JI33984	CP	%	103			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-JI33984	CP	%	107			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	B18-JI33991	CP	%	105			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	B18-JI33991	CP	%	120			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	B18-JI33991	CP	%	106			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-JI33991	CP	%	105			50-150	Pass	
Perfluorooctanoic acid (PFOA)	B18-JI33991	CP	%	107			50-150	Pass	
Perfluorononanoic acid (PFNA)	B18-JI33991	CP	%	109			50-150	Pass	
Perfluorodecanoic acid (PFDA)	B18-JI33991	CP	%	107			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-JI33991	CP	%	116			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-JI33991	CP	%	109			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-JI33991	CP	%	88			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-JI33991	CP	%	115			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	B18-JI33991	CP	%	108			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-JI33991	CP	%	110			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-JI33991	CP	%	108			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-JI33991	CP	%	113			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-JI33991	CP	%	116			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-JI33991	CP	%	109			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-JI33991	CP	%	108			50-150	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	B18-JI33991	CP	%	95			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-JI33991	CP	%	101			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-JI33991	CP	%	104			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-JI33991	CP	%	98			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-JI33991	CP	%	112			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-JI33991	CP	%	101			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-JI33991	CP	%	97			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-JI33991	CP	%	107			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-JI33991	CP	%	103			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-JI33991	CP	%	105			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	B18-JI33996	CP	%	102			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	B18-JI33996	CP	%	101			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	B18-JI33996	CP	%	89			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-JI33996	CP	%	90			50-150	Pass	
Perfluorooctanoic acid (PFOA)	B18-JI33996	CP	%	96			50-150	Pass	
Perfluorononanoic acid (PFNA)	B18-JI33996	CP	%	97			50-150	Pass	
Perfluorodecanoic acid (PFDA)	B18-JI33996	CP	%	103			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-JI33996	CP	%	103			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-JI33996	CP	%	66			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-JI33996	CP	%	53			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-JI33996	CP	%	85			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	B18-JI33996	CP	%	97			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-JI33996	CP	%	127			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-JI33996	CP	%	72			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-JI33996	CP	%	91			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-JI33996	CP	%	146			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-JI33996	CP	%	80			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-JI33996	CP	%	114			50-150	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	B18-JI33996	CP	%	100			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-JI33996	CP	%	77			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-JI33996	CP	%	100			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-JI33996	CP	%	125			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-JI33996	CP	%	97			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-JI33996	CP	%	70			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-JI33996	CP	%	91			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-JI33996	CP	%	106			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-JI33996	CP	%	89			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-JI33996	CP	%	127			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	B18-JI34015	CP	%	92			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	B18-JI34015	CP	%	107			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	B18-JI34015	CP	%	90			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-JI34015	CP	%	91			50-150	Pass	
Perfluorooctanoic acid (PFOA)	B18-JI34015	CP	%	84			50-150	Pass	
Perfluorononanoic acid (PFNA)	B18-JI34015	CP	%	85			50-150	Pass	
Perfluorodecanoic acid (PFDA)	B18-JI34015	CP	%	88			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-JI34015	CP	%	100			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-JI34015	CP	%	83			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-JI34015	CP	%	107			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-JI34015	CP	%	86			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	B18-JI34015	CP	%	100			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-JI34015	CP	%	101			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-JI34015	CP	%	96			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-JI34015	CP	%	89			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-JI34015	CP	%	90			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-JI34015	CP	%	96			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-JI34015	CP	%	100			50-150	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	B18-JI34015	CP	%	78			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-JI34015	CP	%	80			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-JI34015	CP	%	95			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-JI34015	CP	%	102			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-JI34015	CP	%	94			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-JI34015	CP	%	77			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-JI34015	CP	%	92			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-JI34015	CP	%	107			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-JI34015	CP	%	101			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-JI34015	CP	%	133			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	B18-JI34017	CP	%	106			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	B18-JI34017	CP	%	100			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	B18-JI34017	CP	%	96			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-JI34017	CP	%	92			50-150	Pass	
Perfluorooctanoic acid (PFOA)	B18-JI34017	CP	%	98			50-150	Pass	
Perfluorononanoic acid (PFNA)	B18-JI34017	CP	%	98			50-150	Pass	
Perfluorodecanoic acid (PFDA)	B18-JI34017	CP	%	106			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-JI34017	CP	%	103			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-JI34017	CP	%	69			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-JI34017	CP	%	66			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-JI34017	CP	%	93			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	B18-JI34017	CP	%	99			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-JI34017	CP	%	129			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-JI34017	CP	%	95			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-JI34017	CP	%	103			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-JI34017	CP	%	144			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-JI34017	CP	%	82			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-JI34017	CP	%	121			50-150	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	B18-JI34017	CP	%	114			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-JI34017	CP	%	80			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-JI34017	CP	%	98			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-JI34017	CP	%	111			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-JI34017	CP	%	101			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-JI34017	CP	%	74			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-JI34017	CP	%	95			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-JI34017	CP	%	103			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-JI34017	CP	%	102			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-JI34017	CP	%	124			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	B18-JI34027	CP	%	92			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	B18-JI34027	CP	%	113			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	B18-JI34027	CP	%	84			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-JI34027	CP	%	95			50-150	Pass	
Perfluorooctanoic acid (PFOA)	B18-JI34027	CP	%	92			50-150	Pass	
Perfluorononanoic acid (PFNA)	B18-JI34027	CP	%	88			50-150	Pass	
Perfluorodecanoic acid (PFDA)	B18-JI34027	CP	%	91			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-JI34027	CP	%	98			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-JI34027	CP	%	91			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-JI34027	CP	%	107			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-JI34027	CP	%	90			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	B18-JI34027	CP	%	98			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-JI34027	CP	%	80			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-JI34027	CP	%	109			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-JI34027	CP	%	122			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-JI34027	CP	%	143			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-JI34027	CP	%	99			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-JI34027	CP	%	101			50-150	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	B18-JI34027	CP	%	77			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-JI34027	CP	%	86			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-JI34027	CP	%	93			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-JI34027	CP	%	100			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-JI34027	CP	%	96			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-JI34027	CP	%	70			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-JI34027	CP	%	95			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-JI34027	CP	%	105			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-JI34027	CP	%	93			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-JI34027	CP	%	138			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	B18-JI34028	CP	%	103			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	B18-JI34028	CP	%	99			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	B18-JI34028	CP	%	95			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-JI34028	CP	%	94			50-150	Pass	
Perfluorooctanoic acid (PFOA)	B18-JI34028	CP	%	95			50-150	Pass	
Perfluorononanoic acid (PFNA)	B18-JI34028	CP	%	102			50-150	Pass	
Perfluorodecanoic acid (PFDA)	B18-JI34028	CP	%	110			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-JI34028	CP	%	109			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-JI34028	CP	%	79			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-JI34028	CP	%	76			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-JI34028	CP	%	90			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	B18-JI34028	CP	%	93			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-JI34028	CP	%	122			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-JI34028	CP	%	68			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-JI34028	CP	%	110			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-JI34028	CP	%	147			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-JI34028	CP	%	78			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-JI34028	CP	%	129			50-150	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	B18-JI34028	CP	%	104			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-JI34028	CP	%	78			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-JI34028	CP	%	98			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-JI34028	CP	%	118			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-JI34028	CP	%	98			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-JI34028	CP	%	82			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-JI34028	CP	%	97			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-JI34028	CP	%	101			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-JI34028	CP	%	94			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-JI34028	CP	%	143			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-JI33972	CP	ug/kg	< 0.3	< 0.3	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-JI33972	CP	ug/kg	< 0.3	< 0.3	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-JI33972	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-JI33976	CP	ug/kg	< 0.3	< 0.3	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-JI33976	CP	ug/kg	< 0.3	< 0.3	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-JI33976	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-JI33979	CP	ug/kg	< 0.3	< 0.3	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-JI33979	CP	ug/kg	< 0.3	< 0.3	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-JI33979	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-JI33982	CP	ug/kg	< 0.3	< 0.3	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-JI33982	CP	ug/kg	< 0.3	< 0.3	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-JI33982	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-JI33985	CP	ug/kg	< 0.3	< 0.3	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-JI33985	CP	ug/kg	< 0.3	< 0.3	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-JI33985	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-JI34010	CP	ug/kg	< 0.3	< 0.3	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-JI34010	CP	ug/kg	< 0.3	< 0.3	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-JI34010	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-JI34014	CP	ug/kg	< 0.3	< 0.3	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-JI34014	CP	ug/kg	< 0.3	< 0.3	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-JI34014	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-JI34021	CP	ug/kg	< 0.3	< 0.3	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-JI34021	CP	ug/kg	< 0.3	< 0.3	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-JI34021	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-JI34025	CP	ug/kg	< 0.3	< 0.3	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-JI34025	CP	ug/kg	< 0.3	< 0.3	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-JI34025	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-JI34030	CP	ug/kg	< 0.3	< 0.3	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-JI34030	CP	ug/kg	< 0.3	< 0.3	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-JI34030	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
G03	Insufficient sample was supplied to conduct this analysis
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised By

Ryan Gilbert	Analytical Services Manager
Jonathon Angell	Senior Analyst-Organic (QLD)



Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

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

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SAMPLE CHAIN OF CUSTODY DOCUMENTATION

5DAY

Sheet ..... of .....

Project No:	18100235	Phase:	6000	Lab Name:	Eurofins Brisbane
Site ID No.:	n/a	Site Location:		Quote No.	180709GOL
Sampled By:	James Comley				

Turnaround Time: 24hrs ☐ 48hrs ☐ Standard ☑ Data Required By: 17-Aug-18
36hrs ☐ 5 Days ☐

Lot 2 Smallwood Place Murarrie QLD Australia 4172

Report Format: PDF ☑ EXCEL ☑ ESDAT ☑ EQUIS ☐

COC point of contact for info: Greg Whitmore Phone 0490735572

Comments/Special Instructions:

GOLDER ASSOCIATES PTY LTD

Brisbane Office
147 Coronation Drive
MILTON QLD 4064
ph: 07 3721 5400
fax: 07 3721 5401

Report Recipient:	Greg Whitmore	Phone:	61490735572	Email:
	James Comley	Phone:	61423079188	Email:
Invoice Recipient:	Accounts Payable	Phone:	03 8562 3628	Email:
	Greg Whitmore	Phone:	61490735572	Email:

ANALYSES REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINERS	Level of Contamination (low, high/unknown)	ON HOLD	28 PFAS including PFOA/PFOS and 6:2 FTS (LOR 0.5-2.0ug/kg)										Comments
	BT01DS_Mullet_23/07/18		23-Jul						x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Composite tissue from individuals, Retain remaining carcass
	BT07_Scat(2)_16/07/18		16-Jul		Biota	Zip-lock	Unknown		x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	BT07_Scat_16/07/18		16-Jul		Biota	Zip-lock	Unknown		x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	BT08_Javelinfish_19/07/18		19-Jul		Biota	Zip-lock	Unknown		x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	BT08_Mullet(2)_19/07/18		19-Jul		Biota	Zip-lock	Unknown		x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	BT08_Mullet(3)_19/07/18		19-Jul		Biota	Zip-lock	Unknown		x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	BT11_Catfish_18/07/18		18-Jul		Biota	Zip-lock	Unknown		x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	BT11_Mullet(4)_18/07/18		18-Jul		Biota	Zip-lock	Unknown		x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
	BT11_Salmon(2)_18/07/18		18-Jul		Biota	Zip-lock	Unknown		x										Photograph prior to dissection, PFAS-free DI water rinse, Fillet (skin-on), Record wet weight of tissue, Retain remaining carcass
							TOTAL	0	4	0	0	0	0	0	0	0	0	0	

SAMPLE MATRIX = Soil/Sediment/Fill/Water/Other

SAMPLE TYPE = Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR), Grab Sample (GS)

HIGH CONCENTRATION: circle expected parameters in analytic list

WATER CONTAINER CODES P = Unpreserved Plastic, N = Nitric Preserved Plastic, ORC = Nitric Preserved ORC, SH = Sodium Hydroxide/Cd Preserved, S = Sodium Hydroxide Preserved Plastic, AG = Amber Glass Unpreserved, AP - Airfreight Unpreserved Plastic V = VOA Vial HCl Preserved, VB = VOA Vial Sodium Bisulphate Preserved, VS = VOA Vial Sulfuric Preserved, AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass, H = HCl preserved Plastic, HS = HCl preserved Speciation bottle, SP = Sulfuric Preserved Plastic, F = Formaldehyde Preserved Glass, Z = Zinc Acetate Preserved Bottle, E = EDTA Preserved Bottles, ST = Sterile Bottle, ASS = Plastic Bag for Acid Sulphate Soils, B = Unpreserved Bag.

