Human Health Risk Assessment: Proposed Recreational Area – Callan Park, Rozelle

Prepared for: Inner West Council

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Document History and Status

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Limitations

Environmental Risk Sciences Pty Ltd has prepared this report for the use of Inner West Council, Sydney Water, Department of Planning Infrastructure and Environment and NSW Health in accordance with the usual care and thoroughness of the consulting profession. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report.

It is prepared in accordance with the scope of work and for the purpose outlined in the **Section 1** of this report.

The methodology adopted and sources of information used are outlined in this report. Environmental Risk Sciences has made no independent verification of this information beyond the agreed scope of works and assumes no responsibility for any inaccuracies or omissions. No indications were found that information provided for use in this assessment was false.

This report was prepared December 2020/February 2021, in June/November 2022 and updated in September 2025. This report is based on the information provided and reviewed at that time. Environmental Risk Sciences disclaims responsibility for any changes that may have occurred after this time.

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Glossary of Terms

ANZECC	Australia and New Zealand Environment and Conservation Council
AT	Averaging time
BW	Body weight
CF	Unit conversion factor
CoPC	Contaminant of potential concern
CSM	Conceptual site model
ED	Exposure duration
EF	Exposure frequency
EPA	Environment Protection Authority
ET	Exposure time
HHERA	Human health and Environmental Risk Assessment
HI	Hazard index
HIL	Health investigation level
HQ	Hazard quotient
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NHMRC	National Health and Medical Research Council
NSW DECC	New South Wales Department of Environment and Climate Change
TRV	Toxicity reference value
USEPA	United States Environmental Protection Agency
VOC	Volatile organic compound
WHO	World Health Organization

Section 1. Introduction

1.1 Background

Environmental Risk Sciences Pty Ltd (enRiskS) has been commissioned by Inner West Council to conduct a Human Health Risk Assessment (HHRA) in relation to the proposed development of a recreational swimming site on the Parramatta River at Callan Park in Rozelle, NSW.

Callan Park is a 61-hectare site on the southern edge of Iron Cove, a tributary to the Parramatta River. It is a historically significant site comprising parkland along the foreshore that provides active and passive recreation and the former Callan Park mental hospital (operating between 1878 to 2008) located in the eastern and southeast part of the park.

The shoreline comprises a seawall (constructed of sandstone and concrete), with no beach areas or exposed sediments (i.e. sediments exposed at low tide such that sediments can stay on skin) present in the area proposed for swimming (as shown on **Figures 1 and 4**).

Recreational activities proposed for the water in this area involve swimming.

1.2 Objectives

The objective of this assessment is to evaluate risks to human health in relation to potential exposures to contaminants that may be present in surface water and sediments (where relevant) in the proposed swimming area at Callan Park.

The HHRA has not addressed the presence of any physical hazards (such as sharps or debris), microbiological hazards or safety issues (relating to public access to waterways). In addition, this assessment does not address any ecological risk issues relating to contamination.

This HHRA supersedes any previous assessments of risks to human health conducted in relation to potential exposure to contaminants that may be present in the proposed swimming area at Callan Park.

Figure 1: Area of proposed recreational swimming area – Callan Park (refer to **Figure 4** for further detail)

Section 2. Methodology

The HHRA has been prepared in accordance with the following framework:

- Framework for Human Health Risk Assessment: Recreational Areas. Report prepared by enRiskS for Sydney Water, dated 22 May 2020.

Following this framework, the assessment of risks to human health has been undertaken in accordance with guidance available from enHealth, the National Environmental Protection Council (NEPC) and the National health and Medical Research Committee (NHMRC) as detailed in the following:

- enHealth 2012, Environmental Health Risk Assessment, Guidelines for Assessing Human Health Risks from Environmental Hazards (enHealth 2012a)
- enHealth 2012, Australian Exposure Factors Guide (enHealth 2012b)
- NEPC, National Environmental Protection Measure (NEPM) – Assessment of Site Contamination referred to as NEPM (2013), including:
  - Schedule B1 Investigation Levels for Soil and Groundwater (NEPC 1999 amended 2013a)
  - Schedule B4 Guideline on Health Risk Assessment Methodology (NEPC 1999 amended 2013b)
  - Schedule B7 Guideline on Health-Based Investigation Levels (NEPC 1999 amended 2013c)
- NHMRC 2008, Guidelines for Managing Risks in Recreational Water (NHMRC 2008)
- NHMRC 2011 updated 2022, Australian Drinking Water Guidelines (NHMRC 2011 updated 2025).

In addition, protocols and guidelines developed by international agencies such as the United States Environmental Protection Authority (USEPA) and the World Health Organisation (WHO) have been used (and referenced) to provide supplementary guidance where required.

The overall approach to the assessment of human health risks is outlined in **Figure 2** (modified from enHealth (enHealth 2012a)).

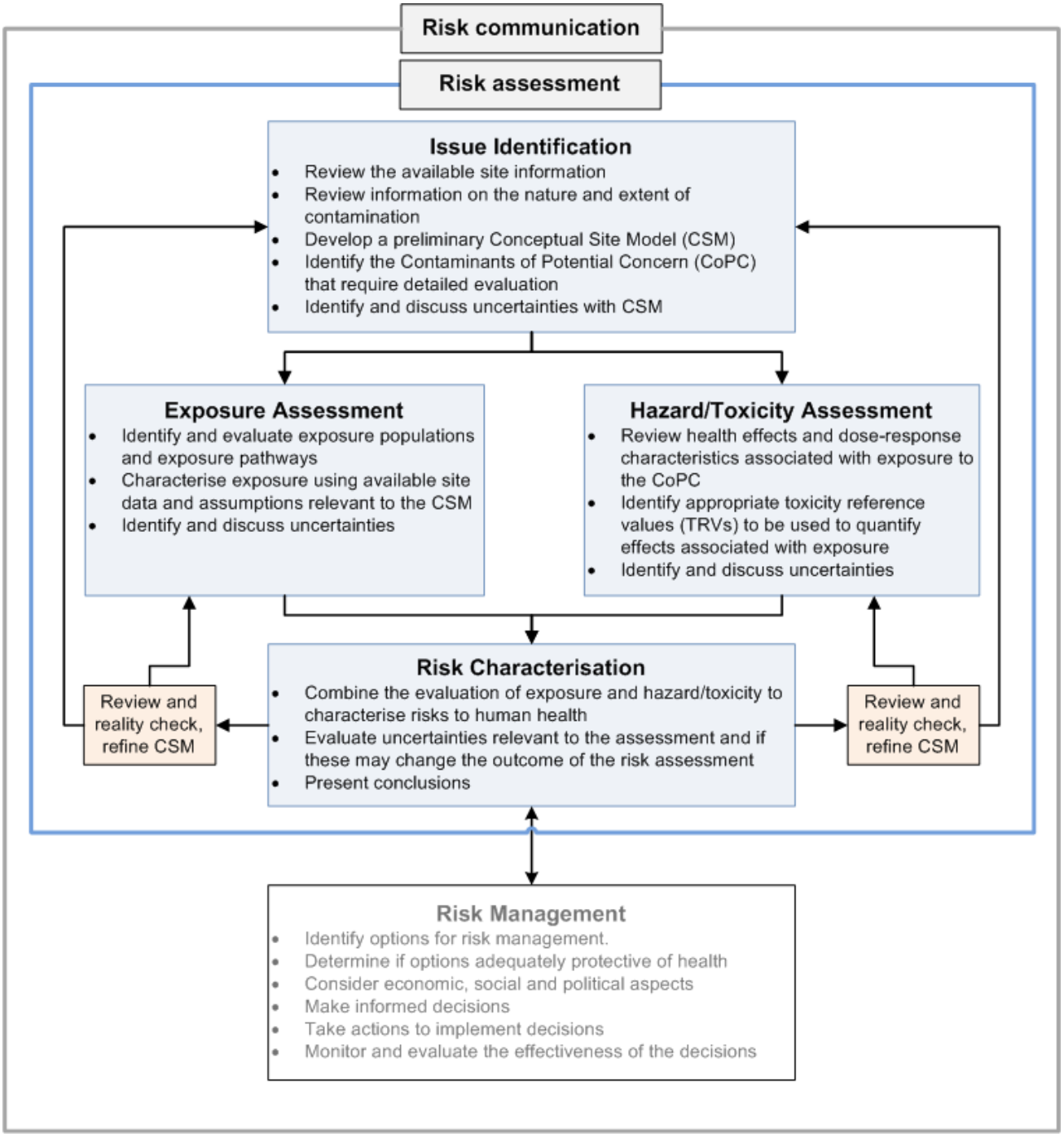

Figure 2: Overall approach to HHRA

Section 3. Issue identification

3.1 General

This section provides understanding the potential for contamination that may be present in the proposed recreation area and the potential for exposure to be of importance for the recreational use of this area.

3.2 Potential for contamination

A key aspect for any HHRA is understanding the nature and extent of contamination that may be present in the areas where people have the potential to be exposed.

The proposed recreational area is located along Iron Cove/Parramatta River. The Parramatta River has a long history of industrial activities that have resulted in a legacy of industrial development and contamination, particularly in sediment quality.

The Parramatta River Estuary Management Committee (AECOM 2010; Cardno 2008, 2012; Jacobs & UNSW 2016a, 2016b) has undertaken a number of reviews related to the river, including urban stormwater, hydrology, flooding, bathymetry and sediments, hydrodynamics, water quality, ecology, human use and recreation. Considerable research has been conducted, and continues, by University of NSW, in relation to contaminated sediments within the study area. While these assessments have commonly focused on ecological issues related to the presence of contamination, significantly elevated concentrations of contaminants such as heavy metals, organochlorine pesticides, dioxins and polycyclic aromatic hydrocarbons (PAHs) have been identified. Other contaminants identified in sediments include polychlorinated biphenyls (PCBs), brominated flame retardants and PFAS (Jacobs & UNSW 2016a).

The discharge of urban stormwater also has the potential to affect water quality in this area. Iron Cove/Parramatta River has a large catchment area, including a number of sub-catchments that drain onto the river via stormwater drains. Key pollutants identified in urban runoff include nutrients, heavy metals, organochlorine and organophosphorus pesticides, PAHs, phenols and sewage from overflows. Other contaminants may include PFAS.

More specifically, the following is relevant to the proposed recreation area at Callan Park.

The Callan Park was a hospital site from 1878 until its closure in 2008. There are still a number of original sandstone buildings remaining on the site, some of which remain empty and some of which are utilised by Ambulance NSW, Writing NSW and Sydney College of the Arts. The site is also currently home to multiple sporting grounds including Callan Park Oval (Friends of Callan Park 2019).

In 2002, a contamination assessment of the site identified the following sources of contamination as of concern (Coffey 2002):

- uncontrolled land filling up to 11 m consisting of mainly plastic bags, household rubbish, bricks, tile pieces, ash, glass, pottery and lead at the sporting ground locations on the foreshore
- shallow filling consisting of mainly gravel, bricks, tile pieces, ash, glass and concrete at the former hospital site

- four fuel underground storage tanks and one above ground storage tank
- several small hazardous chemical storage sheds
- an open stormwater channel located adjacent to Callan Park Oval.

Consequently, it is important to consider the potential for contaminants to be present in the proposed recreation area.

3.3 Potential for exposure to contaminants from recreational activities

The proposed recreation area is located in a bay/shoreline bounded by seawalls that are expected to remain (refer to the **Figure 3**).

Figure 3: View of seawall[1] in area of proposed recreational use

The proposed design of the swimming site is shown on **Figure 4**. This shows the installation of a fixed jetty and gangway with the proposed swimming area located off the jetty area accessed via a

[1] http://parramattariver.org.au/wp-content/uploads/estuaryprocesses2010/s%20Appendices/Appendix%201b.%20LEICHHARDT.pdf

gangway and pontoon, with a separate pontoon proposed in the area. The swimming area would be enclosed within a shark net.

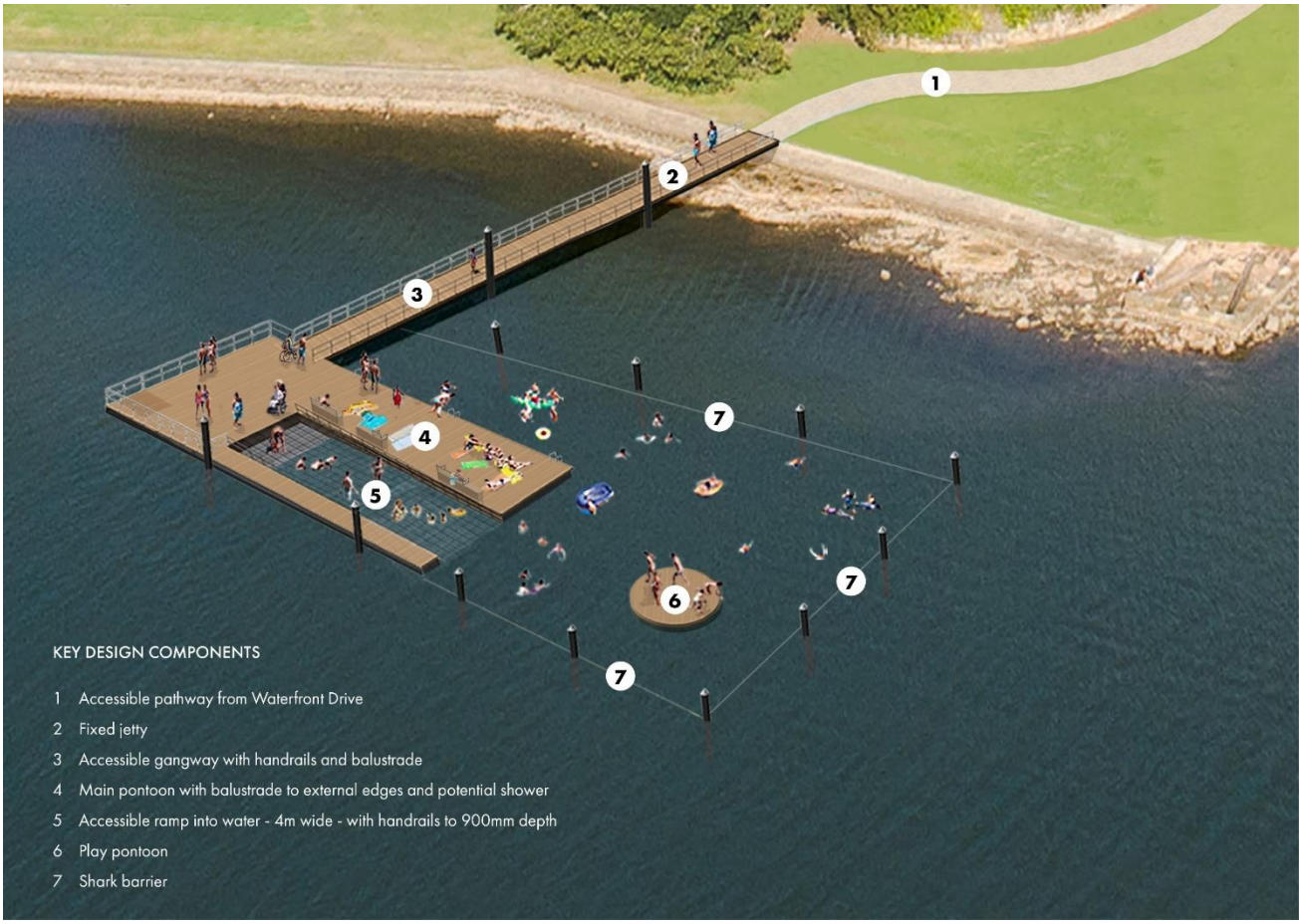

Figure 4: Current design of proposed recreational swimming area - Callan Park (source: https://yoursay.innerwest.nsw.gov.au/callan-park-tidal-baths)

A bathymetric survey conducted by Hydrographic & Cadastral Survey Pty Ltd (21 June 2022) and review of the low tide water depths by Civille for the area of the proposed recreational swimming area identified that at low tide the depth of water (95% tidal exceedance) within the swimming enclosure (within the shark net area) ranges from 2.25 m to 3.3m.

This information confirms that at all times (including low tide) the swim site will comprise water with no exposed sediment.

The recreational area is proposed to be used for swimming activities. The proposed recreation area does not have any beach areas or exposed sediments, including at low tide. The proposed swim site design does not provide or encourage access to or the sea wall or shoreline.

Figure 5 presents a diagrammatic conceptual site model (CSM) that shows the recreational exposure scenario evaluated in this assessment and the key pathways of exposure that need to be considered when evaluating risks to human health.

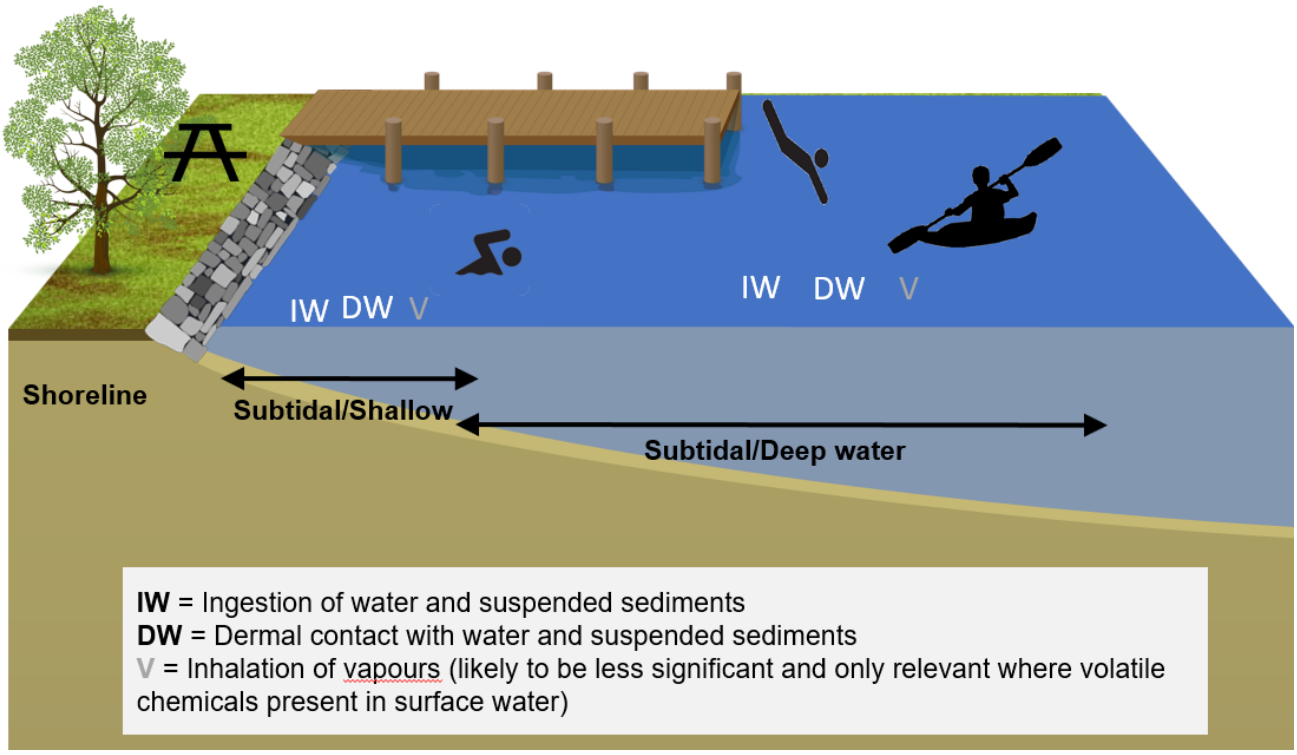

Figure 5: CSM for proposed recreational area (no exposed sediments)

For this swimming area, the potential to be exposed to contaminants in sediments is negligible for the following reasons:

- Swimming in the recreational area would always be in deep water where the depth of water, even at low tide, means people cannot stand in sediments.
- Should people swim down to the sediments, any sediments that may be on the skin would immediately wash off and not stick to the skin. Where sediments cannot stick to the skin and is constantly washed off the skin, such as the hands, incidental ingestion of sediments via hand to mouth behaviour would not occur. Any dermal contact with sediments would be for a short period of time before being washed off the skin. Such exposure would be too short for the movement of contamination bound to sediment to migrate from the sediment to the skin and be absorbed by the skin into the body.
- When swimming and playing in the water, sediments may be disturbed and these sediments would be present suspended in the water – exposure to these sediments would occur as a result of the incidental ingestion of water and dermal contact with water, which is assessed on the basis of surface water data.
- When assessing exposures based on the surface water data, data that reflects the total concentration in water – as dissolved and particulate (suspended sediment) is used. These samples are collected during a range of different conditions (discussed below) and exposure via ingestion and dermal contact to chemical dissolved in the water and bound to suspended sediments is assessed.

Hence for the proposed swimming area and the activities, the exposure pathways that are key are incidental ingestion and dermal contact with contaminants in surface water.

Assessing exposure to surface water, which includes suspended sediment, has been done by ensuring surface water samples were collected during different conditions at the site – calm conditions and conditions where the sediments would be significantly stirred up. This was done by ensuring samples were taken on days of high wind and/or days immediately after rain events when the water was likely to be "murky" (See **Section 3.4/Table 1**). These samples were then analysed unfiltered - i.e., the suspended particles were ***not*** removed from the water samples prior to analysis. The results then indicate the total concentration to which people might be exposed.

These data appropriately allow the assessment of all exposures for contaminants in water – to contaminants dissolved in water and contaminants attached to suspended sediments – where people can be exposed via the water they ingest or via contact with the skin.

Hence, this assessment has focused on data relevant to characterising contamination in surface water in the proposed recreation area.

It is not expected that any of the contaminants that might be present in surface water would be chemicals that are volatile, however, if volatile chemicals are present then the public may also be exposed via inhalation of vapours close to the water surface. Results of surface water analysis (presented in **Section 4.2**) did not identify the presence of volatile chemicals. Hence there is no potential for the inhalation of volatile chemicals to occur when swimming at the proposed recreational/swimming area.

3.4 Sampling of surface water

Surface water samples have been collected by the University of NSW (UNSW) from 2 locations within the proposed recreational/swimming area.

The samples were collected from the shoreline using a telescopic pole with a sampling vessel attached (refer to **Figure 6** – it can be seen in this photo that the water was murky during sampling) on 6 separate events from 5 June 2019 to 2 July 2019, representing 6 different conditions, as detailed in **Table 1**. Samples collected on the first 4 sampling event were analysed for all analytes. Samples collected on the last 2 sampling events were analysed for dioxins and furans only. The sample dates were carefully selected to ensure a range of weather conditions including dry conditions, light rainfall and extensive rainfall.

The UNSW staff took 1 L samples which were transferred directly into 1 L amber glass sampling bottles provided by the analytical laboratory. These samples were then stored chilled in the sample coolers and transported to the analytical laboratory. All samples were submitted unfiltered for analysis.

Figure 6: Shoreline surface water sampling (samples collected from 2 locations over 6 events)

The water samples were transported under Chain of Custody protocols to ALS for analysis. ALS is NATA certified for the analysis of inorganics and organics as requested. Brominated diphenyl ethers (PBDEs) were analysed by NMI.

Table 1 summarises the suite of analytes reported each of the samples collected. The analytical suite is extensive and addresses the range of contaminants that have the potential to be present (as discussed in **Section 3.2**). It is noted that apart from analysis of metals in samples S1 and S2, all results relate to total concentrations (or unfiltered – so water + suspended sediments).

Table 1: Sampling dates and conditions

Sample IDs	Date	Weather conditions	Analytical suite
S1, S2	5 June 2019	24-48 hrs rainfall	- total suspended solids (SS) - dissolved metals (samples S1 and S2) - total metals (samples S3 to S8) - polychlorinated biphenyls (PCBs) - organochlorine pesticides (OCP) - organophosphorus pesticides (OPP) - monocyclic aromatic hydrocarbons (MAHs) - oxygenated/sulfonated compounds - fumigants - halogenated compounds - trihalomethanes - phenolic compounds - polynuclear aromatic hydrocarbons (PAHs) - phthalate esters, - nitrosamines - nitroaromatics and ketones - haloethers - chlorinated hydrocarbons - anilines and benzidines - total petroleum hydrocarbons (TPH)/total recoverable hydrocarbons (TRH) - BTEXN (benzene, toluene, ethylbenzene, total xylenes and naphthalene) - organotin compounds - phenoxyacetic acid herbicides - glyphosate - PFAS - multiresidue pesticides - miscellaneous pesticides - phenolic endocrine disrupting compounds - brominated diphenyl ethers (PBDEs) - dioxins and furans.
S3, S4	12 June 2019	Dry conditions	
S5, S6	19 June 2019	1-2 days after rainfall	
S7, S8	26 June 2019	<1 day since rain	
S9, S10	1 July 2019	Dry weather	Dioxins and furans only
S11, S12	2 July 2019	Dry weather	Dioxins and furans only

All samples, S1-S12 were also analysed for pharmaceuticals and trace organics (which achieved a lower LOR than the standard analysis). This analysis was undertaken by UNSW and was not NATA accredited.

All laboratory reports and the data provided for pharmaceutical analysis are included in **Appendix A**.

All data that are collected for use in an assessment of contamination need to be reviewed to ensure that samples have been collected appropriately and resulting data are reliable. This is evaluated through the assessment of field and laboratory data quality parameters, as detailed in the ASC NEPM (NEPC 1999 amended 2013d). A data quality evaluation is included in **Appendix B**.

On the basis of the review undertaken, the overall quality of the analytical data is considered to be reliable for interpretative use.

It is noted that in some analysis the analytical LOR was somewhat raised, however, the higher LORs are not considered to be significant. Some laboratory recoveries exceeded acceptable limits for some individual compounds. These individual compounds were not expected to be contaminants

of concern in the area evaluated and hence the recoveries are not considered to affect the overall reliability of the data.

Section 4. Screening level assessment

4.1 General

A screening level assessment has been undertaken for this site. Such an assessment involves comparison of the available data with screening level guidelines to determine if the concentrations present are high enough to warrant a more detailed assessment of risk.

Screening level guidelines adopted are intended to be conservative and protective of exposures that may occur during recreational use of the area by all members of the community (including young children). They are usually national guidelines which have been calculated to cover situations where exposure would occur daily or similar.

For the proposed recreational area at Callan Park, only exposure to surface water is relevant, and hence the available surface water data have been the focus of this assessment.

As noted in **Section 3.3**, potential for exposure to contaminants present in sediments is negligible due to direct contact with the sediments at this site. However, exposure to contaminants attached to sediments that may be suspended in the water column has been considered because the surface water results are those for unfiltered surface water samples. Unfiltered samples collected over a variety of conditions will include the suspended sediments in the area.

At this site, direct contact with the sediments can only occur underwater, so the sediments will not remain on the surface of the skin for any length of time, and the sediments will always be washed off prior to leaving the water, so transfer to the mouth for exposure via incidental ingestion will also be negligible.

4.2 Review of surface water data

Water within the Parramatta River is saline to brackish (depending on freshwater inflows via creeks in some areas) up to the weir at Parramatta. Hence the water in the proposed recreational area of Callan Park is not suitable for drinking at any time (i.e., it will always be somewhat salty). As a result, it is overly conservative to adopt drinking water guidelines in a screening level assessment of recreational exposures. Drinking water guidelines assume that an individual consumes 2 litres of water every day for a lifetime, and that intakes via ingestion can contribute between 10% and 20% of the total acceptable intake (i.e., as defined by Australian health authorities) of that chemical every day.

NHMRC (NHMRC 2008, 2019) provides guidance on the assessment of chemical contamination in recreational water. These guidelines cover a wide range of recreational exposures in water such as swimming, diving, boating, sailboarding and is protective of exposures for all members of the public, including children, as well as other such as tourists and sporting groups. In relation to the assessment of chemical contaminants, the guidelines are intended to address all recreational exposures that include direct contact with water (with absorption via the skin, eyes and mucous membranes), ingestion (particularly important for young children) and inhalation (of water spray).

The NHMRC recreational water guidelines generally recommend the use of a screening level guideline that is 10 times higher than the Australian Drinking Water Guideline for the relevant chemical (NHMRC 2011 updated 2025). This approach is consistent with that adopted by the WHO

(WHO 2006) for recreational exposures. Where PFAS are present, specific recreational water guidelines from NHMRC are available which use slightly different assumptions but these assumptions are still relevant for Callan Park area (HEPA 2020; NHMRC 2019).

Based on the above, screening level guidelines relevant to recreational exposures have been adopted from the following sources:

- Recreational water guidelines for PFAS (HEPA 2020; NHMRC 2019)
- Recreational water guidelines for other chemicals, determined to be 10 x drinking water guideline, where the drinking water guideline has been obtained from the following:
    - Australian Drinking Water Guidelines (NHMRC 2011 updated 2025)
    - Australian Guidelines for Water Recycling (NRMMC 2008), which includes guidelines derived for pharmaceuticals and a range of other chemicals not included in the drinking water guidelines, but likely to be in recycled water
    - WHO Guidelines for Drinking Water Quality (WHO 2017)
    - USEPA Residential Tap Water guidelines (USEPA 2024) (these guidelines are used where there are no guidelines from NHMRC or WHO, and the approach adopted by the USEPA is consistent with Australian guidance from enHealth (enHealth 2012a))

It is noted that only health based guidelines have been adopted from the above sources. Some chemicals also include guidelines that are protective of aesthetics in drinking water (i.e., taste, odours or protection of equipment). These aesthetic guidelines have not been adopted for the purpose of screening surface water for recreational use.