	NAME	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY					
RECEIVED BY	RYAN G.	RG	EMCT	23/8	3PM
RELEASED BY					
RECEIVED BY					

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

SAMPLES MISPLACED AT LAB
INITIALLY RECIEVED 27/7

RL3
SNT003
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**Golder Associates Pty Ltd (Qld)**
Contact name:	Greg Whitmore
Project name:	18100235
Project ID:	6000
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Aug 23, 2018 3:00 PM
Eurofins | mgt reference:	**613766**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 6 degrees Celsius.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Ryan Gilbert on Phone : or by e.mail: RyanGilbert@eurofins.com

Results will be delivered electronically via e.mail to Greg Whitmore - GWhitmore@golder.com.au.

eurofins | mgt

ABN– 50 005 085 521
e.mail : EnviroSales@eurofins.com
web : www.eurofins.com.au

Melbourne
2-5 Kingston Town Close
Oakleigh VIC 3166
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NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name: Golder Associates Pty Ltd (Qld)
Address: 147 Coronation Dve
Milton
QLD 4064

Project Name: 18100235
Project ID: 6000

Order No.:
Report #: 613766
Phone: (07) 3721 5400
Fax: (07) 3721 5401

Received: Aug 23, 2018 3:00 PM
Due: Aug 30, 2018
Priority: 5 Day
Contact Name: Greg Whitmore

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Initial Weight	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	BT01DS_MULLET_23/07/18	Jul 23, 2018		Fish	B18-Au29349	X	X
2	BT07_SCAT(2)_16/07/18	Jul 16, 2018		Fish	B18-Au29350	X	X
3	BT07_SCAT_16/07/18	Jul 16, 2018		Fish	B18-Au29351	X	X
4	BT08_JAVELINFISH_19/07/18	Jul 16, 2018		Fish	B18-Au29352	X	X
5	BT08_MULLET(2)_19/07/18	Jul 19, 2018		Fish	B18-Au29353	X	X

eurofins | mgt

ABN– 50 005 085 521
e.mail : EnviroSales@eurofins.com
web : www.eurofins.com.au

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Project Name: 18100235
Project ID: 6000

Order No.:
Report #: 613766
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Received: Aug 23, 2018 3:00 PM
Due: Aug 30, 2018
Priority: 5 Day
Contact Name: Greg Whitmore

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Initial Weight	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
6	BT08_MULLET(3)_19/07/18	Jul 19, 2018		Fish	B18-Au29354	X	X
7	BT11_CATFISH_18/07/18	Jul 18, 2018		Fish	B18-Au29355	X	X
8	BT11_MULLET(4)_18/07/18	Jul 18, 2018		Fish	B18-Au29356	X	X
9	BT11_SALMON(2)_18/07/18	Jul 18, 2018		Fish	B18-Au29357	X	X
Test Counts						9	9

Certificate of Analysis

Golder Associates Pty Ltd
147 Coronation Dve
Milton
QLD 4064

NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Greg Whitmore**

Report **613766-S**
Project name 18100235
Project ID 6000
Received Date Aug 23, 2018

Client Sample ID			**BT01DS_MULLET_23/07/18**	**BT07_SCAT(2)_16/07/18**	**BT07_SCAT_16/07/18**	**BT08_JAVELINFISH_19/07/18**
Sample Matrix			**Fish**	**Fish**	**Fish**	**Fish**
Eurofins | mgt Sample No.			**B18-Au29349**	**B18-Au29350**	**B18-Au29351**	**B18-Au29352**
Date Sampled			**Jul 23, 2018**	**Jul 16, 2018**	**Jul 16, 2018**	**Jul 16, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanoic acid (PFPeA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanoic acid (PFHxA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroheptanoic acid (PFHpA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanoic acid (PFOA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorononanoic acid (PFNA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorodecanoic acid (PFDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroundecanoic acid (PFUnDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorododecanoic acid (PFDoDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotridecanoic acid (PFTrDA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C4-PFBA (surr.)	1	%	83	86	81	90
13C5-PFPeA (surr.)	1	%	98	83	88	88
13C5-PFHxA (surr.)	1	%	98	100	101	103
13C4-PFHpA (surr.)	1	%	105	117	121	117
13C8-PFOA (surr.)	1	%	89	112	110	109
13C5-PFNA (surr.)	1	%	92	102	101	111
13C6-PFDA (surr.)	1	%	92	119	115	117
13C2-PFUnDA (surr.)	1	%	99	127	114	111
13C2-PFDoDA (surr.)	1	%	107	132	86	110
13C2-PFTeDA (surr.)	1	%	101	108	120	93
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C8-FOSA (surr.)	1	%	68	84	87	82
D3-N-MeFOSA (surr.)	1	%	50	53	50	59

Client Sample ID			BT01DS_MULLET_23/07/18	BT07_SCAT(2)_16/07/18	BT07_SCAT_16/07/18	BT08_JAVELINFISH_19/07/18
Sample Matrix			**Fish**	**Fish**	**Fish**	**Fish**
Eurofins | mgt Sample No.			**B18-Au29349**	**B18-Au29350**	**B18-Au29351**	**B18-Au29352**
Date Sampled			**Jul 23, 2018**	**Jul 16, 2018**	**Jul 16, 2018**	**Jul 16, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances						
D5-N-EtFOSA (surr.)	1	%	44	32	32	46
D7-N-MeFOSE (surr.)	1	%	74	71	81	71
D9-N-EtFOSE (surr.)	1	%	59	43	53	65
D5-N-EtFOSAA (surr.)	1	%	104	164	137	109
D3-N-MeFOSAA (surr.)	1	%	100	137	129	119
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanesulfonic acid (PFOS)[N11]	0.3	ug/kg	< 0.3	[N09]0.7	< 0.3	< 0.3
Perfluorodecanesulfonic acid (PFDS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C3-PFBS (surr.)	1	%	115	129	129	133
18O2-PFHxS (surr.)	1	%	88	112	116	114
13C8-PFOS (surr.)	1	%	98	120	115	116
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C2-4:2 FTSA (surr.)	1	%	200	115	107	109
13C2-6:2 FTSA (surr.)	1	%	125	114	98	77
13C2-8:2 FTSA (surr.)	1	%	189	156	148	111
PFASs Summations						
Sum (PFHxS + PFOS)*	0.5	ug/kg	< 0.5	0.7	< 0.5	< 0.5
Sum of US EPA PFAS (PFOS + PFOA)*	0.5	ug/kg	< 0.5	0.7	< 0.5	< 0.5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.5	ug/kg	< 0.5	0.7	< 0.5	< 0.5
Sum of WA DWER PFAS (n=10)*	0.5	ug/kg	< 0.5	0.7	< 0.5	< 0.5
Sum of PFASs (n=28)*	0.5	ug/kg	< 0.5	0.7	< 0.5	< 0.5
Initial Weight	0.01	kg	see attached	see attached	see attached	see attached

Client Sample ID			BT08_MULLET(2)_19/07/18	BT08_MULLET(3)_19/07/18	BT11_CATFISH_18/07/18	BT11_MULLET(4)_18/07/18
Sample Matrix			**Fish**	**Fish**	**Fish**	**Fish**
Eurofins | mgt Sample No.			**B18-Au29353**	**B18-Au29354**	**B18-Au29355**	**B18-Au29356**
Date Sampled			**Jul 19, 2018**	**Jul 19, 2018**	**Jul 18, 2018**	**Jul 18, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanoic acid (PFPeA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanoic acid (PFHxA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroheptanoic acid (PFHpA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanoic acid (PFOA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorononanoic acid (PFNA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BT08_MULLET (2)_19/07/18	BT08_MULLET (3)_19/07/18	BT11_CATFISH_18/07/18	BT11_MULLET (4)_18/07/18
Sample Matrix			**Fish**	**Fish**	**Fish**	**Fish**
Eurofins | mgt Sample No.			**B18-Au29353**	**B18-Au29354**	**B18-Au29355**	**B18-Au29356**
Date Sampled			**Jul 19, 2018**	**Jul 19, 2018**	**Jul 18, 2018**	**Jul 18, 2018**
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorodecanoic acid (PFDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoroundecanoic acid (PFUnDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorododecanoic acid (PFDoDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotridecanoic acid (PFTrDA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C4-PFBA (surr.)	1	%	91	93	92	96
13C5-PFPeA (surr.)	1	%	85	92	90	91
13C5-PFHxA (surr.)	1	%	101	106	108	111
13C4-PFHpA (surr.)	1	%	115	122	131	129
13C8-PFOA (surr.)	1	%	110	118	122	122
13C5-PFNA (surr.)	1	%	116	127	131	134
13C6-PFDA (surr.)	1	%	123	135	134	137
13C2-PFUnDA (surr.)	1	%	120	128	129	139
13C2-PFDoDA (surr.)	1	%	59	51	122	86
13C2-PFTeDA (surr.)	1	%	86	110	129	116
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C8-FOSA (surr.)	1	%	83	96	91	84
D3-N-MeFOSA (surr.)	1	%	26	29	65	20
D5-N-EtFOSA (surr.)	1	%	30	31	20	16
D7-N-MeFOSE (surr.)	1	%	73	82	71	79
D9-N-EtFOSE (surr.)	1	%	26	36	46	22
D5-N-EtFOSAA (surr.)	1	%	142	151	135	151
D3-N-MeFOSAA (surr.)	1	%	85	69	145	99
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Perfluorooctanesulfonic acid (PFOS)[N11]	0.3	ug/kg	< 0.3	< 0.3	< 0.3	< 0.3
Perfluorodecanesulfonic acid (PFDS)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C3-PFBS (surr.)	1	%	129	136	136	137
18O2-PFHxS (surr.)	1	%	108	119	126	134
13C8-PFOS (surr.)	1	%	127	131	131	138