These sources do not include a drinking water (and hence recreational water) guideline for saccharin or benzodiazole. For these chemicals, a review of the available scientific information has been undertaken. The data found have been used to derive a drinking water and recreational water guideline following the approach outlined by NHMRC (NHMRC 2011 updated 2025). This is all outlined in **Appendix C**.

Table 2 presents a summary of the concentrations of chemicals that have been detected in each surface water sample. The table presents only chemicals detected in at least one sample. Review of the laboratory analysis reports indicates that, with the exception of metals reported for samples S2 and S2 (where dissolved metals were reported), the data relate to unfiltered samples, which is the water that the community may be exposed to when undertaking recreational activities in this area. The unfiltered samples include the suspended sediments that could have contaminants attached and be in the water a person may incidentally ingest while swimming. These total concentrations have been compared against the recreational water guidelines, adopted for the purpose of screening.

It is noted that none of the chemicals detected were ones that are considered to be volatile. Also, most of the long list of chemicals which were analysed have not been detected in any sample. There are no samples where the analytical limit of reporting was elevated (or higher than the guideline relevant to the analytical method used).

Note that the units for concentrations in water vary within the table.

Table 2: Summary and review of surface water data

Analytes detected	Concentration reported in each sample												Adopted screening level guideline
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	
Compounds detected	**mg/L**												**mg/L**
Arsenic	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.003	0.003	--	--	--	--	0.1 [A]
Boron	4.22	4.37	4.17	4.29	4.18	3.95	3.40	3.47	--	--	--	--	40 [A]
Barium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.012	0.013	--	--	--	--	20 [A]
Chromium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	0.002	--	--	--	--	0.5 [A]
Copper	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.004	0.008	--	--	--	--	20 [A]
Manganese	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.014	0.014	--	--	--	--	1 [A]
Nickel	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.001	0.001	--	--	--	--	0.2 [A]
Lead	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.002	0.010	--	--	--	--	0.05 [A]
Zinc	<0.050	<0.050	<0.052	<0.052	<0.052	<0.052	0.015	0.033	--	--	--	--	60 [U]
PFOS	0.00016	0.00044	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	--	--	--	--	0.002 [N]
Benomyl	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00002	0.00002	--	--	--	--	0.9 [A]
Diuron	0.00004	0.00005	0.00002	0.00003	0.00004	0.00004	0.00009	0.00006	--	--	--	--	0.2 [A]
Dioxins and furans	**pg/L**												**pg/L**
WHO-TEQ (upper bound)	105.69*	105.68*	105.69*	105.85*	<53.31	<53.31	54.13	53.99	<53.82	53.86*	<53.31	<53.31	160 [R]
Pharmaceuticals and trace organics	**ng/L**												**ng/L**
Saccharin	17	19	14	15	15	16	39	37	23	20	22	22	175,000,000[D]
Bisphenol A	15	4730	19	18	97	<10	26	10	<10	16	16	<10	7,700,000 [U]
Diuron	33	34	32	31	31	30	44	45	53	51	50	49	200,000 [R]
Ibuprofen	<5	72	<5	<5	<5	<5	10	9	<5	<5	<5	<5	4,000,000 [R]
PFOA	<5	<5	<5	<5	<5	<5	6	7	5	6	<5	5	10,000 [N]
PFOS	<5	<5	<5	5	5	5	<5	<5	5	13	<5	<5	2,000 [N]
Paracetamol	134	141	39	26	93	91	375	353	130	127	130	128	1,750,000 [R]
Caffeine	323	326	298	440	198	195	481	445	395	365	347	349	3,500 [R]
Benzotriazole	25	34	29	26	31	28	47	48	46	46	43	45	4,200,000[D]
TCEP (tris(2-carboxyethyl)phosphine)	31	33	19	18	33	35	100	97	64	64	58	57	1000 [R]

* Only compound detected above the analytical limit of reporting (LOR) in samples analysed was OCDD. No other dioxin-like compound was detected in the water. The TEQ presented has adopted the LOR for compounds not detected, providing a conservative value – also termed upper bound. Note that the analytical laboratory was able to use a lower LOR for samples S5 to S12 so this resulted in a lower total equivalent concentration when no congeners other than OCDD were detected. Where the TEQ concentration is based on half the LOR or zero (where not detected), the concentrations will be much lower and there will be a greater margin of safety between the reported concentration and the recreational water guideline.

A = Recreational guideline which is 10 x Australian Drinking Water Guideline (NHMRC 2011 updated 2025) (health based guidelines)

N = Recreational guideline for PFOS and PFOA from NHMRC (NHMRC 2019)

R = Recreational guidelines which is 10 x Guideline value presented in Australian Guidelines for Water Recycling (NRMMC 2008)

D = Recreational water guideline derived following guidance from NHMRC (NHMRC 2011 updated 2025), refer to **Appendix C**

U = Recreational guideline which is 10 x USEPA RSL for residential tapwater (USEPA 2024)

Review of the data presented in **Table 2** indicates that there are no analytes detected in surface water, during any of the sampling events and weather conditions, that report concentrations that exceed the adopted screening level guidelines. This includes consideration of samples where suspended sediments would have contributed to the concentrations assessed against the screening guidelines. The guidelines adopted are protective of all exposures relevant to the proposed use of the area for swimming activities.

For most compounds detected in surface water there is a significant margin of safety between the detected concentration and the adopted guideline (up to more than 1 million fold). This margin is sufficient to address any uncertainties in this assessment due to variability in surface water concentrations that may occur over time.

In relation to dioxins and furans, samples S1 to S4 report a concentration that is below the adopted screening criteria, but more elevated than samples S5 to S12. This is due to solely to the higher LOR used by the analytical laboratory for these samples. The only detected congener in these samples was OCDD. This chemical makes a very small contribution to the total equivalent concentration and so the actual LORs for the other congeners make a significant change to the upper bound reported concentration. In relation to samples S5 to S12, the following is reported:

- S5 – no congeners detected
- S6 – no congeners detected
- S7 – some OCDD and HpCDD detected (detection contributes < 1 pg TEQ/L)
- S8 – some OCDD and HpCDD detected (detection contributes < 1 pg TEQ/L)
- S9 – no congeners detected
- S10 – some OCDD detected (detection contributes < 0.1 pg TEQ/L)
- S11 – no congeners detected
- S12 – no congeners detected.

It is important to note that OCDD and HpCDD are the dioxin congeners that have the most hydrophobic characteristics. For these chemicals to be detected in a water sample must mean that they were present attached to suspended sediments within the water sample, as it is not possible for actual dissolved OCDD to be measurable. Again, for samples S5 to S12, the results are dominated by the analytical LORs. There is very limited variability in the results over the different sampling events and conditions (apart from the change in LORs).

In relation to the trace organics and pharmaceuticals, slightly elevated concentrations of paracetamol, caffeine, saccharin and TCEP were reported in samples T7 and T8. It is noted that these chemicals are usually present in sewage, so these detections may indicate that runoff during rainfall may have included some sewage. These samples were collected immediately after rainfall. However, for all other samples and results, there is no discernible relationship with time after rain events.

Based on the screening level assessment undertaken, there is no requirement to undertake any more detailed assessment of human health risks as all concentrations measured are below relevant, conservative screening guidelines provided by Australian health authorities.

4.3 Uncertainties

The key uncertainties related to the assessment undertaken for the proposed Callan Park swimming area relate to the data relied on for the assessment. The data was collected in 2019 during a range of different conditions that include immediately following rainfall, 1 to 2 days post rainfall and dry conditions. These data provide an assessment of variability over those conditions. It is noted that for many compounds detected in surface water the variability across those varying conditions is low and hence the potential for significant variability under different conditions is expected to be limited.

There is a sufficient margin of safety identified in the data collected and relied on in this assessment to address any additional variability in concentrations that may occur during other conditions, given that such variability is not expected to be large and the margins range up to more than 1 million fold.

Should the design of the swimming area change such that sediments are exposed at low tide in areas where the public may come into contact with these sediments (i.e. above the water line), then the risk assessment would need to be revised to address direct contact exposures with sediments.

Section 5. Conclusions

The proposed development of a recreational swimming site on the Parramatta River at Callan Park in Rozelle, NSW, has been evaluated in relation to potential risks to the health of recreational users from exposure to chemical contaminants. The area is proposed to be used for swimming and boating activities with no exposed sediments in the area at any time (including at low tide).

The focus of the risk assessment was the chemicals detected in surface water (both those dissolved in the water and those attached to suspended sediments). Surface water samples were collected under varying conditions that would include situations where there would have been significant suspended sediments and times where such materials would have been lower. These samples were also analysed unfiltered – this ensures that the concentrations of contaminants attached to the suspended sediments have been included in the screening evaluation.

Based on the available data and the assessment undertaken, there are no risk issues of concern in relation to the proposed recreational swimming area. All measured concentrations were below relevant, conservative screening guidelines provided by Australian health authorities.

Section 6. References

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Appendix A Laboratory reports

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1917456**	Page	: 1 of 21
Client	: **INNER WEST COUNCIL**	Laboratory	: Environmental Division Sydney
Contact	: AMOS BRANCH	Contact	: Customer Services ES
Address	: PO Box 14 Petersham 2019	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: Parramatta River Risk Assessment	Date Samples Received	: 06-Jun-2019 16:30
Order number	: ----	Date Analysis Commenced	: 07-Jun-2019
C-O-C number	: ----	Issue Date	: 22-Jul-2019 17:12
Sampler	: ----		
Site	: ----		
Quote number	: SY/284/19		
No. of samples received	: 2		
No. of samples analysed	: 2		

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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Santusha Pandra	Organic Chemist	Brisbane Organics, Stafford, QLD
Uma Nagendiram	Subcontracting Coordinator	WRG Subcontracting, 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.

- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences.
- EP231: Particular samples required dilution due to sample matrix (conductivity) . LOR values have been adjusted accordingly.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EG020: Samples were diluted and rerun due to matrix interference and LOR's have been raised accordingly. (High Total Dissolved Solids)
- EP244: Limit of Reporting has been raised due to high moisture content, insufficient sample or matrix interference.
- EP080: High LCS recovery deemed acceptable as all associated analyte results are less than LOR
- EP075: 'Sum of PAH' is the sum of the USEPA 16 priority PAHs
- EDC (EP244) is conducted by ALS Scoresby NATA accreditation no. 992, site no. 989.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S1	S2	----	----	----
			Client sampling date / time	06-Jun-2019 10:00	06-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1917456-001	ES1917456-002	--------	--------	--------
				Result	Result	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**12**	**14**	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.010	----	----	----
Boron	7440-42-8	0.05	mg/L	**4.22**	**4.37**	----	----	----
Barium	7440-39-3	0.001	mg/L	<0.010	<0.010	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.010	<0.010	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0010	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.010	<0.010	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.010	<0.010	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.010	<0.010	----	----	----
Manganese	7439-96-5	0.001	mg/L	<0.010	<0.010	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.010	<0.010	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.010	<0.010	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.10	<0.10	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.10	<0.10	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.050	<0.050	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5	----	----	----
beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5	----	----	----
gamma-BHC	58-89-9	0.5	µg/L	<0.5	<0.5	----	----	----
delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S1	S2	----	----	----
			Client sampling date / time	06-Jun-2019 10:00	06-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1917456-001	ES1917456-002	--------	--------	--------
				Result	Result	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued								
Endrin	72-20-8	0.5	µg/L	<0.5	<0.5	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	----	----	----
4.4`-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	----	----	----
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L	<0.5	<0.5	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/L	<0.5	<0.5	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----
Toluene	108-88-3	1	µg/L	<1	<1	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S1	S2	----	----	----
				Client sampling date / time	06-Jun-2019 10:00	06-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1917456-001	ES1917456-002	--------	--------	--------
					Result	Result	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
Ethylbenzene	100-41-4	1	µg/L		<1	<1	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	1	µg/L		<1	<1	----	----	----
Styrene	100-42-5	1	µg/L		<1	<1	----	----	----
ortho-Xylene	95-47-6	1	µg/L		<1	<1	----	----	----
Isopropylbenzene	98-82-8	1	µg/L		<1	<1	----	----	----
n-Propylbenzene	103-65-1	1	µg/L		<1	<1	----	----	----
1.3.5-Trimethylbenzene	108-67-8	1	µg/L		<1	<1	----	----	----
sec-Butylbenzene	135-98-8	1	µg/L		<1	<1	----	----	----
1.2.4-Trimethylbenzene	95-63-6	1	µg/L		<1	<1	----	----	----
tert-Butylbenzene	98-06-6	1	µg/L		<1	<1	----	----	----
p-Isopropyltoluene	99-87-6	1	µg/L		<1	<1	----	----	----
n-Butylbenzene	104-51-8	1	µg/L		<1	<1	----	----	----
^ Total Xylenes	----	1	µg/L		<1	<1	----	----	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	10	µg/L		<10	<10	----	----	----
2-Butanone (MEK)	78-93-3	10	µg/L		<10	<10	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L		<10	<10	----	----	----
2-Hexanone (MBK)	591-78-6	10	µg/L		<10	<10	----	----	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	1	µg/L		<1	<1	----	----	----
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	1	µg/L		<1	<1	----	----	----
1.2-Dichloropropane	78-87-5	1	µg/L		<1	<1	----	----	----
cis-1.3-Dichloropropylene	10061-01-5	2	µg/L		<2	<2	----	----	----
trans-1.3-Dichloropropylene	10061-02-6	2	µg/L		<2	<2	----	----	----
1.2-Dibromoethane (EDB)	106-93-4	1	µg/L		<1	<1	----	----	----
^ 1.3-Dichloropropylene (cis & trans)	----	2	µg/L		<2	<2	----	----	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	10	µg/L		<10	<10	----	----	----
Chloromethane	74-87-3	10	µg/L		<10	<10	----	----	----
Vinyl chloride	75-01-4	0.2	µg/L		<0.2	<0.2	----	----	----
Bromomethane	74-83-9	10	µg/L		<10	<10	----	----	----
Chloroethane	75-00-3	10	µg/L		<10	<10	----	----	----
Trichlorofluoromethane	75-69-4	10	µg/L		<10	<10	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S1	S2	----	----	----
			Client sampling date / time	06-Jun-2019 10:00	06-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1917456-001	ES1917456-002	--------	--------	--------
				Result	Result	----	----	----
EP074E: Halogenated Aliphatic Compounds - Continued								
1.1-Dichloroethene	75-35-4	1	µg/L	<1	<1	----	----	----
Iodomethane	74-88-4	1	µg/L	<1	<1	----	----	----
Methylene chloride	75-09-2	2	µg/L	<2	<2	----	----	----
trans-1.2-Dichloroethene	156-60-5	1	µg/L	<1	<1	----	----	----
1.1-Dichloroethane	75-34-3	1	µg/L	<1	<1	----	----	----
cis-1.2-Dichloroethene	156-59-2	1	µg/L	<1	<1	----	----	----
1.1.1-Trichloroethane	71-55-6	1	µg/L	<1	<1	----	----	----
1.1-Dichloropropylene	563-58-6	1	µg/L	<1	<1	----	----	----
Carbon Tetrachloride	56-23-5	1	µg/L	<1	<1	----	----	----
1.2-Dichloroethane	107-06-2	1	µg/L	<1	<1	----	----	----
Trichloroethene	79-01-6	1	µg/L	<1	<1	----	----	----
Dibromomethane	74-95-3	1	µg/L	<1	<1	----	----	----
1.1.2-Trichloroethane	79-00-5	1	µg/L	<1	<1	----	----	----
1.3-Dichloropropane	142-28-9	1	µg/L	<1	<1	----	----	----
Tetrachloroethene	127-18-4	1	µg/L	<1	<1	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	1	µg/L	<1	<1	----	----	----
trans-1.4-Dichloro-2-butene	110-57-6	1	µg/L	<1	<1	----	----	----
cis-1.4-Dichloro-2-butene	1476-11-5	1	µg/L	<1	<1	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	1	µg/L	<1	<1	----	----	----
1.2.3-Trichloropropane	96-18-4	1	µg/L	<1	<1	----	----	----
Pentachloroethane	76-01-7	1	µg/L	<1	<1	----	----	----
1.2-Dibromo-3-chloropropane	96-12-8	1	µg/L	<1	<1	----	----	----
Hexachlorobutadiene	87-68-3	0.5	µg/L	<0.5	<0.5	----	----	----
Bromochloromethane	74-97-5	1	µg/L	<1	<1	----	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	1	µg/L	<1	<1	----	----	----
Bromobenzene	108-86-1	1	µg/L	<1	<1	----	----	----
2-Chlorotoluene	95-49-8	1	µg/L	<1	<1	----	----	----
4-Chlorotoluene	106-43-4	1	µg/L	<1	<1	----	----	----
1.3-Dichlorobenzene	541-73-1	1	µg/L	<1	<1	----	----	----
1.4-Dichlorobenzene	106-46-7	0.1	µg/L	<0.1	<0.1	----	----	----
1.2-Dichlorobenzene	95-50-1	1	µg/L	<1	<1	----	----	----
1.2.4-Trichlorobenzene	120-82-1	1	µg/L	<1	<1	----	----	----
1.2.3-Trichlorobenzene	87-61-6	1	µg/L	<1	<1	----	----	----
^ Sum of Trichlorobenzenes	----	1	µg/L	<1	<1	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S1	S2	----	----	----
			Client sampling date / time	06-Jun-2019 10:00	06-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1917456-001	ES1917456-002	--------	--------	--------
				Result	Result	----	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	1	µg/L	<1	<1	----	----	----
Bromodichloromethane	75-27-4	1	µg/L	<1	<1	----	----	----
Dibromochloromethane	124-48-1	1	µg/L	<1	<1	----	----	----
Bromoform	75-25-2	1	µg/L	<1	<1	----	----	----
^ Total Trihalomethanes	----	1	µg/L	<1	<1	----	----	----
EP074H: Naphthalene								
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	----	----	----
2.4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	----	----	----
2.4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	----	----	----
2.6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	----	----	----
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	----	----	----
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S1	S2	----	----	----
			Client sampling date / time	06-Jun-2019 10:00	06-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1917456-001	ES1917456-002	--------	--------	--------
				Result	Result	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds								
Phenol	108-95-2	2	µg/L	<2	<2	----	----	----
2-Chlorophenol	95-57-8	2	µg/L	<2	<2	----	----	----
2-Methylphenol	95-48-7	2	µg/L	<2	<2	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	2	µg/L	<2	<2	----	----	----
2.4-Dimethylphenol	105-67-9	2	µg/L	<2	<2	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L	<2	<2	----	----	----
2.6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	2	µg/L	<2	<2	----	----	----
2.4.6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2.4.5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	4	µg/L	<4	<4	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	2	µg/L	<2	<2	----	----	----
2-Methylnaphthalene	91-57-6	2	µg/L	<2	<2	----	----	----
2-Chloronaphthalene	91-58-7	2	µg/L	<2	<2	----	----	----
Acenaphthylene	208-96-8	2	µg/L	<2	<2	----	----	----
Acenaphthene	83-32-9	2	µg/L	<2	<2	----	----	----
Fluorene	86-73-7	2	µg/L	<2	<2	----	----	----
Phenanthrene	85-01-8	2	µg/L	<2	<2	----	----	----
Anthracene	120-12-7	2	µg/L	<2	<2	----	----	----
Fluoranthene	206-44-0	2	µg/L	<2	<2	----	----	----
Pyrene	129-00-0	2	µg/L	<2	<2	----	----	----
N-2-Fluorenyl Acetamide	53-96-3	2	µg/L	<2	<2	----	----	----
Benz(a)anthracene	56-55-3	2	µg/L	<2	<2	----	----	----
Chrysene	218-01-9	2	µg/L	<2	<2	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	4	µg/L	<4	<4	----	----	----
7.12-Dimethylbenz(a)anthracene	57-97-6	2	µg/L	<2	<2	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S1	S2	----	----	----
			Client sampling date / time	06-Jun-2019 10:00	06-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1917456-001	ES1917456-002	--------	--------	--------
				Result	Result	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(a)pyrene	50-32-8	2	µg/L	<2	<2	----	----	----
3-Methylcholanthrene	56-49-5	2	µg/L	<2	<2	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	2	µg/L	<2	<2	----	----	----
Dibenz(a.h)anthracene	53-70-3	2	µg/L	<2	<2	----	----	----
Benzo(g.h.i)perylene	191-24-2	2	µg/L	<2	<2	----	----	----
^ Sum of PAHs	----	2	µg/L	<2	<2	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	2	µg/L	<2	<2	----	----	----
EP075C: Phthalate Esters								
Dimethyl phthalate	131-11-3	2	µg/L	<2	<2	----	----	----
Diethyl phthalate	84-66-2	2	µg/L	<2	<2	----	----	----
Di-n-butyl phthalate	84-74-2	2	µg/L	<2	<2	----	----	----
Butyl benzyl phthalate	85-68-7	2	µg/L	<2	<2	----	----	----
bis(2-ethylhexyl) phthalate	117-81-7	10	µg/L	<10	<10	----	----	----
Di-n-octylphthalate	117-84-0	2	µg/L	<2	<2	----	----	----
EP075D: Nitrosamines								
N-Nitrosomethylethylamine	10595-95-6	2	µg/L	<2	<2	----	----	----
N-Nitrosodiethylamine	55-18-5	2	µg/L	<2	<2	----	----	----
N-Nitrosopyrrolidine	930-55-2	4	µg/L	<4	<4	----	----	----
N-Nitrosomorpholine	59-89-2	2	µg/L	<2	<2	----	----	----
N-Nitrosodi-n-propylamine	621-64-7	2	µg/L	<2	<2	----	----	----
N-Nitrosopiperidine	100-75-4	2	µg/L	<2	<2	----	----	----
N-Nitrosodibutylamine	924-16-3	2	µg/L	<2	<2	----	----	----
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	4	µg/L	<4	<4	----	----	----
Methapyrilene	91-80-5	2	µg/L	<2	<2	----	----	----
EP075E: Nitroaromatics and Ketones								
2-Picoline	109-06-8	2	µg/L	<2	<2	----	----	----
Acetophenone	98-86-2	2	µg/L	<2	<2	----	----	----
Nitrobenzene	98-95-3	2	µg/L	<2	<2	----	----	----
Isophorone	78-59-1	2	µg/L	<2	<2	----	----	----
2.6-Dinitrotoluene	606-20-2	4	µg/L	<4	<4	----	----	----
2.4-Dinitrotoluene	121-14-2	4	µg/L	<4	<4	----	----	----
1-Naphthylamine	134-32-7	2	µg/L	<2	<2	----	----	----
4-Nitroquinoline-N-oxide	56-57-5	2	µg/L	<2	<2	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S1	S2	----	----	----
			Client sampling date / time	06-Jun-2019 10:00	06-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1917456-001	ES1917456-002	--------	--------	--------
				Result	Result	----	----	----
EP075E: Nitroaromatics and Ketones - Continued								
5-Nitro-o-toluidine	99-55-8	2	µg/L	<2	<2	----	----	----
Azobenzene	103-33-3	2	µg/L	<2	<2	----	----	----
1.3.5-Trinitrobenzene	99-35-4	2	µg/L	<2	<2	----	----	----
Phenacetin	62-44-2	2	µg/L	<2	<2	----	----	----
4-Aminobiphenyl	92-67-1	2	µg/L	<2	<2	----	----	----
Pentachloronitrobenzene	82-68-8	2	µg/L	<2	<2	----	----	----
Pronamide	23950-58-5	2	µg/L	<2	<2	----	----	----
Dimethylaminoazobenzene	60-11-7	2	µg/L	<2	<2	----	----	----
Chlorobenzilate	510-15-6	2	µg/L	<2	<2	----	----	----
EP075F: Haloethers								
Bis(2-chloroethyl) ether	111-44-4	2	µg/L	<2	<2	----	----	----
Bis(2-chloroethoxy) methane	111-91-1	2	µg/L	<2	<2	----	----	----
4-Chlorophenyl phenyl ether	7005-72-3	2	µg/L	<2	<2	----	----	----
4-Bromophenyl phenyl ether	101-55-3	2	µg/L	<2	<2	----	----	----
EP075G: Chlorinated Hydrocarbons								
1.3-Dichlorobenzene	541-73-1	2	µg/L	<2	<2	----	----	----
1.4-Dichlorobenzene	106-46-7	2	µg/L	<2	<2	----	----	----
1.2-Dichlorobenzene	95-50-1	2	µg/L	<2	<2	----	----	----
Hexachloroethane	67-72-1	2	µg/L	<2	<2	----	----	----
1.2.4-Trichlorobenzene	120-82-1	2	µg/L	<2	<2	----	----	----
Hexachloropropylene	1888-71-7	2	µg/L	<2	<2	----	----	----
Hexachlorobutadiene	87-68-3	2	µg/L	<2	<2	----	----	----
Hexachlorocyclopentadiene	77-47-4	10	µg/L	<10	<10	----	----	----
Pentachlorobenzene	608-93-5	2	µg/L	<2	<2	----	----	----
Hexachlorobenzene (HCB)	118-74-1	4	µg/L	<4	<4	----	----	----
EP075H: Anilines and Benzidines								
Aniline	62-53-3	2	µg/L	<2	<2	----	----	----
4-Chloroaniline	106-47-8	2	µg/L	<2	<2	----	----	----
2-Nitroaniline	88-74-4	4	µg/L	<4	<4	----	----	----
3-Nitroaniline	99-09-2	4	µg/L	<4	<4	----	----	----
Dibenzofuran	132-64-9	2	µg/L	<2	<2	----	----	----
4-Nitroaniline	100-01-6	2	µg/L	<2	<2	----	----	----
Carbazole	86-74-8	2	µg/L	<2	<2	----	----	----
3.3`-Dichlorobenzidine	91-94-1	2	µg/L	<2	<2	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S1	S2	----	----	----
			Client sampling date / time	06-Jun-2019 10:00	06-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1917456-001	ES1917456-002	--------	--------	--------
				Result	Result	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	2	µg/L	<2	<2	----	----	----
beta-BHC	319-85-7	2	µg/L	<2	<2	----	----	----
gamma-BHC	58-89-9	2	µg/L	<2	<2	----	----	----
delta-BHC	319-86-8	2	µg/L	<2	<2	----	----	----
Heptachlor	76-44-8	2	µg/L	<2	<2	----	----	----
Aldrin	309-00-2	2	µg/L	<2	<2	----	----	----
Heptachlor epoxide	1024-57-3	2	µg/L	<2	<2	----	----	----
alpha-Endosulfan	959-98-8	2	µg/L	<2	<2	----	----	----
4.4`-DDE	72-55-9	2	µg/L	<2	<2	----	----	----
Dieldrin	60-57-1	2	µg/L	<2	<2	----	----	----
Endrin	72-20-8	2	µg/L	<2	<2	----	----	----
beta-Endosulfan	33213-65-9	2	µg/L	<2	<2	----	----	----
4.4`-DDD	72-54-8	2	µg/L	<2	<2	----	----	----
Endosulfan sulfate	1031-07-8	2	µg/L	<2	<2	----	----	----
4.4`-DDT	50-29-3	4	µg/L	<4	<4	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	4	µg/L	<4	<4	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	4	µg/L	<4	<4	----	----	----
EP075J: Organophosphorus Pesticides								
Dichlorvos	62-73-7	2	µg/L	<2	<2	----	----	----
Dimethoate	60-51-5	2	µg/L	<2	<2	----	----	----
Diazinon	333-41-5	2	µg/L	<2	<2	----	----	----
Chlorpyrifos-methyl	5598-13-0	2	µg/L	<2	<2	----	----	----
Malathion	121-75-5	2	µg/L	<2	<2	----	----	----
Fenthion	55-38-9	2	µg/L	<2	<2	----	----	----
Chlorpyrifos	2921-88-2	2	µg/L	<2	<2	----	----	----
Pirimphos-ethyl	23505-41-1	2	µg/L	<2	<2	----	----	----
Chlorfenvinphos	470-90-6	2	µg/L	<2	<2	----	----	----
Prothiofos	34643-46-4	2	µg/L	<2	<2	----	----	----
Ethion	563-12-2	2	µg/L	<2	<2	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S1	S2	----	----	----
			Client sampling date / time	06-Jun-2019 10:00	06-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1917456-001	ES1917456-002	--------	--------	--------
				Result	Result	----	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	----	----	----
>C10 - C16 Fraction	----	100	µg/L	<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----
Toluene	108-88-3	2	µg/L	<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	----	----	----
^ Total Xylenes	----	2	µg/L	<2	<2	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	<1	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----
EP090: Organotin Compounds (Soluble)								
Monobutyltin	78763-54-9	5	ngSn/L	<5	<5	----	----	----
Dibutyltin	1002-53-5	5	ngSn/L	<5	<5	----	----	----