Client Sample ID			BT08_MULLET (2)_19/07/18	BT08_MULLET (3)_19/07/18	BT11_CATFISH_18/07/18	BT11_MULLET (4)_18/07/18
Sample Matrix			**Fish**	**Fish**	**Fish**	**Fish**
Eurofins | mgt Sample No.			**B18-Au29353**	**B18-Au29354**	**B18-Au29355**	**B18-Au29356**
Date Sampled			**Jul 19, 2018**	**Jul 19, 2018**	**Jul 18, 2018**	**Jul 18, 2018**
Test/Reference	LOR	Unit				
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
13C2-4:2 FTSA (surr.)	1	%	112	120	132	145
13C2-6:2 FTSA (surr.)	1	%	96	104	102	119
13C2-8:2 FTSA (surr.)	1	%	158	187	193	INT
PFASs Summations						
Sum (PFHxS + PFOS)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of US EPA PFAS (PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of WA DWER PFAS (n=10)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Sum of PFASs (n=28)*	0.5	ug/kg	< 0.5	< 0.5	< 0.5	< 0.5
Initial Weight	0.01	kg	see attached	see attached	see attached	see attached

Client Sample ID			BT11_SALMON(2)_18/07/18
Sample Matrix			**Fish**
Eurofins | mgt Sample No.			**B18-Au29357**
Date Sampled			**Jul 18, 2018**
Test/Reference	LOR	Unit	
Perfluoroalkyl carboxylic acids (PFCAs)			
Perfluorobutanoic acid (PFBA)[N11]	0.5	ug/kg	< 0.5
Perfluoropentanoic acid (PFPeA)[N11]	0.5	ug/kg	< 0.5
Perfluorohexanoic acid (PFHxA)[N11]	0.5	ug/kg	< 0.5
Perfluoroheptanoic acid (PFHpA)[N11]	0.5	ug/kg	< 0.5
Perfluorooctanoic acid (PFOA)[N11]	0.5	ug/kg	< 0.5
Perfluorononanoic acid (PFNA)[N11]	0.5	ug/kg	< 0.5
Perfluorodecanoic acid (PFDA)[N11]	0.5	ug/kg	< 0.5
Perfluoroundecanoic acid (PFUnDA)[N11]	0.5	ug/kg	< 0.5
Perfluorododecanoic acid (PFDoDA)[N11]	0.5	ug/kg	< 0.5
Perfluorotridecanoic acid (PFTrDA)[N15]	0.5	ug/kg	< 0.5
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.5	ug/kg	< 0.5
13C4-PFBA (surr.)	1	%	97
13C5-PFPeA (surr.)	1	%	96
13C5-PFHxA (surr.)	1	%	109
13C4-PFHpA (surr.)	1	%	125
13C8-PFOA (surr.)	1	%	119
13C5-PFNA (surr.)	1	%	125
13C6-PFDA (surr.)	1	%	128
13C2-PFUnDA (surr.)	1	%	120
13C2-PFDoDA (surr.)	1	%	126
13C2-PFTeDA (surr.)	1	%	107

Client Sample ID			BT11_SALMON(2)_18/07/18
Sample Matrix			**Fish**
Eurofins | mgt Sample No.			**B18-Au29357**
Date Sampled			**Jul 18, 2018**
Test/Reference	LOR	Unit	
Perfluoroalkyl sulfonamido substances			
Perfluorooctane sulfonamide (FOSA)[N11]	0.5	ug/kg	< 0.5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.5	ug/kg	< 0.5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.5	ug/kg	< 0.5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.5	ug/kg	< 0.5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.5	ug/kg	< 0.5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.5	ug/kg	< 0.5
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.5	ug/kg	< 0.5
13C8-FOSA (surr.)	1	%	87
D3-N-MeFOSA (surr.)	1	%	61
D5-N-EtFOSA (surr.)	1	%	42
D7-N-MeFOSE (surr.)	1	%	89
D9-N-EtFOSE (surr.)	1	%	67
D5-N-EtFOSAA (surr.)	1	%	141
D3-N-MeFOSAA (surr.)	1	%	129
Perfluoroalkyl sulfonic acids (PFSAs)			
Perfluorobutanesulfonic acid (PFBS)[N11]	0.5	ug/kg	< 0.5
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.5	ug/kg	< 0.5
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.3	ug/kg	< 0.3
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.5	ug/kg	< 0.5
Perfluorooctanesulfonic acid (PFOS)[N11]	0.3	ug/kg	< 0.3
Perfluorodecanesulfonic acid (PFDS)[N15]	0.5	ug/kg	< 0.5
13C3-PFBS (surr.)	1	%	133
18O2-PFHxS (surr.)	1	%	122
13C8-PFOS (surr.)	1	%	126
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.5	ug/kg	< 0.5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.5	ug/kg	< 0.5
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.5	ug/kg	< 0.5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.5	ug/kg	< 0.5
13C2-4:2 FTSA (surr.)	1	%	154
13C2-6:2 FTSA (surr.)	1	%	118
13C2-8:2 FTSA (surr.)	1	%	189
PFASs Summations			
Sum (PFHxS + PFOS)*	0.5	ug/kg	< 0.5
Sum of US EPA PFAS (PFOS + PFOA)*	0.5	ug/kg	< 0.5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.5	ug/kg	< 0.5
Sum of WA DWER PFAS (n=10)*	0.5	ug/kg	< 0.5
Sum of PFASs (n=28)*	0.5	ug/kg	< 0.5
Initial Weight	0.01	kg	see attached

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

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

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Brisbane	Aug 23, 2018	180 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Brisbane	Aug 23, 2018	180 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Brisbane	Aug 23, 2018	180 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Brisbane	Aug 23, 2018	180 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Initial Weight	Brisbane	Aug 24, 2018	0 Day

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Oakleigh VIC 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
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NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
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NATA # 1261
Site # 23736

Company Name: Golder Associates Pty Ltd (Qld)
Address: 147 Coronation Dve
Milton
QLD 4064

Project Name: 18100235
Project ID: 6000

Order No.:
Report #: 613766
Phone: (07) 3721 5400
Fax: (07) 3721 5401

Received: Aug 23, 2018 3:00 PM
Due: Aug 30, 2018
Priority: 5 Day
Contact Name: Greg Whitmore

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Initial Weight	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	BT01DS_MULLET_23/07/18	Jul 23, 2018		Fish	B18-Au29349	X	X
2	BT07_SCAT(2)_16/07/18	Jul 16, 2018		Fish	B18-Au29350	X	X
3	BT07_SCAT_16/07/18	Jul 16, 2018		Fish	B18-Au29351	X	X
4	BT08_JAVELINFISH_19/07/18	Jul 16, 2018		Fish	B18-Au29352	X	X
5	BT08_MULLET(2)_19/07/18	Jul 19, 2018		Fish	B18-Au29353	X	X

eurofins | mgt

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Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
6	BT08_MULLET(3)_19/07/18	Jul 19, 2018		Fish	B18-Au29354	X	X
7	BT11_CATFISH_18/07/18	Jul 18, 2018		Fish	B18-Au29355	X	X
8	BT11_MULLET(4)_18/07/18	Jul 18, 2018		Fish	B18-Au29356	X	X
9	BT11_SALMON(2)_18/07/18	Jul 18, 2018		Fish	B18-Au29357	X	X
Test Counts						9	9

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

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

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

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

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

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/kg	< 0.5			0.5	Pass	
Perfluoropentanoic acid (PFPeA)	ug/kg	< 0.5			0.5	Pass	
Perfluorohexanoic acid (PFHxA)	ug/kg	< 0.5			0.5	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/kg	< 0.5			0.5	Pass	
Perfluorooctanoic acid (PFOA)	ug/kg	< 0.5			0.5	Pass	
Perfluorononanoic acid (PFNA)	ug/kg	< 0.5			0.5	Pass	
Perfluorodecanoic acid (PFDA)	ug/kg	< 0.5			0.5	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/kg	< 0.5			0.5	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/kg	< 0.5			0.5	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/kg	< 0.5			0.5	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/kg	< 0.5			0.5	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/kg	< 0.5			0.5	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/kg	< 0.5			0.5	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/kg	< 0.5			0.5	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/kg	< 0.5			0.5	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	ug/kg	< 0.5			0.5	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/kg	< 0.5			0.5	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/kg	< 0.5			0.5	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/kg	< 0.5			0.5	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/kg	< 0.5			0.5	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	< 0.3			0.3	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	< 0.5			0.5	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/kg	< 0.3			0.3	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/kg	< 0.5			0.5	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/kg	< 0.5			0.5	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	ug/kg	< 0.5			0.5	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/kg	< 0.5			0.5	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/kg	< 0.5			0.5	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	108			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	122			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	112			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	94			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	101			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	99			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	106			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	99			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	96			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	102			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	121			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluorooctane sulfonamide (FOSA)	%	97			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	126			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	101			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	100			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	88			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	109			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	103			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	91			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	115			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	95			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	107			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	96			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	94			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	104			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	101			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	111			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	125			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	B18-Au29357	CP	%	106			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	B18-Au29357	CP	%	116			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	B18-Au29357	CP	%	112			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-Au29357	CP	%	91			50-150	Pass	
Perfluorooctanoic acid (PFOA)	B18-Au29357	CP	%	103			50-150	Pass	
Perfluorononanoic acid (PFNA)	B18-Au29357	CP	%	95			50-150	Pass	
Perfluorodecanoic acid (PFDA)	B18-Au29357	CP	%	106			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-Au29357	CP	%	107			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-Au29357	CP	%	83			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-Au29357	CP	%	112			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-Au29357	CP	%	117			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	B18-Au29357	CP	%	92			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-Au29357	CP	%	133			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-Au29357	CP	%	55			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-Au29357	CP	%	85			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-Au29357	CP	%	88			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-Au29357	CP	%	93			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-Au29357	CP	%	117			50-150	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	B18-Au29357	CP	%	95			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-Au29357	CP	%	121			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-Au29357	CP	%	89			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-Au29357	CP	%	113			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-Au29357	CP	%	95			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-Au29357	CP	%	76			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-Au29357	CP	%	100			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-Au29357	CP	%	104			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-Au29357	CP	%	114			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-Au29357	CP	%	118			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-Au29352	CP	ug/kg	< 0.3	< 0.3	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-Au29352	CP	ug/kg	< 0.3	< 0.3	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-Au29352	CP	ug/kg	< 0.5	< 0.5	<1	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

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

Authorised By

Ryan Gilbert	Analytical Services Manager
Jonathon Angell	Senior Analyst-Organic (QLD)



Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

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

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APPENDIX G

Data Validation

DATA VALIDATION SUMMARY SHEET

Project Name:	**Biota Assessment**	**Project Number:**	**18100235**
Primary Laboratory:	**Eurofins**	**Workorder Number:**	**609830','612811','613763','613766'**
Secondary Laboratory:	**ALS**	**Workorder Number:**	**EB1818258','ES1825269'**
Date Sampled:	**Various**	**Sample Medium:**	**Sediment, Surface Water & Biota**

Sample Information

Number of Primary Samples:	**105**	**Number of Triplicate Samples:**	**9**
Number of Duplicate Samples:	**2**	**Number of Other QAQC Samples:**	**6**

Documentation and Sample Handling Information

	Y/N	Comments
COC completed properly?	Y	Signed by field staff and laboratory personnel.
All requested analysis completed?	Y	All requested analyses on the COC performed by ALS and Eurofins.
Samples received intact and chilled?	Y	
Samples analysed within appropiate holding times?	Y	All ALS & Eurofins samples were analysed within appropriate holding times.
Sample volumes sufficient for QC analysis?	Y	Sufficient sample volume provided for ALS and Eurofins laboratory QC analysis .
Are there non-NATA accredited methods used?	N	ALS and Eurofins are NATA accredited for all other methods used in this batch.
Chromatograms supplied as appropriate?	Y	Were not requested with analysis
Laboratory reports signed by authorised personnel?	Y	

QAQC Sample Information (Method Blank - MB, Rinsate Blank - RB, Field Blank - FB, Trip Blank - TB)

Type	Sample ID	Comments
Method Blank	MB	Neither Eurofins or ALS recorded any method blank outliers.