Tributyltin	56573-85-4	2	ngSn/L	<2	<2	----	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS								
4-Chlorophenoxy acetic acid	122-88-3	10	µg/L	<10	<10	----	----	----
2.4-DB	94-82-6	10	µg/L	<10	<10	----	----	----
Dicamba	1918-00-9	10	µg/L	<10	<10	----	----	----
Mecoprop	93-65-2	10	µg/L	<10	<10	----	----	----
MCPA	94-74-6	10	µg/L	<10	<10	----	----	----
2.4-DP	120-36-5	10	µg/L	<10	<10	----	----	----
2.4-D	94-75-7	10	µg/L	<10	<10	----	----	----
Triclopyr	55335-06-3	10	µg/L	<10	<10	----	----	----
Silvex (2.4.5-TP/Fenoprop)	93-72-1	10	µg/L	<10	<10	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S1	S2	----	----	----
				Client sampling date / time	06-Jun-2019 10:00	06-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1917456-001	ES1917456-002	--------	--------	--------
					Result	Result	----	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS - Continued									
2.4.5-T	93-76-5	10	µg/L		<10	<10	----	----	----
MCPB	94-81-5	10	µg/L		<10	<10	----	----	----
Picloram	1918-02-1	10	µg/L		<10	<10	----	----	----
Clopyralid	1702-17-6	10	µg/L		<10	<10	----	----	----
Fluroxypyr	69377-81-7	10	µg/L		<10	<10	----	----	----
2.6-D	575-90-6	10	µg/L		<10	<10	----	----	----
2.4.6-T	575-89-3	10	µg/L		<10	<10	----	----	----
EP204: Glyphosate and AMPA									
Glyphosate	1071-83-6	10	µg/L		<10	<10	----	----	----
AMPA	1066-51-9	10	µg/L		<10	<10	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.05	<0.05	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.05	**0.07**	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.16**	**0.44**	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.2	<0.2	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.05	<0.05	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.05	<0.05	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.05	<0.05	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.05	<0.05	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	----	----	----
EP231P: PFAS Sums									
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.16**	**0.51**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S1	S2	----	----	----
				Client sampling date / time	06-Jun-2019 10:00	06-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1917456-001	ES1917456-002	--------	--------	--------
					Result	Result	----	----	----
EP231P: PFAS Sums - Continued									
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.16**	**0.51**	----	----	----
EP234: Multiresidue Pesticides (ESI Positive)									
3-Hydroxy Carbofuran	16655-82-6	0.02	µg/L		<0.02	<0.02	----	----	----
Abamectin	71751-41-2	0.1	µg/L		<0.1	<0.1	----	----	----
Acephate	30560-19-1	0.5	µg/L		<0.5	<0.5	----	----	----
Alachlor	15972-60-8	0.1	µg/L		<0.1	<0.1	----	----	----
Aldicarb	116-06-3	0.05	µg/L		<0.05	<0.05	----	----	----
Ametryn	834-12-8	0.01	µg/L		<0.01	<0.01	----	----	----
Aminopyralid	150114-71-9	0.1	µg/L		<0.1	<0.1	----	----	----
Amitraz	33089-61-1	100	µg/L		<100	<100	----	----	----
Atrazine	1912-24-9	0.01	µg/L		<0.01	<0.01	----	----	----
Atrazine-desethyl	6190-65-4	0.1	µg/L		<0.1	<0.1	----	----	----
Atrazine-desisopropyl	1007-28-9	0.1	µg/L		<0.1	<0.1	----	----	----
Azinphos-ethyl	2642-71-9	0.02	µg/L		<0.02	<0.02	----	----	----
Azinphos-methyl	86-50-0	0.02	µg/L		<0.02	<0.02	----	----	----
Azoxystrobin	131860-33-8	0.1	µg/L		<0.1	<0.1	----	----	----
Bendiocarb	22781-23-3	0.10	µg/L		<0.10	<0.10	----	----	----
Benomyl	17804-35-2	0.01	µg/L		<0.01	<0.01	----	----	----
Bensulfuron methyl	83055-99-6	0.1	µg/L		<0.1	<0.1	----	----	----
Bensulide	741-58-2	0.1	µg/L		<0.1	<0.1	----	----	----
Boscalid	188425-85-6	0.1	µg/L		<0.1	<0.1	----	----	----
Bromacil	314-40-9	0.02	µg/L		<0.02	<0.02	----	----	----
Bromophos-ethyl	4824-78-6	0.10	µg/L		<0.10	<0.10	----	----	----
Butachlor	23184-66-9	0.1	µg/L		<0.1	<0.1	----	----	----
Carbaryl	63-25-2	0.01	µg/L		<0.01	<0.01	----	----	----
Carbendazim (Thiophanate methyl)	10605-21-7	0.1	µg/L		<0.1	<0.1	----	----	----
Carbofenothion	786-19-6	0.02	µg/L		<0.02	<0.02	----	----	----
Carbofuran	1563-66-2	0.01	µg/L		<0.01	<0.01	----	----	----
Carboxin	5234-68-4	0.1	µg/L		<0.1	<0.1	----	----	----
Carfentrazone-ethyl	128639-02-1	0.1	µg/L		<0.1	<0.1	----	----	----
Chlorantraniliprole	500008-45-7	0.1	µg/L		<0.1	<0.1	----	----	----
Chlorfenvinphos	470-90-6	0.02	µg/L		<0.02	<0.02	----	----	----
Chloroxuron	1982-47-4	0.1	µg/L		<0.1	<0.1	----	----	----
Chlorpyrifos	2921-88-2	0.02	µg/L		<0.02	<0.02	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S1	S2	----	----	----
			Client sampling date / time	06-Jun-2019 10:00	06-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1917456-001	ES1917456-002	--------	--------	--------
				Result	Result	----	----	----
EP234: Multiresidue Pesticides (ESI Positive) - Continued								
Chlorpyrifos-methyl	5598-13-0	0.1	µg/L	<0.2	<0.2	----	----	----
Chlorsulfuron	64902-72-3	0.2	µg/L	<0.2	<0.2	----	----	----
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	----	----	----
Cyanazine	21725-46-2	0.02	µg/L	<0.02	<0.02	----	----	----
Cyproconazole	94361-06-5	0.02	µg/L	<0.02	<0.02	----	----	----
Cyprodinil	121552-61-2	0.01	µg/L	<0.01	<0.01	----	----	----
Cyromazine	66215-27-8	0.05	µg/L	<0.05	<0.05	----	----	----
Demeton-O	298-03-0	0.02	µg/L	<0.02	<0.02	----	----	----
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	----	----	----
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	----	----	----
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	----	----	----
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	----	----	----
Dichlobenil	1194-65-6	0.1	µg/L	<0.1	<0.1	----	----	----
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	----	----	----
Diclofop-methyl	51338-27-3	0.05	µg/L	<0.05	<0.05	----	----	----
Difenoconazole	119446-68-3	0.02	µg/L	<0.02	<0.02	----	----	----
Diflubenzuron	35367-38-5	0.1	µg/L	<0.1	<0.1	----	----	----
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	----	----	----
Diphenamid	957-51-7	0.1	µg/L	<0.1	<0.1	----	----	----
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	----	----	----
Diuron	330-54-1	0.02	µg/L	**0.04**	**0.05**	----	----	----
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	----	----	----
EPTC	759-94-4	0.1	µg/L	<0.1	<0.1	----	----	----
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	----	----	----
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	----	----	----
Etridiazole	2593-15-9	0.5	µg/L	<0.5	<0.5	----	----	----
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	----	----	----
Fenarimol	60168-88-9	0.02	µg/L	<0.02	<0.02	----	----	----
Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	<10	----	----	----
Fenitrothion	122-14-5	2	µg/L	<2	<2	----	----	----
Fenoxycarb	79127-80-3	0.1	µg/L	<0.1	<0.1	----	----	----
Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	----	----	----
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	----	----	----
Flamprop methyl	52756-25-9	0.1	µg/L	<0.1	<0.1	----	----	----
Fluometuron	2164-17-2	0.01	µg/L	<0.01	<0.01	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S1	S2	----	----	----
				Client sampling date / time	06-Jun-2019 10:00	06-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1917456-001	ES1917456-002	--------	--------	--------
					Result	Result	----	----	----
EP234: Multiresidue Pesticides (ESI Positive) - Continued									
Flusilazole	85509-19-9	0.02	µg/L		<0.02	<0.02	----	----	----
Formothion	2540-82-1	20	µg/L		<20	<20	----	----	----
Fosetyl Aluminium	39148-24-8	10	µg/L		<10	<10	----	----	----
Haloxyfop	69806-34-4	0.1	µg/L		<0.1	<0.1	----	----	----
Hexaconazole	79983-71-4	0.02	µg/L		<0.02	<0.02	----	----	----
Hexazinone	51235-04-2	0.02	µg/L		<0.02	<0.02	----	----	----
Imazapyr	94795-74-1	10.0	µg/L		<10.0	<10.0	----	----	----
Indoxacarb	173584-44-6	0.1	µg/L		<0.1	<0.1	----	----	----
Iodosulfuron methyl	144550-36-7	0.1	µg/L		<0.1	<0.1	----	----	----
Irgarol	28159-98-0	0.002	µg/L		<0.002	<0.002	----	----	----
Isoproturon	34123-59-6	0.1	µg/L		<0.1	<0.1	----	----	----
Malathion	121-75-5	0.02	µg/L		<0.02	<0.02	----	----	----
Metalaxyl	57837-19-1	0.1	µg/L		<0.1	<0.1	----	----	----
Metalaxyl-M	70630-17-0	0.1	µg/L		<0.1	<0.1	----	----	----
Metaldehyde	108-62-3	10	µg/L		<10	<10	----	----	----
Methidathion	950-37-8	0.1	µg/L		<0.1	<0.1	----	----	----
Methiocarb	2032-65-7	0.01	µg/L		<0.01	<0.01	----	----	----
Methomyl	16752-77-5	0.01	µg/L		<0.01	<0.01	----	----	----
Metolachlor	51218-45-2	0.01	µg/L		<0.01	<0.01	----	----	----
Metribuzin	21087-64-9	0.02	µg/L		<0.02	<0.02	----	----	----
Mevinphos	7786-34-7	0.02	µg/L		<0.02	<0.02	----	----	----
Molinate	2212-67-1	0.1	µg/L		<0.1	<0.1	----	----	----
Monocrotophos	6923-22-4	0.02	µg/L		<0.02	<0.02	----	----	----
Myclobutanil	88671-89-0	0.1	µg/L		<0.1	<0.1	----	----	----
Naftalofos	1491-41-4	1.0	µg/L		<1.0	<1.0	----	----	----
Napropamide	15299-99-7	0.1	µg/L		<0.1	<0.1	----	----	----
Nitralin	4726-14-1	0.1	µg/L		<0.1	<0.1	----	----	----
Norflurazon	27314-13-2	0.1	µg/L		<0.1	<0.1	----	----	----
Novaluron	116714-46-6	0.1	µg/L		<0.1	<0.1	----	----	----
Omethoate	1113-02-6	0.01	µg/L		<0.01	<0.01	----	----	----
Oxamyl	23135-22-0	0.01	µg/L		<0.01	<0.01	----	----	----
Oxyfluorfen	42874-03-3	1.0	µg/L		<1.0	<1.0	----	----	----
Paclobutrazole	76738-62-0	0.05	µg/L		<0.05	<0.05	----	----	----
Parathion	56-38-2	0.2	µg/L		<0.2	<0.2	----	----	----
Parathion-methyl	298-00-0	0.5	µg/L		<0.5	<0.5	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S1	S2	----	----	----
			Client sampling date / time	06-Jun-2019 10:00	06-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1917456-001	ES1917456-002	--------	--------	--------
				Result	Result	----	----	----
EP234: Multiresidue Pesticides (ESI Positive) - Continued								
Pebulate	1114-71-2	0.1	µg/L	<0.1	<0.1	----	----	----
Penconazole	66246-88-6	0.01	µg/L	<0.01	<0.01	----	----	----
Pendimethalin	40487-42-1	0.05	µg/L	<0.05	<0.05	----	----	----
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	----	----	----
Pirimicarb	23103-98-2	0.1	µg/L	<0.1	<0.1	----	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	----	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	----	----	----
Prochloraz	67747-09-5	0.1	µg/L	<0.1	<0.1	----	----	----
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	----	----	----
Promecarb	2631-37-0	0.1	µg/L	<0.1	<0.1	----	----	----
Prometryn	7287-19-6	0.01	µg/L	<0.01	<0.01	----	----	----
Propachlor	1918-16-7	0.1	µg/L	<0.1	<0.1	----	----	----
Propamocarb	24579-73-5	0.1	µg/L	<0.1	<0.1	----	----	----
Propargite	2312-35-8	0.1	µg/L	<0.1	<0.1	----	----	----
Propazine	139-40-2	0.01	µg/L	<0.01	<0.01	----	----	----
Propiconazole	60207-90-1	0.05	µg/L	<0.05	<0.05	----	----	----
Propyzamide	23950-58-5	0.1	µg/L	<0.1	<0.1	----	----	----
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	----	----	----
Pyraclostrobin	175013-18-0	0.1	µg/L	<0.1	<0.1	----	----	----
Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	----	----	----
Pyrimethanil	53112-28-0	0.02	µg/L	<0.02	<0.02	----	----	----
Pyriproxyfen	95737-68-1	0.1	µg/L	<0.1	<0.1	----	----	----
Pyroxsulam	422556-08-9	0.1	µg/L	<0.1	<0.1	----	----	----
Quinclorac	84087-01-4	0.1	µg/L	<0.1	<0.1	----	----	----
Rimsulfuron	122931-48-0	0.1	µg/L	<0.1	<0.1	----	----	----
Siduron	1982-49-6	0.1	µg/L	<0.1	<0.1	----	----	----
Simazine	122-34-9	0.02	µg/L	<0.02	<0.02	----	----	----
Spirotetramat	203313-25-1	0.1	µg/L	<0.1	<0.1	----	----	----
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	----	----	----
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	----	----	----
Tebuconazole	107534-96-3	0.01	µg/L	<0.01	<0.01	----	----	----
Tebuthiuron	34014-18-1	0.02	µg/L	<0.02	<0.02	----	----	----
Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	----	----	----
Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	----	----	----
Terbuthylazine	5915-41-3	0.01	µg/L	<0.01	<0.01	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S1	S2	----	----	----
				Client sampling date / time	06-Jun-2019 10:00	06-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1917456-001	ES1917456-002	--------	--------	--------
					Result	Result	----	----	----
EP234: Multiresidue Pesticides (ESI Positive) - Continued									
Terbutryn	886-50-0	0.01	µg/L		<0.01	<0.01	----	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L		<0.01	<0.01	----	----	----
Tetraconazole	112281-77-3	0.1	µg/L		<0.1	<0.1	----	----	----
Thiamethoxam	153719-23-4	0.02	µg/L		<0.02	<0.02	----	----	----
Thiobencarb	28249-77-6	0.01	µg/L		<0.01	<0.01	----	----	----
Thiodicarb	59669-26-0	0.01	µg/L		<0.01	<0.01	----	----	----
Thiometon	640-15-3	0.5	µg/L		<0.5	<0.5	----	----	----
Toltrazuril	69004-03-1	0.5	µg/L		<0.5	<0.5	----	----	----
Triadimefon	43121-43-3	0.1	µg/L		<0.1	<0.1	----	----	----
Triadimenol	55219-65-3	0.1	µg/L		<0.1	<0.1	----	----	----
Triazophos	24017-47-8	0.005	µg/L		<0.005	<0.005	----	----	----
Trichlorfon	52-68-6	0.02	µg/L		<0.02	<0.02	----	----	----
Trichloronate	327-98-0	0.5	µg/L		<0.5	<0.5	----	----	----
Trifloxystrobin	141517-21-7	0.1	µg/L		<0.1	<0.1	----	----	----
Trifloxysulfuron-sodium	199119-58-9	0.1	µg/L		<0.1	<0.1	----	----	----
Trifluralin	1582-09-8	10.0	µg/L		<10.0	<10.0	----	----	----
Trinexapac Ethyl	95266-40-3	1	µg/L		<1	<1	----	----	----
Vernolate	1929-77-7	0.1	µg/L		<0.1	<0.1	----	----	----
EP234I: Miscellaneous (ESI Positive Mode) Pesticides									
2-Aminobenzimidazole	934-32-7	0.01	µg/L		<0.01	<0.01	----	----	----
Imidacloprid	----	0.01	µg/L		<0.01	<0.01	----	----	----
EP244: Phenolic Endocrine Disrupting Compounds (EDC)									
4-n-Nonylphenol	104-40-5	2	µg/L		<20	<20	----	----	----
Bisphenol A	80-05-7	2	µg/L		<20	<20	----	----	----
Diethylstilbestrol	56-53-1	2	µg/L		<20	<20	----	----	----
4-t-Octylphenol	140-66-9	2	µg/L		<20	<20	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		**106**	**80.5**	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		**91.1**	**95.4**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		**84.7**	**91.7**	----	----	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	1	%		**122**	**118**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S1	S2	----	----	----
				Client sampling date / time	06-Jun-2019 10:00	06-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1917456-001	ES1917456-002	--------	--------	--------
					Result	Result	----	----	----
EP074S: VOC Surrogates - Continued									
Toluene-D8	2037-26-5	1	%		105	100	----	----	----
4-Bromofluorobenzene	460-00-4	1	%		103	97.5	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		27.1	27.1	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		66.6	67.0	----	----	----
2.4.6-Tribromophenol	118-79-6	1.0	%		40.8	38.1	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		74.9	69.3	----	----	----
Anthracene-d10	1719-06-8	1.0	%		87.4	77.2	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		90.1	88.5	----	----	----
EP075S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	2	%		44.8	42.0	----	----	----
Phenol-d6	13127-88-3	2	%		37.7	35.2	----	----	----
2-Chlorophenol-D4	93951-73-6	2	%		70.5	65.6	----	----	----
2.4.6-Tribromophenol	118-79-6	2	%		48.8	37.6	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	2	%		71.6	66.2	----	----	----
1.2-Dichlorobenzene-D4	2199-69-1	2	%		57.7	52.3	----	----	----
2-Fluorobiphenyl	321-60-8	2	%		72.4	66.3	----	----	----
Anthracene-d10	1719-06-8	2	%		87.7	80.5	----	----	----
4-Terphenyl-d14	1718-51-0	2	%		97.0	90.0	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		117	114	----	----	----
Toluene-D8	2037-26-5	2	%		103	97.9	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		96.7	91.9	----	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	5	%		70.9	73.4	----	----	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2.4-Dichlorophenyl Acetic Acid	19719-28-9	10	%		71.5	76.6	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		116	112	----	----	----
13C8-PFOA	----	0.02	%		78.1	68.4	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	29	129
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	67	111
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	67	111
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	125
Toluene-D8	2037-26-5	69	127
4-Bromofluorobenzene	460-00-4	75	123
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP075S: Acid Extractable Surrogates			
2-Fluorophenol	367-12-4	10	117
Phenol-d6	13127-88-3	10	69
2-Chlorophenol-D4	93951-73-6	21	130
2.4.6-Tribromophenol	118-79-6	10	151
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	142
1.2-Dichlorobenzene-D4	2199-69-1	24	121
2-Fluorobiphenyl	321-60-8	27	135
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	21	123
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128
EP090S: Organotin Surrogate			
Tripropyltin	----	24	116
EP202S: Phenoxyacetic Acid Herbicide Surrogate			
2.4-Dichlorophenyl Acetic Acid	19719-28-9	64	140
EP231S: PFAS Surrogate			

Sub-Matrix: **WATER**

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

CERTIFICATE OF ANALYSIS

Client	**INNERWEST COUNCIL**	**Laboratory :**	Environmental Division Sydney		
Contact	S KHAN	**Contact**	CUSTOMER.SERVICES.ES	**Work Order:**	**ES1990025**
Address:	SYDNEY SYDNEY	**Address:**	277-289 Woodpark Road Smithfield NSW 2164 Australia		
Project	Parramatta Rive Risk Assesement	**Quote #**	----	**Received:**	4 Jun 2019
Order #	- Not provided -			**Issued**	17 Jun 2019
C-O-C #	- Not provided -				
Site	- Not provided -				
E-mail	S.khan@unsw.edu.au	**E-mail**	ALSEnviro.Sydney@alsglobal.com	**Number of Samples**	
Phone	- Not provided -	**Phone**	+61-2-8784 8555	**Received:**	2
Fax	- Not provided -	**Fax**	+61-2-8784 8500	**Analysed:**	2

Notes
LOR = Limit of reporting
I-TEF = International toxic equivalency factor
I-TEQ = International toxic equivalence
WHO-TEF = World Health Organistaion toxic equivalency factor
WHO-TEQ = World Health Organisation toxic equivalence

1 I -TEQ(zero) and WHO-TEQ(zero) calculated treating <LOR as zero concentration
2 I -TEQ(0.5 LOR) and WHO-TEQ(0.5 zero) calculated treating <LOR as 0.5 LoR concentration
3 I-TEQ(LOR) and WHO-TEQ(LOR) calculated treating <LOR as LoR concentration
4 Totals LORs are calculated by multiplying the number of peaks by the individual LOR per compound
5 13C12 Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency.

T = tetra
Pe = penta
Hx = hexa
Hp =hepta
O = octa
CDD, dioxin = chlorinated dibenzo-p-dioxin
CDF, furan = chlorinated dibenzofuran

Work order specific comments

Samples analysed 'as received', results reported on 'dry weight' basis.

Samples S1, S2: Lower than the standard sample volume was available for these samples. The LOR is raised based on the volume available.

ALSE - Excellence in Analytical Testing

NATA Accredited Laboratory - 825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IED 17025

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)

Client	: INNERWEST COUNCIL	**Work Order**	: ES1990025
Project	: Parramatta Rive Risk Assesement	**ALS Quote Reference**	: ----

ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: ES1990025001
Client Sample ID: S1

Qc Lot Number: 4537331
Sample Matrix: WATER

Date Sampled: 06-Jun-2019
Date Extracted: 11-Jun-2019
Date Analysed: 11-Jun-2019

Compound	Conc pg/L	LOR pg/L	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<9.3	9.3	1	0.00	4.63	9.26	1	0.00	4.63	9.26	90.4
12378-PeCDD	<46.3	46.3	1	0.00	23.15	46.30	0.5	0.00	11.57	23.15	91.8
123478-HxCDD	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	49.4
123678-HxCDD	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	70.4
123789-HxCDD	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	-
1234678-HpCDD	<46.3	46.3	0.01	0.00	0.23	0.46	0.01	0.00	0.23	0.46	67.2
OCDD	367.0	185.2	0.0003	0.11	0.11	0.11	0.001	0.37	0.37	0.37	50.0
2378-TCDF	<9.3	9.3	0.1	0.00	0.46	0.93	0.1	0.00	0.46	0.93	69.8
12378-PeCDF	<46.3	46.3	0.03	0.00	0.69	1.39	0.05	0.00	1.16	2.31	79.1
23478-PeCDF	<46.3	46.3	0.3	0.00	6.94	13.89	0.5	0.00	11.57	23.15	86.1
123478-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	39.8
123678-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	65.0
234678-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	61.3
123789-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	62.1
1234678-HpCDF	<46.3	46.3	0.01	0.00	0.23	0.46	0.01	0.00	0.23	0.46	42.9
1234789-HpCDF	<46.3	46.3	0.01	0.00	0.23	0.46	0.01	0.00	0.23	0.46	58.5
OCDF	<92.6	92.6	0.0003	0.00	0.01	0.03	0.001	0.00	0.05	0.09	-
Total TEQ	-	-	-	0.11	52.90	105.69	-	0.37	46.71	93.05	-

Group Totals	Conc pg/L	LOR$_4$ pg/L	No. of Peaks
Tetra-Dioxins	<9.3	9.3	1
Penta-Dioxins	<46.3	46.3	1
Hexa-Dioxins	<46.3	46.3	1
Hepta-Dioxins	<92.6	92.6	2
Octa-Dioxin	367.0	185.2	1
Tetra-Furans	<9.3	9.3	1
Penta-Furans	<46.3	46.3	1
Hexa-Furans	<46.3	46.3	1
Hepta-Furans	<46.3	46.3	1
Octa-Furan	<92.6	92.6	1
S **PCDD/Fs**	367.0		

Client	: INNERWEST COUNCIL	**Work Order**	: ES1990025
Project	: Parramatta Rive Risk Assesement	**ALS Quote Reference**	: ----

ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: ES1990025002
Client Sample ID: S2

Qc Lot Number: 4537332
Sample Matrix: WATER

Date Sampled: 06-Jun-2019
Date Extracted: 11-Jun-2019
Date Analysed: 11-Jun-2019

Compound	Conc pg/L	LOR pg/L	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<9.3	9.3	1	0.00	4.63	9.26	1	0.00	4.63	9.26	86.4
12378-PeCDD	<46.3	46.3	1	0.00	23.15	46.30	0.5	0.00	11.57	23.15	102.6
123478-HxCDD	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	53.8
123678-HxCDD	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	78.1
123789-HxCDD	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	-
1234678-HpCDD	<46.3	46.3	0.01	0.00	0.23	0.46	0.01	0.00	0.23	0.46	72.1
OCDD	337.0	185.2	0.0003	0.10	0.10	0.10	0.001	0.34	0.34	0.34	46.0
2378-TCDF	<9.3	9.3	0.1	0.00	0.46	0.93	0.1	0.00	0.46	0.93	76.8
12378-PeCDF	<46.3	46.3	0.03	0.00	0.69	1.39	0.05	0.00	1.16	2.31	95.3
23478-PeCDF	<46.3	46.3	0.3	0.00	6.94	13.89	0.5	0.00	11.57	23.15	96.9
123478-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	44.4
123678-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	69.8
234678-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	64.0
123789-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	67.9
1234678-HpCDF	<46.3	46.3	0.01	0.00	0.23	0.46	0.01	0.00	0.23	0.46	44.7
1234789-HpCDF	<46.3	46.3	0.01	0.00	0.23	0.46	0.01	0.00	0.23	0.46	64.1
OCDF	<92.6	92.6	0.0003	0.00	0.01	0.03	0.001	0.00	0.05	0.09	-
Total TEQ	-	-	-	0.10	52.89	105.68	-	0.34	46.68	93.02	-

Group Totals	Conc pg/L	LOR$_4$ pg/L	No. of Peaks
Tetra-Dioxins	<9.3	9.3	1
Penta-Dioxins	<46.3	46.3	1
Hexa-Dioxins	<46.3	46.3	1
Hepta-Dioxins	<92.6	92.6	2
Octa-Dioxin	337.0	185.2	1
Tetra-Furans	<9.3	9.3	1
Penta-Furans	<46.3	46.3	1
Hexa-Furans	<46.3	46.3	1
Hepta-Furans	<46.3	46.3	1
Octa-Furan	<92.6	92.6	1
S **PCDD/Fs**	337.0		

Australian Government
National Measurement Institute

CERTIFICATE OF ANALYSIS # DAU19_193

Client	ALS Environmental 277-284 Woodpark Road Smithfield NSW 2164	**Job No.**	AUSL01/190611
		Sampled by	Client
		Date Sampled	not specified
		Date Received	11-Jun-19
Contact	Uma Nagendiram		

The results relate only to the sample(s) tested.

Method AUTL_03 **Date Reported** 2-Jul-2019

Details

The method is for determination of tri through deca-brominated diphenyl ethers (PBDEs) in aqueous samples by high resolution gas chromatography/high resolution mass spectrometry (HRGC/HRMS). All results are corrected for labelled surrogates.

Prior to extraction, the sample is spiked with a range of isotopically labelled surrogate standards. Clean up is effected by partitioning with sulphuric acid then distilled water. Further purification is performed using column chromatography on acid and base modified silica gels plus basic alumina.

Immediately prior to injection, internal standards are added to each extract, and an aliquot of the extract is injected into the GC. The analytes are separated by the GC and detected by a high-resolution (>10,000) mass spectrometer.