Trip Spike Information

Analyte	Spike Concentrations	Recovery Concentration	% Recovery	Comments
				No trip spike submitted as per sampling and analysis plan.

Laboratory Control Spike (LCS) Analyses

Analyte Group	Comments
PFAS	Eurofins and ALS LCS pass for all reports.

Matrix Spike (MS) Analyses

Analyte Group	Comments
PFAS	All Eurofins and ALS matrix spikes within laboratory acceptance criteria.

Laboratory Duplicates (LD) Analyses

Analyte Group	Analyte(s)	Sample ID	Comments
PFAS			Eurofins and ALS LD pass for all reports.

Field Duplicates (FD) Analyses

Analyte Group	Primary ID	Duplicate ID	Comments
PFAS	SD11	QAQC100	Field duplicate RPDs are within the data quality objectives.
PFAS	SW05	QAQC101	Field duplicate RPDs are within the data quality objectives.

Field Triplicates (FT) Analyses

Analyte Group	Primary ID	Triplicate ID	Comments
PFAS	SD11	QAQC200	Field triplicate RPDs are are within the data quality objectives.
PFAS	SW05	QAQC201	Field triplicate RPDs are are within the data quality objectives.
PFAS	BT07_MULLET_24/07/18	QAQC202	Field triplicate RPDs are are within the data quality objectives.
PFAS	BT09_ROCKCOD_19/07/18	QAQC203	Field triplicate RPDs are are within the data quality objectives.
PFAS	BT01_PRAWN(2)_24/07/18	QAQC204	Field triplicate RPDs are are within the data quality objectives.
PFAS	BT05_COCKLE_19/07/18	QAQC205	Field triplicate RPDs are are within the data quality objectives.
PFAS	BT03_MUDCRAB_19/07/18	QAQC206	Field triplicate RPDs are are within the data quality objectives.
PFAS	BT01_MUDCRAB(2)_24/07/18	QAQC207	Field triplicate RPDs are are within the data quality objectives.
PFAS	BT05_GASTROPOD_19/07/18	QAQC208	Field triplicate RPDs are are within the data quality objectives.

Surrogate Compound Monitoring Analyses

Analyte Group	Analyte(s)	Comments
PFAS		Surrogates within the accepted recovery range for all reports.

Overall Comments

This batch has been validated and is considered suitable for environmnetal interpretive use.

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.

*When concentrations are less than the LOR for both primary and duplicate/triplicate results, no RPDs are calculated

Performed By:	**Srikar Rapole**	**Checked By**	**James Comley**
Date:	**6/09/2018**	**Date:**	**11/09/2018**

Table 1 - Rinsate Sample Results

Project Number 18100235

			Lab Report Number	EB1818258	EB1818258	EB1818258	EB1818258	EB1818258
			Field ID	QAQC400	QAQC401	QAQC402	QAQC403	QAQC404
			Sampled_Date	27/07/2018	27/07/2018	27/07/2018	27/07/2018	27/07/2018 14:58
			Sample Type	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate
Chem_Group	**ChemName**	**Units**	**EQL**					
Per- and Polyfluoroalkyl Substances (PFAS)	8:2 Fluorotelomer sulfonate	ug/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	N-Et-FOSA	µg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	N-Et-FOSE	µg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	N-Me-FOSA	µg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	N-Me-FOSE	µg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Perfluorobutanoic acid (PFBA)	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002
	Perfluoro-n-pentanoic acid (PFPeA)	µg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	PFDcS	µg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	N-methyl-perfluorooctanesulfonamidoacetic acid	ug/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	Perfluorobutanesulfonic acid (PFBS)	µg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	Perfluorodecanoic acid (PFDA)	µg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	Perfluorododecanoic acid (PFDoA)	µg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	Perfluorohexanesulfonic acid (PFHxS)	µg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	Perfluorohexanoic acid (PFHxA)	µg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	Perfluorononanoic acid (PFNA)	µg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	N-ethyl-perfluorooctanesulfonamidoacetic acid	ug/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	Perfluorooctanesulfonamide (PFOSA)	µg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	Perfluorooctanesulfonic acid (PFOS)3	µg/L	0.0001	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	Perfluoroundecanoic acid (PFUnA)	µg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Perfluorooctanoate (PFOA)	µg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	Sum of PFHxS and PFOS (lab reported)	mg/l	0.0000003	<3e-007	<3e-007	<3e-007	<3e-007	<3e-007
	10:2 Fluorotelomer sulfonic acid	µg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	4:2 Fluorotelomer sulfonic acid	µg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Perfluoroheptane sulfonic acid	µg/L	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Table 2 - Trip Blank Sample Results

Project Number 18100235

Lab Report Number	EB1818258
Field ID	QAQC300
Sampled_Date	27/07/2018 14:58
Sample Type	Trip_B

Chem_Group	ChemName	Units	EQL	
Per- and Polyfluoroalkyl Substances (PFAS)	8:2 Fluorotelomer sulfonate	ug/L	0.001	<0.001
	N-Et-FOSA	µg/L	0.001	<0.001
	N-Et-FOSE	µg/L	0.001	<0.001
	N-Me-FOSA	µg/L	0.001	<0.001
	N-Me-FOSE	µg/L	0.001	<0.001
	Perfluorobutanoic acid (PFBA)	µg/L	0.002	<0.002
	Perfluoro-n-pentanoic acid (PFPeA)	µg/L	0.0005	<0.0005
	PFDcS	µg/L	0.0005	<0.0005
	N-methyl-perfluorooctanesulfonamidoacetic acid	ug/L	0.0005	<0.0005
	Perfluorobutanesulfonic acid (PFBS)	µg/L	0.0005	<0.0005
	Perfluorodecanoic acid (PFDA)	µg/L	0.0005	<0.0005
	Perfluorododecanoic acid (PFDoA)	µg/L	0.0005	<0.0005
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.0005	<0.0005
	Perfluorohexanesulfonic acid (PFHxS)	µg/L	0.0005	<0.0005
	Perfluorohexanoic acid (PFHxA)	µg/L	0.0005	<0.0005
	Perfluorononanoic acid (PFNA)	µg/L	0.0005	<0.0005
	N-ethyl-perfluorooctanesulfonamidoacetic acid	ug/L	0.0005	<0.0005
	Perfluorooctanesulfonamide (PFOSA)	µg/L	0.0005	<0.0005
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.0005	<0.0005
	Perfluorooctanesulfonic acid (PFOS)3	µg/L	0.0001	<0.0003
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.0005	<0.0005
	Perfluoroundecanoic acid (PFUnA)	µg/L	0.0005	<0.0005
	6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.001	<0.001
	Perfluorooctanoate (PFOA)	µg/L	0.0005	<0.0005
	Sum of PFHxS and PFOS (lab reported)	mg/l	0.0000003	<3e-007
	10:2 Fluorotelomer sulfonic acid	µg/L	0.001	<0.001
	4:2 Fluorotelomer sulfonic acid	µg/L	0.001	<0.001
	Perfluoroheptane sulfonic acid	µg/L	0.0005	<0.0005

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Sediment and Surface Water Duplicate and Triplicate RPD Sample Results

Project Number 18100235

Lab Report Number	612811	612811		612811	EB1818258	
Field ID	SD11	QAQC100	RPD	SD11	QAQC200	RPD
Sampled Date/Time	18/07/2018	18/07/2018		18/07/2018	18/07/2018	

Chem_Group	ChemName	Units	EQL						
Per- and Polyfluoroalkyl Substances (PFAS)	10:2 Fluorotelomer sulfonic acid	mg/kg	0.005 : 0.0005 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0005	ND
	4:2 Fluorotelomer sulfonic acid	mg/kg	0.005 : 0.0005 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0005	ND
	8:2 Fluorotelomer sulfonate	mg/kg	0.005 : 0.0005 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0005	ND
	N-Et-FOSA	mg/kg	0.005 : 0.0005 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0005	ND
	N-Et-FOSE	mg/kg	0.005 : 0.0005 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0005	ND
	N-Me-FOSA	mg/kg	0.005 : 0.0005 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0005	ND
	N-Me-FOSE	mg/kg	0.005 : 0.0005 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0005	ND
	Perfluorobutanoic acid (PFBA)	mg/kg	0.005 : 0.001 (Interlab)	<0.005	<0.005	ND	<0.005	<0.001	ND
	Perfluoroheptane sulfonic acid	mg/kg	0.005 : 0.0002 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0002	ND
	Perfluoro-n-pentanoic acid (PFPeA)	mg/kg	0.005 : 0.0002 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0002	ND
	Perfluoropentane sulfonic acid	mg/kg	0.005 : 0.0002 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0002	ND
	PFDcS	mg/kg	0.005 : 0.0002 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0002	ND
	N-methyl-perfluorooctanesulfonamidoacetic acid	mg/kg	0.01 : 0.0002 (Interlab)	<0.01	<0.01	ND	<0.01	<0.0002	ND
	Sum of WA DER PFAS (n=10)	UG/KG	10 : 0.2 (Interlab)	<10	<10	ND	<10	<0.2	ND
	Sum of PFASs (n=28)	UG/KG	50 : 0.2 (Interlab)	<50	<50	ND	<50	<0.2	ND
	Perfluorobutanesulfonic acid (PFBS)	mg/kg	0.005 : 0.0002 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0002	ND
	Perfluorodecanoic acid (PFDA)	mg/kg	0.005 : 0.0002 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0002	ND
	Perfluorododecanoic acid (PFDoA)	mg/kg	0.005 : 0.0002 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0002	ND
	Perfluoroheptanoic acid (PFHpA)	mg/kg	0.005 : 0.0002 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0002	ND
	Perfluorohexanesulfonic acid (PFHxS)	mg/kg	0.005 : 0.0002 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0002	ND
	Perfluorohexanoic acid (PFHxA)	mg/kg	0.005 : 0.0002 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0002	ND
	Perfluorononanoic acid (PFNA)	mg/kg	0.005 : 0.0002 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0002	ND
	6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.01 : 0.0005 (Interlab)	<0.01	<0.01	ND	<0.01	<0.0005	ND
	N-ethyl-perfluorooctanesulfonamidoacetic acid	mg/kg	0.01 : 0.0002 (Interlab)	<0.01	<0.01	ND	<0.01	<0.0002	ND
	Perfluorooctanoate (PFOA)	mg/kg	0.005 : 0.0002 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0002	ND
	Perfluorooctanesulfonamide (PFOSA)	mg/kg	0.005 : 0.0002 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0002	ND
	Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.005 : 0.0005 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0005	ND
	Perfluorooctanesulfonic acid (PFOS)3	mg/kg	0.005 : 0.0002 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0002	ND
	Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.005 : 0.0002 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0002	ND
	Perfluoroundecanoic acid (PFUnA)	mg/kg	0.005 : 0.0002 (Interlab)	<0.005	<0.005	ND	<0.005	<0.0002	ND

Legend

ND = Not Detected (RPDs not calculated if both primary and duplicate results are below LOR)

- = Not analysed/calculated

Indicates RPD result does not meet the acceptable criteria

Acceptable RPDs: RPD <= 30%

RPD > 30%, Analysis result < 10 times LOR

RPD <= 50%, Analysis result > 10 times LOR and < 20 times LOR

Created by: ERC 22/08/2018

Checked By: JC 13/09/2018

Sediment and Surface Water Duplicate and Triplicate RPD Sample Results

Lab Report Number	EB1818258	EB1818258		EB1818258	612811	
Field ID	SW05	QAQC101	**RPD**	SW05	QAQC201	**RPD**
Sampled Date/Time	20/07/2018 14:58	20/07/2018 14:58		20/07/2018 14:58	20/07/2018 14:58	
Chem_Group	**ChemName**	**Units**	**EQL**			
Per- and Polyfluoroalkyl Substances (PFAS)	10:2 Fluorotelomer sulfonic acid	µg/L	0.001	<0.001	<0.001	ND	<0.001	<0.001	ND
	4:2 Fluorotelomer sulfonic acid	µg/L	0.001	<0.001	<0.001	ND	<0.001	<0.001	ND
	8:2 Fluorotelomer sulfonate	ug/L	0.001	<0.001	<0.001	ND	<0.001	<0.001	ND
	N-Et-FOSA	µg/L	0.001 : 0.005 (Interlab)	<0.001	<0.001	ND	<0.001	<0.005	ND
	N-Et-FOSE	µg/L	0.001 : 0.005 (Interlab)	<0.001	<0.001	ND	<0.001	<0.005	ND
	N-Me-FOSA	µg/L	0.001 : 0.005 (Interlab)	<0.001	<0.001	ND	<0.001	<0.005	ND
	N-Me-FOSE	µg/L	0.001 : 0.005 (Interlab)	<0.001	<0.001	ND	<0.001	<0.005	ND
	Perfluorobutanoic acid (PFBA)	µg/L	0.002 : 0.005 (Interlab)	<0.002	<0.002	ND	<0.002	<0.005	ND
	Perfluoroheptane sulfonic acid	µg/L	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.001	ND
	Perfluoro-n-pentanoic acid (PFPeA)	µg/L	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.001	ND
	Perfluoropentane sulfonic acid	µg/L	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.001	ND
	PFDcS	µg/L	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.001	ND
	N-methyl-perfluorooctanesulfonamidoacetic acid	ug/L	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.005	ND
	Perfluorobutanesulfonic acid (PFBS)	µg/L	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.001	ND
	Perfluorodecanoic acid (PFDA)	µg/L	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.001	ND
	Perfluorododecanoic acid (PFDoA)	µg/L	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.001	ND
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.001	ND
	Perfluorohexanesulfonic acid (PFHxS)	µg/L	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.001	ND
	Perfluorohexanoic acid (PFHxA)	µg/L	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.001	ND
	Perfluorononanoic acid (PFNA)	µg/L	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.001	ND
	6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.001 : 0.005 (Interlab)	<0.001	<0.001	ND	<0.001	<0.005	ND
	N-ethyl-perfluorooctanesulfonamidoacetic acid	ug/L	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.005	ND
	Perfluorooctanoate (PFOA)	µg/L	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.001	ND
	Perfluorooctanesulfonamide (PFOSA)	µg/L	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.005	ND
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.001	ND
	Perfluorooctanesulfonic acid (PFOS)3	µg/L	0.0003 : 0.0001 (Interlab)	<0.0003	<0.0003	ND	<0.0003	<0.0001	ND
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.001	ND
	Perfluoroundecanoic acid (PFUnA)	µg/L	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.001	ND

Legend

- = Not analysed/calculated

Indicates RPD result does not meet the acceptable criteria

Acceptable RPDs: RPD <= 30%

RPD > 30%, Analysis result < 10 times LOR

RPD <= 50%, Analysis result > 10 times LOR and < 20 times LOR

Created by: ERC 22/08/2018

Checked By: JC 13/09/2018

GOLDER

Biota Triplicate
RPD Sample Results

Project Number 18100235

Lab Report Number	609830	ES1825269		609830	ES1825269	
Field ID	BT07_MULLET_24/07/18	QAQC202	**RPD**	BT09_ROCKCOD_19/07/18	QAQC203	**RPD**
Sampled Date/Time	24/07/2018	24/07/2018		19/07/2018	19/07/2018	

Chem_Group	ChemName	Units	EQL						
Per- and Polyfluoroalkyl Substances (PFAS)	N-Methyl PFO sulfonamidoethanol (MeFOSE)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	Perfluorodecane sulfonic acid (PFDS)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	N-methyl-PFO sulfonamidoacetic acid (MeFOSAA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluorooctanoic Acid (PFOA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0003 : 0.001 (Interlab)	<0.0003	<0.001	ND	<0.0003	<0.001	ND
	Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0003 : 0.001 (Interlab)	<0.0003	<0.001	ND	<0.0003	<0.001	ND
	Sum of PFASs (n=28 - Lab Reported)	mg/kg	0.0005 : 0.001 (Interlab)	0.0006	<0.001	ND	<0.0005	<0.001	ND
	Perfluorobutanoic acid (PFBA)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.005	ND	<0.0005	<0.005	ND
	Perfluorohexanoic acid (PFHxA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluorodecanoic acid (PFDA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluoropentanoic acid (PFPeA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	Perfluorononanoic acid (PFNA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0005 : 0.001 (Interlab)	0.0006	<0.001	ND	<0.0005	<0.001	ND
	Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	4:2 Fluorotelomer sulfonic acid (4:2 FTSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	6:2 Fluorotelomer sulfonic acid (6:2 FTSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	8:2 Fluorotelomer sulfonic acid (8:2 FTSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	10:2 Fluorotelomer sulfonic acid (10:2 FTSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	N-Ethyl PFO sulfonamide (EtFOSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	N-Ethyl PFO sulfonamidoethanol (EtFOSE)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	N-Methyl PFO sulfonamide (MeFOSA)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.005	ND	<0.0005	<0.005	ND
	Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	N-ethyl-PFO sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND

Legend

ND = Not Detected (RPDs not calculated if both primary and duplicate results are below LOR)

- = Not analysed/calculated

Indicates RPD result does not meet the acceptable criteria

Acceptable RPDs: RPD <= 30%

RPD > 30%, Analysis result < 10 times LOR

Created by: SR 07/09/2018

Checked By: JC 13/09/2018

Lab Report Number	609830	ES1825269		609830	ES1825269	
Field ID	BT01_PRAWN(2)_24/07/18	QAQC204	RPD	BT05_COCKLE_19/07/18	QAQC205	RPD
Sampled Date/Time	24/07/2018	24/07/2018		19/07/2018	19/07/2018	

Chem_Group	ChemName	Units	EQL						
Per- and Polyfluoroalkyl Substances (PFAS)	N-Methyl PFO sulfonamidoethanol (MeFOSE)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	Perfluorodecane sulfonic acid (PFDS)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	N-methyl-PFO sulfonamidoacetic acid (MeFOSAA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluorooctanoic Acid (PFOA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0003 : 0.001 (Interlab)	<0.0003	<0.001	ND	<0.0003	<0.001	ND
	Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0003 : 0.001 (Interlab)	<0.0003	<0.001	ND	<0.0003	<0.001	ND
	Sum of PFASs (n=28 - Lab Reported)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluorobutanoic acid (PFBA)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.005	ND	<0.0005	<0.005	ND
	Perfluorohexanoic acid (PFHxA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluorodecanoic acid (PFDA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluoropentanoic acid (PFPeA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	Perfluorononanoic acid (PFNA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	4:2 Fluorotelomer sulfonic acid (4:2 FTSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	6:2 Fluorotelomer sulfonic acid (6:2 FTSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	8:2 Fluorotelomer sulfonic acid (8:2 FTSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	10:2 Fluorotelomer sulfonic acid (10:2 FTSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	N-Ethyl PFO sulfonamide (EtFOSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	N-Ethyl PFO sulfonamidoethanol (EtFOSE)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	N-Methyl PFO sulfonamide (MeFOSA)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.005	ND	<0.0005	<0.005	ND
	Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	N-ethyl-PFO sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND

Legend
ND = Not Detected (RPDs not calculated if both primary and duplicate results are below LOR)
- = Not analysed/calculated
Indicates RPD result does not meet the acceptable criteria
Acceptable RPDs: RPD <= 30%
RPD > 30%, Analysis result < 10 times LOR

Legend
ND = Not Detected (RPDs not calculated if both primary and duplicate results are below LOR)
- = Not analysed/calculated
Indicates RPD result does not meet the acceptable criteria
Acceptable RPDs: RPD <= 30%
RPD > 30%, Analysis result < 10 times LOR

Lab Report Number	609830	ES1825269		609830	ES1825269	
Field ID	BT03_MUDCRAB_19/07/18	QAQC206	RPD	BT01_MUDCRAB(2)_24/07/18	QAQC207	RPD
Sampled Date/Time	19/07/2018	19/07/2018		24/07/2018	24/07/2018	

Chem_Group	ChemName	Units	EQL						
Per- and Polyfluoroalkyl Substances (PFAS)	N-Methyl PFO sulfonamidoethanol (MeFOSE)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	Perfluorodecane sulfonic acid (PFDS)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	N-methyl-PFO sulfonamidoacetic acid (MeFOSAA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluorooctanoic Acid (PFOA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0003 : 0.001 (Interlab)	<0.0003	<0.001	ND	<0.0003	<0.001	ND
	Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0003 : 0.001 (Interlab)	<0.0003	<0.001	ND	<0.0003	<0.001	ND
	Sum of PFASs (n=28 - Lab Reported)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluorobutanoic acid (PFBA)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.005	ND	<0.0005	<0.005	ND
	Perfluorohexanoic acid (PFHxA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluorodecanoic acid (PFDA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluoropentanoic acid (PFPeA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	Perfluorononanoic acid (PFNA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	4:2 Fluorotelomer sulfonic acid (4:2 FTSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	6:2 Fluorotelomer sulfonic acid (6:2 FTSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	8:2 Fluorotelomer sulfonic acid (8:2 FTSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	10:2 Fluorotelomer sulfonic acid (10:2 FTSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	N-Ethyl PFO sulfonamide (EtFOSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	N-Ethyl PFO sulfonamidoethanol (EtFOSE)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	N-Methyl PFO sulfonamide (MeFOSA)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.005	ND	<0.0005	<0.005	ND
	Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	N-ethyl-PFO sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
								0	

Legend

ND = Not Detected (RPDs not calculated if both primary and duplicate results are below LOR)

- = Not analysed/calculated

Indicates RPD result does not meet the acceptable criteria

Acceptable RPDs: RPD <= 30%

RPD > 30%, Analysis result < 10 times LOR

GOLDER

Biota Triplicate
RPD Sample Results

Project Number 18100235

Lab Report Number	609830	ES1825269		609830	ES1825269	
Field ID	BT05_GASTROPOD_19/07/18	QAQC208	RPD	BT07_MUDCRAB(2)_17/07/18	QAQC209	RPD
Sampled Date/Time	19/07/2018	19/07/2018		17/07/2018	17/07/2018	