Authorisation

Nino Piro
Senior Chemist
Australian Ultra Trace Laboratory

Robert Crough
Chemist
Australian Ultra Trace Laboratory

Sample Details : Job No. AUSL01/190611

Laboratory Reg. No.	Client Sample Ref.	Matrix	Description
N19/015021	S1	Aqueous	Water
N19/015022	S2	Aqueous	Water

Project Details

Project Name	*Not specified*
Project Number	*Work Order No. ES1917456 / Purchase Order 409274*

Key

Analytes

BDE 17	2,2,'4-Tribromodiphenyl ether
BDE 28 + 33	2,4,4'-Tribromodiphenyl ether + 2',3,4-Tribromodiphenyl ether
BDE 30	2,4,6-Tribromodiphenyl ether
BDE 47	2,2',4,4'-Tetrabromodiphenyl ether
BDE 49	2,2,'4,5'-Tetrabromodiphenyl ether
BDE 66	2,3',4,4'-Tetrabromodiphenyl ether
BDE 71	2,3,'4',6-Tetrabromodiphenyl ether
BDE 77	3,3',4,4'-Tetrabromodiphenyl ether
BDE 85	2,2',3,4,4'-Pentabromodiphenyl ether
BDE 99	2,2',4,4',5-Pentabromodiphenyl ether
BDE 100	2,2',4,4',6-Pentabromodiphenyl ether
BDE 119	2,3',4,4',6-Pentabromodiphenyl ether
BDE 126	3,3',4,4',5-Pentabromodiphenyl ether
BDE 138 + 166	2,2',3,4,4',5'-Hexabromodiphenyl ether + 2,3,4,4',5,6-Hexabromodiphenyl ether
BDE 139	2,2',3,4,4',6-Hexabromodiphenyl ether
BDE 140	2,2',3,4,4',6'-Hexabromodiphenyl ether
BDE 153	2,2',4,4',5,5'-Hexabromodiphenyl ether
BDE 154	2,2',4,4',5,6'-Hexabromodiphenyl ether
BDE 156 + 169	2,3,3',4,4',5-Hexabromodiphenyl ether + 3,3',4,4',5,5'-Hexabromodiphenyl ether
BB 153	2,2',4,4',5,5'-Hexabromobiphenyl
BDE 171	2,2',3,3',4,4',6-Heptabromodiphenyl ether
BDE 180	2,2',3,4,4',5,5'-Heptabromodiphenyl ether
BDE 183	2,2',3,4,4',5',6-Heptabromodiphenyl ether
BDE 184	2,2',3,4,4',6,6'-Heptabromodiphenyl ether
BDE 191	2,3,3',4,4',5',6-Heptabromodiphenyl ether
BDE 196	2,2',3,3',4,4',5,6'-Octabromodiphenyl ether
BDE 197	2,2',3,3',4,4',6,6'-Octabromodiphenyl ether
BDE 201	2,2',3,3',4,5',6,6'-Octabromodiphenyl ether
BDE 203	2,2',3,4,4',5,5',6-Octabromodiphenyl ether
BDE 204	2,2',3,4,4',5,6,6'-Octabromodiphenyl ether
BDE 205	2,3,3',4,4',5,5',6-Octabromodiphenyl ether
BDE 206	2,2',3,3',4,4',5,5',6-Nonabromodiphenyl ether
BDE 207	2,2',3,3',4,4',5,6,6'-Nonabromodiphenyl ether
BDE 208	2,2',3,3',4,5,5',6,6'-Nonabromodiphenyl ether
BDE 209	2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether

Units & Abbreviations

ng/kg	nanograms per kilogram
<	level less than limit of detection (LOD)
Surrogate Recovery	percentage recovery for $^{13}C_{12}$ labelled surrogate standard
⚐	Laboratory surrogate recovery outside normal acceptance criteria (25 - 125%)

Results : Job No. AUSL01/190611

Laboratory Reg. No.	N19/015021	**Date Extracted**	14-Jun-19
Client Sample Ref.	S1	**DB5 Analysis**	26-Jun-19
Matrix	Aqueous		
Description	Water		

PBDE Congener	Level ng/kg	Labelled Surrogate recovery	
BDE 17	<0.007		
BDE 28 + 33	<0.02	60	
BDE 30	<0.008		
BDE 47	<0.06	81	
BDE 49	<0.004		
BDE 66	<0.005		
BDE 71	<0.004		
BDE 77	<0.003	91	
BDE 85	<0.006		
BDE 99	<0.03	82	
BDE 100	<0.008	79	
BDE 119	<0.006		
BDE 126	<0.004	100	
BDE 138 + 166	<0.007		
BDE 139	<0.006		
BDE 140	<0.006		
BDE 153	<0.006	88	
BDE 154	<0.005	81	
BDE 156 + 169	<0.006	84	
BB 153	<0.006	83	
BDE 171	<0.006		
BDE 180	<0.006		
BDE 183	<0.01	80	
BDE 184	<0.005		
BDE 191	<0.005		
BDE 196	<0.009		
BDE 197	<0.006	89	
BDE 201	<0.005		
BDE 203	<0.01		
BDE 204	<0.006		
BDE 205	<0.01	58	
BDE 206	<0.01		
BDE 207	<0.02	99	
BDE 208	<0.02		
BDE 209	<0.2	35	

Summary Results		
Sum of PBDE congeners		
Excluding LOD values	0	ng/kg

Results : Job No. AUSL01/190611

Laboratory Reg. No.	N19/015022	**Date Extracted**	14-Jun-19
Client Sample Ref.	S2	**DB5 Analysis**	26-Jun-19
Matrix	Aqueous		
Description	Water		

PBDE Congener	Level ng/kg	Labelled Surrogate recovery	
BDE 17	<0.009		
BDE 28 + 33	<0.008	49	
BDE 30	<0.01		
BDE 47	<0.04	73	
BDE 49	<0.004		
BDE 66	<0.005		
BDE 71	<0.004		
BDE 77	<0.003	85	
BDE 85	<0.006		
BDE 99	<0.02	79	
BDE 100	<0.007	72	
BDE 119	<0.006		
BDE 126	<0.004	92	
BDE 138 + 166	<0.007		
BDE 139	<0.006		
BDE 140	<0.006		
BDE 153	<0.009	81	
BDE 154	<0.005	78	
BDE 156 + 169	<0.006	80	
BB 153	<0.006	80	
BDE 171	<0.006		
BDE 180	<0.006		
BDE 183	<0.03	76	
BDE 184	<0.005		
BDE 191	<0.005		
BDE 196	<0.02		
BDE 197	<0.02	86	
BDE 201	<0.007		
BDE 203	<0.02		
BDE 204	<0.008		
BDE 205	<0.02	51	
BDE 206	<0.03		
BDE 207	<0.07	92	
BDE 208	<0.03		
BDE 209	<0.5	27	

Summary Results		
Sum of PBDE congeners		
Excluding LOD values	0	ng/kg

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1918074**	Page	: 1 of 20
Client	: **INNER WEST COUNCIL**	Laboratory	: Environmental Division Sydney
Contact	: AMOS BRANCH	Contact	: Customer Services ES
Address	: PO Box 14 Petersham 2019	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: Parramatta River Risk Assessment	Date Samples Received	: 12-Jun-2019 17:45
Order number	:	Date Analysis Commenced	: 13-Jun-2019
C-O-C number	: ----	Issue Date	: 30-Jul-2019 17:22
Sampler	: ----		
Site	: ----		
Quote number	: SY/284/19		
No. of samples received	: 2		
No. of samples analysed	: 2		

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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Santusha Pandra	Organic Chemist	Brisbane Organics, Stafford, QLD

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.

- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EG020: LOR's have been raised due to matrix interference. (High Total Dissolved Solids)
- EP090S: High LCS recovery deemed acceptable as all associated analyte results are less than LOR.
- EP075: 'Sum of PAH' is the sum of the USEPA 16 priority PAHs