Chem_Group	ChemName	Units	EQL						
Per- and Polyfluoroalkyl Substances (PFAS)	N-Methyl PFO sulfonamidoethanol (MeFOSE)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	Perfluorodecane sulfonic acid (PFDS)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	N-methyl-PFO sulfonamidoacetic acid (MeFOSAA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluorooctanoic Acid (PFOA)	mg/kg	0.0005 : 0.001 (Interlab)	0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0003 : 0.001 (Interlab)	<0.0003	<0.001	ND	<0.0003	<0.001	ND
	Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0003 : 0.001 (Interlab)	0.0004	<0.001	ND	<0.0003	<0.001	ND
	Sum of PFASs (n=28 - Lab Reported)	mg/kg	0.0005 : 0.001 (Interlab)	0.0009	<0.001	ND	0.0006	<0.001	ND
	Perfluorobutanoic acid (PFBA)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.005	ND	0.0006	<0.005	ND
	Perfluorohexanoic acid (PFHxA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluorodecanoic acid (PFDA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluoropentanoic acid (PFPeA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	Perfluorononanoic acid (PFNA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	4:2 Fluorotelomer sulfonic acid (4:2 FTSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	6:2 Fluorotelomer sulfonic acid (6:2 FTSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	8:2 Fluorotelomer sulfonic acid (8:2 FTSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	10:2 Fluorotelomer sulfonic acid (10:2 FTSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	N-Ethyl PFO sulfonamide (EtFOSA)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	N-Ethyl PFO sulfonamidoethanol (EtFOSE)	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.002	ND	<0.0005	<0.002	ND
	N-Methyl PFO sulfonamide (MeFOSA)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.005	ND	<0.0005	<0.005	ND
	Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND
	N-ethyl-PFO sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	ND	<0.0005	<0.001	ND

Legend
ND = Not Detected (RPDs not calculated if both primary and duplicate results are below LOR)
- = Not analysed/calculated
Indicates RPD result does not meet the acceptable criteria
Acceptable RPDs: RPD <= 30%
RPD > 30%, Analysis result < 10 times LOR

Legend
ND = Not Detected (RPDs not calculated if both primary and duplicate results are below LOR)
- = Not analysed/calculated
Indicates RPD result does not meet the acceptable criteria
Acceptable RPDs: RPD <= 30%
RPD > 30%, Analysis result < 10 times LOR

Created by: SR 07/09/2018
Checked By: JC 13/09/2018

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1825269**	Page	: 1 of 7
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Sydney
Contact	: MR GREG WHITMORE	Contact	: Customer Services ES
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: 18100235	Date Samples Received	: 28-Aug-2018 11:30
Order number	:	Date Analysis Commenced	: 28-Aug-2018
C-O-C number	: ----	Issue Date	: 03-Sep-2018 15:44
Sampler	: ----		
Site	: ----		
Quote number	: EN/002/18 National BQ		
No. of samples received	: 8		
No. of samples analysed	: 8		

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*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Franco Lentini		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.

- EP231X (Biota): ALS NATA accreditation for PFAS in Biota covers all Perfluoroalkyl Sulfonic Acids, Perfluoroalkyl Carboxylic Acids and (n:2) Fluorotelomer Sulfonic Acids in fish (whole and muscle), plants and vegetable matrices, with the exception PFBA (fish only), EtFOSA, MeFOSE, EtFOSE, MeFOSAA, EtFOSAA.

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)				Client sample ID	QAQC202	QAQC203	QAQC204	QAQC205	QAQC206
				Client sampling date / time	23-Aug-2018 00:00	23-Aug-2018 00:00	23-Aug-2018 00:00	23-Aug-2018 00:00	23-Aug-2018 00:00
Compound	CAS Number	LOR	Unit		ES1825269-001	ES1825269-002	ES1825269-003	ES1825269-004	ES1825269-005
					Result	Result	Result	Result	Result
Biota Sample Pre-Preparation									
ø Sample Description	---	-	–		Biota	Biota	Biota	Biota	Biota
ø Weight of Sample Prepared	---	0.1	g		1.9	24.6	12.1	18.9	21.2
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg		<1	<1	<1	<1	<1
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg		<1	<1	<1	<1	<1
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg		<1	<1	<1	<1	<1
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg		<1	<1	<1	<1	<1
Perfluorooctane sulfonic acid (PFOS) - Linear	2795-39-3	1	µg/kg		<1	<1	<1	<1	<1
Perfluorooctane sulfonic acid (PFOS) - Branched	---	1	µg/kg		<1	<1	<1	<1	<1
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg		<1	<1	<1	<1	<1
Perfluorodecane sulfonic acid (PFDS)	335-77-3	2	µg/kg		<2	<2	<2	<2	<2
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg		<5	<5	<5	<5	<5
Perfluoropentanoic acid (PFPeA)	2706-90-3	2	µg/kg		<2	<2	<2	<2	<2
Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg		<1	<1	<1	<1	<1
Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg		<1	<1	<1	<1	<1
Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg		<1	<1	<1	<1	<1
Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg		<1	<1	<1	<1	<1
Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg		<1	<1	<1	<1	<1
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg		<1	<1	<1	<1	<1
Perfluorododecanoic acid (PFDoDA)	307-55-1	2	µg/kg		<2	<2	<2	<2	<2
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	2	µg/kg		<2	<2	<2	<2	<2
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg		<2	<2	<2	<2	<2

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)				Client sample ID	QAQC202	QAQC203	QAQC204	QAQC205	QAQC206
				Client sampling date / time	23-Aug-2018 00:00	23-Aug-2018 00:00	23-Aug-2018 00:00	23-Aug-2018 00:00	23-Aug-2018 00:00
Compound	CAS Number	LOR	Unit		ES1825269-001	ES1825269-002	ES1825269-003	ES1825269-004	ES1825269-005
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	5	µg/kg		<5	<5	<5	<5	<5
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	5	µg/kg		<5	<5	<5	<5	<5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg		<2	<2	<2	<2	<2
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg		<2	<2	<2	<2	<2
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg		<2	<2	<2	<2	<2
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg		<1	<1	<1	<1	<1
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg		<1	<1	<1	<1	<1
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg		<2	<2	<2	<2	<2
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg		<2	<2	<2	<2	<2
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg		<2	<2	<2	<2	<2
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg		<2	<2	<2	<2	<2
EP231P: PFAS Sums									
^ **Sum of PFAS**	---	1	µg/kg		<1	<1	<1	<1	<1
EP231S: PFAS Surrogate									
13C4-PFOS	---	1	%		**93.0**	**85.5**	**119**	**79.5**	**67.5**
13C8-PFOA	---	1	%		**62.5**	**61.5**	**89.0**	**61.5**	**62.5**

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)				Client sample ID	QAQC207	QAQC208	QAQC209	----	----
				Client sampling date / time	23-Aug-2018 00:00	23-Aug-2018 00:00	23-Aug-2018 00:00	---	---
Compound	CAS Number	LOR	Unit		ES1825269-006	ES1825269-007	ES1825269-008	------	------
					Result	Result	Result	---	---
Biota Sample Pre-Preparation									
ø Sample Description	---	-	-		Biota	Biota	Biota	---	---
ø Weight of Sample Prepared	---	0.1	g		3.5	7.6	4.5	---	---
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg		<1	<1	<1	---	---
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg		<1	<1	<1	---	---
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg		<1	<1	<1	---	---
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg		<1	<1	<1	---	---
Perfluorooctane sulfonic acid (PFOS) - Linear	2795-39-3	1	µg/kg		<1	<1	<1	---	---
Perfluorooctane sulfonic acid (PFOS) - Branched	---	1	µg/kg		<1	<1	<1	---	---
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg		<1	<1	<1	---	---
Perfluorodecane sulfonic acid (PFDS)	335-77-3	2	µg/kg		<2	<2	<2	---	---
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg		<5	<5	<5	---	---
Perfluoropentanoic acid (PFPeA)	2706-90-3	2	µg/kg		<2	<2	<2	---	---
Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg		<1	<1	<1	---	---
Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg		<1	<1	<1	---	---
Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg		<1	<1	<1	---	---
Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg		<1	<1	<1	---	---
Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg		<1	<1	<1	---	---
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg		<1	<1	<1	---	---
Perfluorododecanoic acid (PFDoDA)	307-55-1	2	µg/kg		<2	<2	<2	---	---
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	2	µg/kg		<2	<2	<2	---	---
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg		<2	<2	<2	---	---

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)				Client sample ID	QAQC207	QAQC208	QAQC209	----	----
				Client sampling date / time	23-Aug-2018 00:00	23-Aug-2018 00:00	23-Aug-2018 00:00	---	---
Compound	CAS Number	LOR	Unit		ES1825269-006	ES1825269-007	ES1825269-008	------	------
					Result	Result	Result	---	---
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	5	µg/kg		<5	<5	<5	---	---
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	5	µg/kg		<5	<5	<5	---	---
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg		<2	<2	<2	---	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg		<2	<2	<2	---	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg		<2	<2	<2	---	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg		<1	<1	<1	---	---
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg		<1	<1	<1	---	---
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg		<2	<2	<2	---	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg		<2	<2	<2	---	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg		<2	<2	<2	---	---
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg		<2	<2	<2	---	---
EP231P: PFAS Sums									
^ **Sum of PFAS**	---	1	µg/kg		<1	<1	<1	---	---
EP231S: PFAS Surrogate									
13C4-PFOS	---	1	%		**83.5**	**78.5**	**76.0**	---	---
13C8-PFOA	---	1	%		**66.0**	**70.0**	**60.5**	---	---

Surrogate Control Limits

Sub-Matrix: **BIOTA**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	---	50	130
13C8-PFOA	---	50	130

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Sheet..... of.....

Project No:	18100235	Phase:	6000	Lab Name:	ALS Brisbane
Site ID No.:	n/a	Site Location:		Quote No.	BN/112/18
Sampled By:					

Turnaround Time	24hrs ☐	48hrs ☐	Standard ☑	Date Required By:	2 Byth Street Stafford QLD Australia 4053
	36hrs ☐	5 Days ☐			

Report Format	PDF ☑	EXCEL ☑	ESDAT ☑	EQUIS ☐	
COC point of contact for info:	Greg Whitmore		Phone	0490735572	

GOLDER ASSOCIATES PTY LTD	Report Recipient:	Greg Whitmore ✓ Phone: 61490735572	Email: GWhitmore@golder.com.au
Brisbane Office		James Comley ✓ Phone: 61423079188	Email: jcomley@golder.com.au
147 Coronation Drive ph: 07 3721 5400	Invoice Recipient:	Accounts Payable ✓ Phone: 03 8862 3628	Email: auaccounts@golder.com.au
MILTON QLD 4064 fax: 07 3721 5401		Greg Whitmore ✓ Phone: 61490735572	Email: GWhitmore@golder.com.au

Comments/Special Instructions:

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINERS	Level of Contamination (low, high/unknown)	ON HOLD	28 PFAS including PFOA/PFOS and 6:2 FTS (LOR 0.5-2.0ug/kg)							Comments
1	QAQC202				Biota	Vial	Unknown		x							
2	QAQC203				Biota	Vial	Unknown		x							
3	QAQC204				Biota	Vial	Unknown		x							
4	QAQC205				Biota	Vial	Unknown		x							
5	QAQC206				Biota	Vial	Unknown		x							
6	QAQC207				Biota	Vial	Unknown		x							
7	QAQC208				Biota	Vial	Unknown		x							
8	QAQC209				Biota	Vial	Unknown		x							
								0	8	0	0	0	0	0	0	

Environmental Division
Sydney
Work Order Reference
ES1825269

Telephone : +61-2-8784 8555

SAMPLE MATRIX = Soil/Sediment/Fill/Water/Other

SAMPLE TYPE = Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR), Grab Sample (GS)

HIGH CONCENTRATION: circle expected parameters in analysis list

WATER CONTAINER CODES P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

	NAME	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	RYAN G.		GMGT	23/8/18	100PM
RECEIVED BY	DALE K			23/8/18	1500
RELEASED BY					
RECEIVED BY	Vishal		ALS SYD	28/08/18	11:30AM

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:
SAMPLES CRYOGENICALLY BLENDED

RL3
SNT004
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1818258**	Page	: 1 of 13
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MR GREG WHITMORE	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 18100235 6000	Date Samples Received	: 27-Jul-2018 13:10
Order number	: 18100235	Date Analysis Commenced	: 31-Jul-2018
C-O-C number	: ----	Issue Date	: 06-Aug-2018 11:17
Sampler	: ----		
Site	: ----		
Quote number	: BN/112/18		
No. of samples received	: 19		
No. of samples analysed	: 19		

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*
Franco Lentini		Sydney Organics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, 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.

- **Analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QAQC200	----	----	----	----
				Client sampling date / time	27-Jul-2018 00:00	---	---	---	---
Compound	CAS Number	LOR	Unit		EB1818258-019	------	------	------	------
					Result	---	---	---	---
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	---	0.1	%		**30.3**	---	---	---	---
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	---	---	---	---
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	---	---	---	---

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QAQC200	----	----	----	----
				Client sampling date / time	27-Jul-2018 00:00	---	---	---	---
Compound	CAS Number	LOR	Unit		EB1818258-019	------	------	------	------
					Result	---	---	---	---
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	---	---	---	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	---	---	---	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	---	---	---	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	---	---	---	---
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	---	---	---	---
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	---	---	---	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	---	---	---	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	---	---	---	---
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	---	---	---	---
EP231P: PFAS Sums									
Sum of PFAS	---	0.0002	mg/kg		<0.0002	---	---	---	---
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	%		**73.5**	---	---	---	---
13C8-PFOA	---	0.0002	%		**71.5**	---	---	---	---

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QAQC101	QAQC300	QAQC400	QAQC401	QAQC402
				Client sampling date / time	27-Jul-2018 00:00	27-Jul-2018 00:00	27-Jul-2018 00:00	27-Jul-2018 00:00	27-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EB1818258-001	EB1818258-002	EB1818258-003	EB1818258-004	EB1818258-005
					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	0.0003	µg/L		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
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	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
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	QAQC101	QAQC300	QAQC400	QAQC401	QAQC402
				Client sampling date / time	27-Jul-2018 00:00	27-Jul-2018 00:00	27-Jul-2018 00:00	27-Jul-2018 00:00	27-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EB1818258-001	EB1818258-002	EB1818258-003	EB1818258-004	EB1818258-005
					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 PFAS	---	0.0003	µg/L		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Sum of PFAS (WA DER List)	---	0.0003	µg/L		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
EP231S: PFAS Surrogate									
13C4-PFOS	---	0.0005	%		**74.9**	**73.4**	**99.1**	**86.5**	**90.1**
13C8-PFOA	---	0.0005	%		**98.7**	**91.3**	**91.9**	**91.6**	**96.1**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QAQC403	QAQC404	SW01	SW02	SW03
				Client sampling date / time	27-Jul-2018 00:00	27-Jul-2018 00:00	23-Jul-2018 00:00	21-Jul-2018 00:00	20-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EB1818258-006	EB1818258-007	EB1818258-008	EB1818258-009	EB1818258-010
					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	0.0003	µg/L		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
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	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
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	QAQC403	QAQC404	SW01	SW02	SW03
				Client sampling date / time	27-Jul-2018 00:00	27-Jul-2018 00:00	23-Jul-2018 00:00	21-Jul-2018 00:00	20-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EB1818258-006	EB1818258-007	EB1818258-008	EB1818258-009	EB1818258-010
					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 PFAS	---	0.0003	µg/L		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Sum of PFAS (WA DER List)	---	0.0003	µg/L		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
EP231S: PFAS Surrogate									
13C4-PFOS	---	0.0005	%		**92.9**	**94.2**	**76.1**	**82.0**	**81.0**
13C8-PFOA	---	0.0005	%		**98.9**	**95.4**	**89.0**	**103**	**106**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW04	SW05	SW06	SW07	SW08
				Client sampling date / time	21-Jul-2018 00:00	20-Jul-2018 00:00	17-Jul-2018 00:00	16-Jul-2018 00:00	16-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EB1818258-011	EB1818258-012	EB1818258-013	EB1818258-014	EB1818258-015
					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	0.0003	µg/L		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
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	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
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	SW04	SW05	SW06	SW07	SW08
				Client sampling date / time	21-Jul-2018 00:00	20-Jul-2018 00:00	17-Jul-2018 00:00	16-Jul-2018 00:00	16-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EB1818258-011	EB1818258-012	EB1818258-013	EB1818258-014	EB1818258-015
					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 PFAS	---	0.0003	µg/L		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Sum of PFAS (WA DER List)	---	0.0003	µg/L		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
EP231S: PFAS Surrogate									
13C4-PFOS	---	0.0005	%		**83.1**	**85.9**	**75.6**	**69.7**	**76.1**
13C8-PFOA	---	0.0005	%		**95.9**	**95.0**	**94.3**	**96.3**	**99.3**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW09	SW10	SW11	----	----
				Client sampling date / time	19-Jul-2018 00:00	22-Jul-2018 00:00	18-Jul-2018 00:00	---	---
Compound	CAS Number	LOR	Unit		EB1818258-016	EB1818258-017	EB1818258-018	------	------
					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	0.0003	µg/L		<0.0003	<0.0003	<0.0003	---	---
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	0.002	µg/L		<0.002	<0.002	<0.002	---	---
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: WATER (Matrix: WATER)				Client sample ID	SW09	SW10	SW11	----	----
				Client sampling date / time	19-Jul-2018 00:00	22-Jul-2018 00:00	18-Jul-2018 00:00	---	---
Compound	CAS Number	LOR	Unit		EB1818258-016	EB1818258-017	EB1818258-018	------	------
					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 PFAS	---	0.0003	µg/L		<0.0003	<0.0003	<0.0003	---	---
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		<0.0003	<0.0003	<0.0003	---	---
Sum of PFAS (WA DER List)	---	0.0003	µg/L		<0.0003	<0.0003	<0.0003	---	---
EP231S: PFAS Surrogate									
13C4-PFOS	---	0.0005	%		**79.6**	**79.5**	**71.5**	---	---
13C8-PFOA	---	0.0005	%		**96.7**	**103**	**88.9**	---	---

Surrogate Control Limits

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

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

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Sheet..... of.....

Project No:	18100235	Phase:	6000	Lab Name:	ALS Brisbane
Site ID No.:	n/a	Site Location:		Quote No.	BN/112/18
Sampled By:					

Turnaround Time: 24hrs ☐ 36hrs ☐ 48hrs ☐ 5 Days ☐ Standard ☑ Date Required By: .....

2 Byth Street Stafford QLD Australia 4053

Report Format	PDF ☑	EXCEL ☑	ESDAT ☑	EQUIS ☐	
COC point of contact for info:	Greg Whitmore		Phone	0490735572	

Comments/Special Instructions:

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	Greg Whitmore	Phone:	61490735572	Email: GWhitmore@golder.com.au

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINERS	Level of Contamination (low, high/unknown)	ON HOLD	PFAS (28 analytes) - ULTRA TRACE	28 PFAS including PFOA/PFOS and 6:2 FTS (LOR 5-10 ug/kg)												Comments
1	QAQC101				Water	Bottle	Unknown		X													
2	QAQC300				Water	Bottle	Unknown		X													
3	QAQC400				Water	Bottle	Unknown		X													
4	QAQC401				Water	Bottle	Unknown		X													
5	QAQC402				Water	Bottle	Unknown		X													
6	QAQC403				Water	Bottle	Unknown		X													
7	QAQC404				Water	Bottle	Unknown		X													
8	SW01		23-Jul		Water	Bottle	Unknown		X													
9	SW02		21-Jul		Water	Bottle	Unknown		X													
10	SW03		20-Jul		Water	Bottle	Unknown		X													
11	SW04		21-Jul		Water	Bottle	Unknown		X													
12	SW05		20-Jul		Water	Bottle	Unknown		X													
13	SW06		17-Jul		Water	Bottle	Unknown		X													
14	SW07		16-Jul		Water	Bottle	Unknown		X													
15	SW08		16-Jul		Water	Bottle	Unknown		X													
16	SW09		19-Jul		Water	Bottle	Unknown		X													
17	SW10		22-Jul		Water	Bottle	Unknown		X													
18	SW11		18-Jul		Water	Bottle	Unknown		X													
19	QAQC200				Sediment	Ziplock	Unknown			X												
								0	18	1	0	0	0	0	0	0	0	0	0	0	0	

Environmental Division
Brisbane
Work Order Reference
EB1818258

Telephone : +61-7-3243 7222

SAMPLE MATRIX = Soil/Sediment/Fill/Water/Other

SAMPLE TYPE = Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR), Grab Sample (GS)

HIGH CONCENTRATION: circle expected parameters in analysis list

WATER CONTAINER CODES P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

	NAME	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY					
RECEIVED BY	Orro		ALS	23/7/18	13:10
RELEASED BY					
RECEIVED BY					

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

RL3
SNT004
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

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30 years Testing For Life 1987–2017
Celebrating 30 years Testing and Protecting Human Health

Certificate of Analysis

Golder Associates Pty Ltd
147 Coronation Dve
Milton
QLD 4064

NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Greg Whitmore**

Report **612811-W**
Project name
Project ID 18100235
Received Date Jul 27, 2018

Client Sample ID			**QAQC201**
Sample Matrix			**Water**
Eurofins | mgt Sample No.			**B18-JI34046**
Date Sampled			**Jul 18, 2018**
Test/Reference	LOR	Unit	
PFASs Summations			
Sum (PFHxS + PFOS)*	0.001	ug/L	< 0.001
Sum of US EPA PFAS (PFOS + PFOA)*	0.001	ug/L	< 0.001
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.001	ug/L	< 0.001
Sum of WA DWER PFAS (n=10)*	0.005	ug/L	< 0.005
Sum of PFASs (n=28)*	0.005	ug/L	< 0.005
Perfluoroalkyl carboxylic acids (PFCAs) - Ultra Trace			
Perfluorobutanoic acid (PFBA)[N11]	0.005	ug/L	< 0.005
Perfluoropentanoic acid (PFPeA)[N11]	0.001	ug/L	< 0.001
Perfluorohexanoic acid (PFHxA)[N11]	0.001	ug/L	< 0.001
Perfluoroheptanoic acid (PFHpA)[N11]	0.001	ug/L	< 0.001
Perfluorooctanoic acid (PFOA)[N11]	0.001	ug/L	< 0.001
Perfluorononanoic acid (PFNA)[N11]	0.001	ug/L	< 0.001
Perfluorodecanoic acid (PFDA)[N11]	0.001	ug/L	< 0.001
Perfluoroundecanoic acid (PFUnDA)[N11]	0.001	ug/L	< 0.001
Perfluorododecanoic acid (PFDoDA)[N11]	0.001	ug/L	< 0.001
Perfluorotridecanoic acid (PFTrDA)[N15]	0.001	ug/L	< 0.001
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.001	ug/L	< 0.001
13C4-PFBA (surr.)	1	%	49
13C5-PFPeA (surr.)	1	%	92
13C5-PFHxA (surr.)	1	%	95
13C4-PFHpA (surr.)	1	%	87
13C8-PFOA (surr.)	1	%	80
13C5-PFNA (surr.)	1	%	81
13C6-PFDA (surr.)	1	%	67
13C2-PFUnDA (surr.)	1	%	52
13C2-PFDoDA (surr.)	1	%	47
13C2-PFTeDA (surr.)	1	%	38
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace			
Perfluorobutanesulfonic acid (PFBS)[N11]	0.001	ug/L	< 0.001
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.001	ug/L	< 0.001
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.001	ug/L	< 0.001
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.001	ug/L	< 0.001
Perfluorooctanesulfonic acid (PFOS)[N11]	0.0001	ug/L	< 0.0001
Perfluorodecanesulfonic acid (PFDS)[N15]	0.001	ug/L	< 0.001
13C3-PFBS (surr.)	1	%	100

Client Sample ID			QAQC201
Sample Matrix			**Water**
Eurofins | mgt Sample No.			**B18-JI34046**
Date Sampled			**Jul 18, 2018**
Test/Reference	LOR	Unit	
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace			
18O2-PFHxS (surr.)	1	%	92
13C8-PFOS (surr.)	1	%	64
Perfluoroalkyl sulfonamido substances- Ultra Trace			
Perfluorooctane sulfonamide (FOSA)[N11]	0.005	ug/L	< 0.005
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.005	ug/L	< 0.005
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.005	ug/L	< 0.005
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.005	ug/L	< 0.005
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.005	ug/L	< 0.005
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.005	ug/L	< 0.005
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.005	ug/L	< 0.005
13C8-FOSA (surr.)	1	%	61
D3-N-MeFOSA (surr.)	1	%	40
D5-N-EtFOSA (surr.)	1	%	34
D7-N-MeFOSE (surr.)	1	%	35
D9-N-EtFOSE (surr.)	1	%	34
D5-N-EtFOSAA (surr.)	1	%	42
D3-N-MeFOSAA (surr.)	1	%	47
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Ultra Trace			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.001	ug/L	< 0.001
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.005	ug/L	< 0.005
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.001	ug/L	< 0.001
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.001	ug/L	< 0.001
13C2-4:2 FTSA (surr.)	1	%	102
13C2-6:2 FTSA (surr.)	1	%	96
13C2-8:2 FTSA (surr.)	1	%	61

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

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

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs) - Ultra Trace			
Perfluoroalkyl carboxylic acids (PFCAs) - Ultra Trace	Brisbane	Aug 13, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace	Brisbane	Aug 13, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances- Ultra Trace	Brisbane	Aug 13, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Ultra Trace	Brisbane	Aug 13, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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Site # 23736

Company Name: Golder Associates Pty Ltd (Qld)
Address: 147 Coronation Dve
Milton
QLD 4064

Project Name:
Project ID: 18100235

Order No.:
Report #: 612811
Phone: (07) 3721 5400
Fax: (07) 3721 5401

Received: Jul 27, 2018 3:00 PM
Due: Aug 17, 2018
Priority: 15 Day
Contact Name: Greg Whitmore

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						CANCELLED	Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)	Per- and Polyfluoroalkyl Substances (PFASs) - Ultra Trace
Melbourne Laboratory - NATA Site # 1254 & 14271									
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794						X	X	X	X
Perth Laboratory - NATA Site # 23736									
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	SD03	Jul 18, 2018		Sediment	B18-JI34034		X	X	
2	SD05	Jul 18, 2018		Sediment	B18-JI34035		X	X	
3	SD06	Jul 18, 2018		Sediment	B18-JI34036		X	X	
4	SD07	Jul 18, 2018		Sediment	B18-JI34037		X	X	
5	SD08	Jul 18, 2018		Sediment	B18-JI34038		X	X	
6	SD09	Jul 18, 2018		Sediment	B18-JI34039		X	X	
7	SD11	Jul 18, 2018		Sediment	B18-JI34040		X	X	
8	SD02	Jul 18, 2018		Sediment	B18-JI34041		X	X	
9	SD01	Jul 18, 2018		Sediment	B18-JI34042		X	X	

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NATA # 1261
Site # 23736

Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**	
Address:	147 Coronation Dve Milton QLD 4064	**Report #:** **Phone:** **Fax:**	612811 (07) 3721 5400 (07) 3721 5401
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Project ID:	18100235		

Received:	Jul 27, 2018 3:00 PM
Due:	Aug 17, 2018
Priority:	15 Day
Contact Name:	Greg Whitmore

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						CANCELLED	Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)	Per- and Polyfluoroalkyl Substances (PFASs) - Ultra Trace
Melbourne Laboratory - NATA Site # 1254 & 14271									
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794						X	X	X	X
Perth Laboratory - NATA Site # 23736									
10	SD04	Jul 18, 2018		Sediment	B18-JI34043		X	X	
11	SD10	Jul 18, 2018		Sediment	B18-JI34044	X			
12	QAQC100	Jul 18, 2018		Sediment	B18-JI34045		X	X	
13	QAQC201	Jul 18, 2018		Water	B18-JI34046				X
Test Counts						1	11	11	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

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

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

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

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

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs) - Ultra Trace							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.005			0.005	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.001			0.001	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.001			0.001	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.001			0.001	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.001			0.001	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.001			0.001	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.001			0.001	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.001			0.001	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.001			0.001	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.001			0.001	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.001			0.001	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.001			0.001	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.001			0.001	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.001			0.001	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.001			0.001	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.0001			0.0001	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.001			0.001	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances- Ultra Trace							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.005			0.005	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.005			0.005	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.005			0.005	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	< 0.005			0.005	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	ug/L	< 0.005			0.005	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.005			0.005	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.005			0.005	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Ultra Trace							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.001			0.001	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	ug/L	< 0.005			0.005	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.001			0.001	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.001			0.001	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs) - Ultra Trace							
Perfluorobutanoic acid (PFBA)	%	95			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	83			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	94			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	95			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	98			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	95			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	92			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	96			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	96			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	67			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	107			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluorobutanesulfonic acid (PFBS)	%	81			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	89			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	89			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	94			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	92			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	87			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances- Ultra Trace							
Perfluorooctane sulfonamide (FOSA)	%	93			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	110			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	98			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	97			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	119			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	145			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	139			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Ultra Trace							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	92			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	94			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	88			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	60			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs) - Ultra Trace				Result 1					
Perfluorobutanoic acid (PFBA)	A18-Au14874	NCP	%	95			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	A18-Au14874	NCP	%	79			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	A18-Au14874	NCP	%	92			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	A18-Au14874	NCP	%	93			50-150	Pass	
Perfluorooctanoic acid (PFOA)	A18-Au14874	NCP	%	97			50-150	Pass	
Perfluorononanoic acid (PFNA)	A18-Au14874	NCP	%	93			50-150	Pass	
Perfluorodecanoic acid (PFDA)	A18-Au14874	NCP	%	93			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	A18-Au14874	NCP	%	98			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	A18-Au14874	NCP	%	98			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	A18-Au14874	NCP	%	54			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	A18-Au14874	NCP	%	102			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace				Result 1					
Perfluorobutanesulfonic acid (PFBS)	A18-Au14874	NCP	%	80			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	A18-Au14874	NCP	%	87			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	A18-Au14874	NCP	%	87			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	A18-Au14874	NCP	%	96			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	A18-Au14874	NCP	%	94			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	A18-Au14874	NCP	%	85			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances- Ultra Trace				Result 1					
Perfluorooctane sulfonamide (FOSA)	A18-Au14874	NCP	%	96			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	A18-Au14874	NCP	%	120			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	A18-Au14874	NCP	%	140			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	A18-Au14874	NCP	%	98			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	A18-Au14874	NCP	%	117			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	A18-Au14874	NCP	%	87			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	A18-Au14874	NCP	%	120			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Ultra Trace				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	A18-Au14874	NCP	%	88			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	A18-Au14874	NCP	%	90			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	A18-Au14874	NCP	%	85			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	A18-Au14874	NCP	%	54			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs) - Ultra Trace				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	A18-Au14873	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	A18-Au14873	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	A18-Au14873	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	A18-Au14873	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	A18-Au14873	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	A18-Au14873	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	A18-Au14873	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	A18-Au14873	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	A18-Au14873	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	A18-Au14873	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	A18-Au14873	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	A18-Au14873	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	A18-Au14873	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	A18-Au14873	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	A18-Au14873	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	A18-Au14873	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	A18-Au14873	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances- Ultra Trace				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	A18-Au14873	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	A18-Au14873	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	A18-Au14873	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	A18-Au14873	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	A18-Au14873	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	A18-Au14873	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	A18-Au14873	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Ultra Trace				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	A18-Au14873	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	A18-Au14873	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	A18-Au14873	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	A18-Au14873	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised By

Ryan Gilbert	Analytical Services Manager
Jonathon Angell	Senior Analyst-Organic (QLD)



Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

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

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APPENDIX H

Important Information relating to This Report

The document ("Report") to which this page is attached and which this page forms a part of, has been issued by Golder Associates Pty Ltd ("Golder") subject to the important limitations and other qualifications set out below.

This Report constitutes or is part of services ("Services") provided by Golder to its client ("Client") under and subject to a contract between Golder and its Client ("Contract"). The contents of this page are not intended to and do not alter Golder's obligations (including any limits on those obligations) to its Client under the Contract.

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The scope of Golder's Services and the period of time they relate to are determined by the Contract and are subject to restrictions and limitations set out in the Contract. If a service or other work is not expressly referred to in this Report, do not assume that it has been provided or performed. If a matter is not addressed in this Report, do not assume that any determination has been made by Golder in regards to it.

At any location relevant to the Services conditions may exist which were not detected by Golder, in particular due to the specific scope of the investigation Golder has been engaged to undertake. Conditions can only be verified at the exact location of any tests undertaken. Variations in conditions may occur between tested locations and there may be conditions which have not been revealed by the investigation and which have not therefore been taken into account in this Report.

Golder accepts no responsibility for and makes no representation as to the accuracy or completeness of the information provided to it by or on behalf of the Client or sourced from any third party. Golder has assumed that such information is correct unless otherwise stated and no responsibility is accepted by Golder for incomplete or inaccurate data supplied by its Client or any other person for whom Golder is not responsible. Golder has not taken account of matters that may have existed when the Report was prepared but which were only later disclosed to Golder.

Having regard to the matters referred to in the previous paragraphs on this page in particular, carrying out the Services has allowed Golder to form no more than an opinion as to the actual conditions at any relevant location. That opinion is necessarily constrained by the extent of the information collected by Golder or otherwise made available to Golder. Further, the passage of time may affect the accuracy, applicability or usefulness of the opinions, assessments or other information in this Report. This Report is based upon the information and other circumstances that existed and were known to Golder when the Services were performed and this Report was prepared. Golder has not considered the effect of any possible future developments including physical changes to any relevant location or changes to any laws or regulations relevant to such location.

Where permitted by the Contract, Golder may have retained subconsultants affiliated with Golder to provide some or all of the Services. However, it is Golder which remains solely responsible for the Services and there is no legal recourse against any of Golder's affiliated companies or the employees, officers or directors of any of them.

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