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S3	S4	----	----	----
			Client sampling date / time	12-Jun-2019 09:30	12-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1918074-001	ES1918074-002	--------	--------	--------
				Result	Result	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	8	14	----	----	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.010	----	----	----
Boron	7440-42-8	0.05	mg/L	4.17	4.29	----	----	----
Barium	7440-39-3	0.001	mg/L	<0.010	<0.010	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.010	<0.010	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0010	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.010	<0.010	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.010	<0.010	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.010	<0.010	----	----	----
Manganese	7439-96-5	0.001	mg/L	<0.010	<0.010	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.010	<0.010	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.010	<0.010	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.10	<0.10	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.10	<0.10	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.052	<0.052	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5	----	----	----
beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5	----	----	----
gamma-BHC	58-89-9	0.5	µg/L	<0.5	<0.5	----	----	----
delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S3	S4	----	----	----
			Client sampling date / time	12-Jun-2019 09:30	12-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1918074-001	ES1918074-002	--------	--------	--------
				Result	Result	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued								
Endrin	72-20-8	0.5	µg/L	<0.5	<0.5	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	----	----	----
4.4`-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	----	----	----
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	----	----	----
^ **Total Chlordane (sum)**	----	0.5	µg/L	<0.5	<0.5	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.5	µg/L	<0.5	<0.5	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----
Toluene	108-88-3	1	µg/L	<1	<1	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S3	S4	----	----	----
				Client sampling date / time	12-Jun-2019 09:30	12-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1918074-001	ES1918074-002	--------	--------	--------
					Result	Result	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
Ethylbenzene	100-41-4	1	µg/L		<1	<1	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	1	µg/L		<1	<1	----	----	----
Styrene	100-42-5	1	µg/L		<1	<1	----	----	----
ortho-Xylene	95-47-6	1	µg/L		<1	<1	----	----	----
Isopropylbenzene	98-82-8	1	µg/L		<1	<1	----	----	----
n-Propylbenzene	103-65-1	1	µg/L		<1	<1	----	----	----
1.3.5-Trimethylbenzene	108-67-8	1	µg/L		<1	<1	----	----	----
sec-Butylbenzene	135-98-8	1	µg/L		<1	<1	----	----	----
1.2.4-Trimethylbenzene	95-63-6	1	µg/L		<1	<1	----	----	----
tert-Butylbenzene	98-06-6	1	µg/L		<1	<1	----	----	----
p-Isopropyltoluene	99-87-6	1	µg/L		<1	<1	----	----	----
n-Butylbenzene	104-51-8	1	µg/L		<1	<1	----	----	----
^ Total Xylenes	----	1	µg/L		<1	<1	----	----	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	10	µg/L		<10	<10	----	----	----
2-Butanone (MEK)	78-93-3	10	µg/L		<10	<10	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L		<10	<10	----	----	----
2-Hexanone (MBK)	591-78-6	10	µg/L		<10	<10	----	----	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	1	µg/L		<1	<1	----	----	----
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	1	µg/L		<1	<1	----	----	----
1.2-Dichloropropane	78-87-5	1	µg/L		<1	<1	----	----	----
cis-1.3-Dichloropropylene	10061-01-5	2	µg/L		<2	<2	----	----	----
trans-1.3-Dichloropropylene	10061-02-6	2	µg/L		<2	<2	----	----	----
1.2-Dibromoethane (EDB)	106-93-4	1	µg/L		<1	<1	----	----	----
^ 1.3-Dichloropropylene (cis & trans)	----	2	µg/L		<2	<2	----	----	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	10	µg/L		<10	<10	----	----	----
Chloromethane	74-87-3	10	µg/L		<10	<10	----	----	----
Vinyl chloride	75-01-4	0.2	µg/L		<0.2	<0.2	----	----	----
Bromomethane	74-83-9	10	µg/L		<10	<10	----	----	----
Chloroethane	75-00-3	10	µg/L		<10	<10	----	----	----
Trichlorofluoromethane	75-69-4	10	µg/L		<10	<10	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S3	S4	----	----	----
			Client sampling date / time	12-Jun-2019 09:30	12-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1918074-001	ES1918074-002	--------	--------	--------
				Result	Result	----	----	----
EP074E: Halogenated Aliphatic Compounds - Continued								
1.1-Dichloroethene	75-35-4	1	µg/L	<1	<1	----	----	----
Iodomethane	74-88-4	1	µg/L	<1	<1	----	----	----
Methylene chloride	75-09-2	2	µg/L	<2	<2	----	----	----
trans-1.2-Dichloroethene	156-60-5	1	µg/L	<1	<1	----	----	----
1.1-Dichloroethane	75-34-3	1	µg/L	<1	<1	----	----	----
cis-1.2-Dichloroethene	156-59-2	1	µg/L	<1	<1	----	----	----
1.1.1-Trichloroethane	71-55-6	1	µg/L	<1	<1	----	----	----
1.1-Dichloropropylene	563-58-6	1	µg/L	<1	<1	----	----	----
Carbon Tetrachloride	56-23-5	1	µg/L	<1	<1	----	----	----
1.2-Dichloroethane	107-06-2	1	µg/L	<1	<1	----	----	----
Trichloroethene	79-01-6	1	µg/L	<1	<1	----	----	----
Dibromomethane	74-95-3	1	µg/L	<1	<1	----	----	----
1.1.2-Trichloroethane	79-00-5	1	µg/L	<1	<1	----	----	----
1.3-Dichloropropane	142-28-9	1	µg/L	<1	<1	----	----	----
Tetrachloroethene	127-18-4	1	µg/L	<1	<1	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	1	µg/L	<1	<1	----	----	----
trans-1.4-Dichloro-2-butene	110-57-6	1	µg/L	<1	<1	----	----	----
cis-1.4-Dichloro-2-butene	1476-11-5	1	µg/L	<1	<1	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	1	µg/L	<1	<1	----	----	----
1.2.3-Trichloropropane	96-18-4	1	µg/L	<1	<1	----	----	----
Pentachloroethane	76-01-7	1	µg/L	<1	<1	----	----	----
1.2-Dibromo-3-chloropropane	96-12-8	1	µg/L	<1	<1	----	----	----
Hexachlorobutadiene	87-68-3	0.5	µg/L	<0.5	<0.5	----	----	----
Bromochloromethane	74-97-5	1	µg/L	<1	<1	----	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	1	µg/L	<1	<1	----	----	----
Bromobenzene	108-86-1	1	µg/L	<1	<1	----	----	----
2-Chlorotoluene	95-49-8	1	µg/L	<1	<1	----	----	----
4-Chlorotoluene	106-43-4	1	µg/L	<1	<1	----	----	----
1.3-Dichlorobenzene	541-73-1	1	µg/L	<1	<1	----	----	----
1.4-Dichlorobenzene	106-46-7	0.1	µg/L	<0.1	<0.1	----	----	----
1.2-Dichlorobenzene	95-50-1	1	µg/L	<1	<1	----	----	----
1.2.4-Trichlorobenzene	120-82-1	1	µg/L	<1	<1	----	----	----
1.2.3-Trichlorobenzene	87-61-6	1	µg/L	<1	<1	----	----	----
^ Sum of Trichlorobenzenes	----	1	µg/L	<1	<1	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S3	S4	----	----	----
			Client sampling date / time	12-Jun-2019 09:30	12-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1918074-001	ES1918074-002	--------	--------	--------
				Result	Result	----	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	1	µg/L	<1	<1	----	----	----
Bromodichloromethane	75-27-4	1	µg/L	<1	<1	----	----	----
Dibromochloromethane	124-48-1	1	µg/L	<1	<1	----	----	----
Bromoform	75-25-2	1	µg/L	<1	<1	----	----	----
^ Total Trihalomethanes	----	1	µg/L	<1	<1	----	----	----
EP074H: Naphthalene								
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	----	----	----
2.4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	----	----	----
2.4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	----	----	----
2.6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	----	----	----
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	----	----	----
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S3	S4	----	----	----
			Client sampling date / time	12-Jun-2019 09:30	12-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1918074-001	ES1918074-002	--------	--------	--------
				Result	Result	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons								
2-Methylnaphthalene	91-57-6	2	µg/L	<2	<2	----	----	----
2-Chloronaphthalene	91-58-7	2	µg/L	<2	<2	----	----	----
N-2-Fluorenyl Acetamide	53-96-3	2	µg/L	<2	<2	----	----	----
7.12-Dimethylbenz(a)anthracene	57-97-6	2	µg/L	<2	<2	----	----	----
3-Methylcholanthrene	56-49-5	2	µg/L	<2	<2	----	----	----
EP075C: Phthalate Esters								
Dimethyl phthalate	131-11-3	2	µg/L	<2	<2	----	----	----
Diethyl phthalate	84-66-2	2	µg/L	<2	<2	----	----	----
Di-n-butyl phthalate	84-74-2	2	µg/L	<2	<2	----	----	----
Butyl benzyl phthalate	85-68-7	2	µg/L	<2	<2	----	----	----
bis(2-ethylhexyl) phthalate	117-81-7	10	µg/L	<10	<10	----	----	----
Di-n-octylphthalate	117-84-0	2	µg/L	<2	<2	----	----	----
EP075D: Nitrosamines								
N-Nitrosomethylethylamine	10595-95-6	2	µg/L	<2	<2	----	----	----
N-Nitrosodiethylamine	55-18-5	2	µg/L	<2	<2	----	----	----
N-Nitrosopyrrolidine	930-55-2	4	µg/L	<4	<4	----	----	----
N-Nitrosomorpholine	59-89-2	2	µg/L	<2	<2	----	----	----
N-Nitrosodi-n-propylamine	621-64-7	2	µg/L	<2	<2	----	----	----
N-Nitrosopiperidine	100-75-4	2	µg/L	<2	<2	----	----	----
N-Nitrosodibutylamine	924-16-3	2	µg/L	<2	<2	----	----	----
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	4	µg/L	<4	<4	----	----	----
Methapyrilene	91-80-5	2	µg/L	<2	<2	----	----	----
EP075E: Nitroaromatics and Ketones								
2-Picoline	109-06-8	2	µg/L	<2	<2	----	----	----
Acetophenone	98-86-2	2	µg/L	<2	<2	----	----	----
Nitrobenzene	98-95-3	2	µg/L	<2	<2	----	----	----
Isophorone	78-59-1	2	µg/L	<2	<2	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S3	S4	----	----	----
			Client sampling date / time	12-Jun-2019 09:30	12-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1918074-001	ES1918074-002	--------	--------	--------
				Result	Result	----	----	----
EP075E: Nitroaromatics and Ketones - Continued								
2.6-Dinitrotoluene	606-20-2	4	µg/L	<4	<4	----	----	----
2.4-Dinitrotoluene	121-14-2	4	µg/L	<4	<4	----	----	----
1-Naphthylamine	134-32-7	2	µg/L	<2	<2	----	----	----
4-Nitroquinoline-N-oxide	56-57-5	2	µg/L	<2	<2	----	----	----
5-Nitro-o-toluidine	99-55-8	2	µg/L	<2	<2	----	----	----
Azobenzene	103-33-3	2	µg/L	<2	<2	----	----	----
1.3.5-Trinitrobenzene	99-35-4	2	µg/L	<2	<2	----	----	----
Phenacetin	62-44-2	2	µg/L	<2	<2	----	----	----
4-Aminobiphenyl	92-67-1	2	µg/L	<2	<2	----	----	----
Pentachloronitrobenzene	82-68-8	2	µg/L	<2	<2	----	----	----
Pronamide	23950-58-5	2	µg/L	<2	<2	----	----	----
Dimethylaminoazobenzene	60-11-7	2	µg/L	<2	<2	----	----	----
Chlorobenzilate	510-15-6	2	µg/L	<2	<2	----	----	----
EP075F: Haloethers								
Bis(2-chloroethyl) ether	111-44-4	2	µg/L	<2	<2	----	----	----
Bis(2-chloroethoxy) methane	111-91-1	2	µg/L	<2	<2	----	----	----
4-Chlorophenyl phenyl ether	7005-72-3	2	µg/L	<2	<2	----	----	----
4-Bromophenyl phenyl ether	101-55-3	2	µg/L	<2	<2	----	----	----
EP075G: Chlorinated Hydrocarbons								
1.3-Dichlorobenzene	541-73-1	2	µg/L	<2	<2	----	----	----
1.4-Dichlorobenzene	106-46-7	2	µg/L	<2	<2	----	----	----
1.2-Dichlorobenzene	95-50-1	2	µg/L	<2	<2	----	----	----
Hexachloroethane	67-72-1	2	µg/L	<2	<2	----	----	----
1.2.4-Trichlorobenzene	120-82-1	2	µg/L	<2	<2	----	----	----
Hexachloropropylene	1888-71-7	2	µg/L	<2	<2	----	----	----
Hexachlorobutadiene	87-68-3	2	µg/L	<2	<2	----	----	----
Hexachlorocyclopentadiene	77-47-4	10	µg/L	<10	<10	----	----	----
Pentachlorobenzene	608-93-5	2	µg/L	<2	<2	----	----	----
Hexachlorobenzene (HCB)	118-74-1	4	µg/L	<4	<4	----	----	----
EP075H: Anilines and Benzidines								
Aniline	62-53-3	2	µg/L	<2	<2	----	----	----
4-Chloroaniline	106-47-8	2	µg/L	<2	<2	----	----	----
2-Nitroaniline	88-74-4	4	µg/L	<4	<4	----	----	----
3-Nitroaniline	99-09-2	4	µg/L	<4	<4	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S3	S4	----	----	----
			Client sampling date / time	12-Jun-2019 09:30	12-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1918074-001	ES1918074-002	--------	--------	--------
				Result	Result	----	----	----
EP075H: Anilines and Benzidines - Continued								
Dibenzofuran	132-64-9	2	µg/L	<2	<2	----	----	----
4-Nitroaniline	100-01-6	2	µg/L	<2	<2	----	----	----
Carbazole	86-74-8	2	µg/L	<2	<2	----	----	----
3.3`-Dichlorobenzidine	91-94-1	2	µg/L	<2	<2	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	2	µg/L	<2	<2	----	----	----
beta-BHC	319-85-7	2	µg/L	<2	<2	----	----	----
gamma-BHC	58-89-9	2	µg/L	<2	<2	----	----	----
delta-BHC	319-86-8	2	µg/L	<2	<2	----	----	----
Heptachlor	76-44-8	2	µg/L	<2	<2	----	----	----
Aldrin	309-00-2	2	µg/L	<2	<2	----	----	----
Heptachlor epoxide	1024-57-3	2	µg/L	<2	<2	----	----	----
alpha-Endosulfan	959-98-8	2	µg/L	<2	<2	----	----	----
4.4`-DDE	72-55-9	2	µg/L	<2	<2	----	----	----
Dieldrin	60-57-1	2	µg/L	<2	<2	----	----	----
Endrin	72-20-8	2	µg/L	<2	<2	----	----	----
beta-Endosulfan	33213-65-9	2	µg/L	<2	<2	----	----	----
4.4`-DDD	72-54-8	2	µg/L	<2	<2	----	----	----
Endosulfan sulfate	1031-07-8	2	µg/L	<2	<2	----	----	----
4.4`-DDT	50-29-3	4	µg/L	<4	<4	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	4	µg/L	<4	<4	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	4	µg/L	<4	<4	----	----	----
EP075J: Organophosphorus Pesticides								
Dichlorvos	62-73-7	2	µg/L	<2	<2	----	----	----
Dimethoate	60-51-5	2	µg/L	<2	<2	----	----	----
Diazinon	333-41-5	2	µg/L	<2	<2	----	----	----
Chlorpyrifos-methyl	5598-13-0	2	µg/L	<2	<2	----	----	----
Malathion	121-75-5	2	µg/L	<2	<2	----	----	----
Fenthion	55-38-9	2	µg/L	<2	<2	----	----	----
Chlorpyrifos	2921-88-2	2	µg/L	<2	<2	----	----	----
Pirimphos-ethyl	23505-41-1	2	µg/L	<2	<2	----	----	----
Chlorfenvinphos	470-90-6	2	µg/L	<2	<2	----	----	----
Prothiofos	34643-46-4	2	µg/L	<2	<2	----	----	----
Ethion	563-12-2	2	µg/L	<2	<2	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S3	S4	----	----	----
				Client sampling date / time	12-Jun-2019 09:30	12-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1918074-001	ES1918074-002	--------	--------	--------
					Result	Result	----	----	----
EP075J: Organophosphorus Pesticides - Continued									
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	----	----	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	----	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	----	----	----
Toluene	108-88-3	2	µg/L		<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	----	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	----	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	----	----	----
EP090: Organotin Compounds (Soluble)									
Monobutyltin	78763-54-9	5	ngSn/L		<5	<5	----	----	----
Dibutyltin	1002-53-5	5	ngSn/L		<5	<5	----	----	----
Tributyltin	56573-85-4	2	ngSn/L		<2	<2	----	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS									
4-Chlorophenoxy acetic acid	122-88-3	10	µg/L		<10	<10	----	----	----
2.4-DB	94-82-6	10	µg/L		<10	<10	----	----	----
Dicamba	1918-00-9	10	µg/L		<10	<10	----	----	----
Mecoprop	93-65-2	10	µg/L		<10	<10	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S3	S4	----	----	----
				Client sampling date / time	12-Jun-2019 09:30	12-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1918074-001	ES1918074-002	--------	--------	--------
					Result	Result	----	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS - Continued									
MCPA	94-74-6	10	µg/L		<10	<10	----	----	----
2.4-DP	120-36-5	10	µg/L		<10	<10	----	----	----
2.4-D	94-75-7	10	µg/L		<10	<10	----	----	----
Triclopyr	55335-06-3	10	µg/L		<10	<10	----	----	----
Silvex (2.4.5-TP/Fenoprop)	93-72-1	10	µg/L		<10	<10	----	----	----
2.4.5-T	93-76-5	10	µg/L		<10	<10	----	----	----
MCPB	94-81-5	10	µg/L		<10	<10	----	----	----
Picloram	1918-02-1	10	µg/L		<10	<10	----	----	----
Clopyralid	1702-17-6	10	µg/L		<10	<10	----	----	----
Fluroxypyr	69377-81-7	10	µg/L		<10	<10	----	----	----
2.6-D	575-90-6	10	µg/L		<10	<10	----	----	----
2.4.6-T	575-89-3	10	µg/L		<10	<10	----	----	----
EP204: Glyphosate and AMPA									
Glyphosate	1071-83-6	10	µg/L		<10	<10	----	----	----
AMPA	1066-51-9	10	µg/L		<10	<10	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.05	<0.05	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.05	<0.05	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.05	<0.05	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.2	<0.2	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.05	<0.05	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.05	<0.05	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.05	<0.05	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.05	<0.05	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S3	S4	----	----	----
			Client sampling date / time	12-Jun-2019 09:30	12-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1918074-001	ES1918074-002	--------	--------	--------
				Result	Result	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
EP231P: PFAS Sums								
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.05	<0.05	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.05	<0.05	----	----	----
EP234: Multiresidue Pesticides (ESI Positive)								
3-Hydroxy Carbofuran	16655-82-6	0.02	µg/L	<0.02	<0.02	----	----	----
Abamectin	71751-41-2	0.1	µg/L	<0.1	<0.1	----	----	----
Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	----	----	----
Alachlor	15972-60-8	0.1	µg/L	<0.1	<0.1	----	----	----
Aldicarb	116-06-3	0.05	µg/L	<0.05	<0.05	----	----	----
Ametryn	834-12-8	0.01	µg/L	<0.01	<0.01	----	----	----
Aminopyralid	150114-71-9	0.1	µg/L	<0.1	<0.1	----	----	----
Amitraz	33089-61-1	100	µg/L	<100	<100	----	----	----
Atrazine	1912-24-9	0.01	µg/L	<0.01	<0.01	----	----	----
Atrazine-desethyl	6190-65-4	0.1	µg/L	<0.1	<0.1	----	----	----
Atrazine-desisopropyl	1007-28-9	0.1	µg/L	<0.1	<0.1	----	----	----
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	----	----	----
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	----	----	----
Azoxystrobin	131860-33-8	0.1	µg/L	<0.1	<0.1	----	----	----
Bendiocarb	22781-23-3	0.10	µg/L	<0.10	<0.10	----	----	----
Benomyl	17804-35-2	0.01	µg/L	<0.01	<0.01	----	----	----
Bensulfuron methyl	83055-99-6	0.1	µg/L	<0.1	<0.1	----	----	----
Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	----	----	----
Boscalid	188425-85-6	0.1	µg/L	<0.1	<0.1	----	----	----
Bromacil	314-40-9	0.02	µg/L	<0.02	<0.02	----	----	----
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	----	----	----
Butachlor	23184-66-9	0.1	µg/L	<0.1	<0.1	----	----	----
Carbaryl	63-25-2	0.01	µg/L	<0.01	<0.01	----	----	----
Carbendazim (Thiophanate methyl)	10605-21-7	0.1	µg/L	<0.1	<0.1	----	----	----
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	----	----	----
Carbofuran	1563-66-2	0.01	µg/L	<0.01	<0.01	----	----	----
Carboxin	5234-68-4	0.1	µg/L	<0.1	<0.1	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S3	S4	----	----	----
			Client sampling date / time	12-Jun-2019 09:30	12-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1918074-001	ES1918074-002	--------	--------	--------
				Result	Result	----	----	----
EP234: Multiresidue Pesticides (ESI Positive) - Continued								
Carfentrazone-ethyl	128639-02-1	0.1	µg/L	<0.1	<0.1	----	----	----
Chlorantraniliprole	500008-45-7	0.1	µg/L	<0.1	<0.1	----	----	----
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	----	----	----
Chloroxuron	1982-47-4	0.1	µg/L	<0.1	<0.1	----	----	----
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.1	µg/L	<0.2	<0.2	----	----	----
Chlorsulfuron	64902-72-3	0.2	µg/L	<0.2	<0.2	----	----	----
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	----	----	----
Cyanazine	21725-46-2	0.02	µg/L	<0.02	<0.02	----	----	----
Cyproconazole	94361-06-5	0.02	µg/L	<0.02	<0.02	----	----	----
Cyprodinil	121552-61-2	0.01	µg/L	<0.01	<0.01	----	----	----
Cyromazine	66215-27-8	0.05	µg/L	<0.05	<0.05	----	----	----
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	----	----	----
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	----	----	----
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	----	----	----
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	----	----	----
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	----	----	----
Dichlobenil	1194-65-6	0.1	µg/L	<0.1	<0.1	----	----	----
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	----	----	----
Diclofop-methyl	51338-27-3	0.05	µg/L	<0.05	<0.05	----	----	----
Difenoconazole	119446-68-3	0.02	µg/L	<0.02	<0.02	----	----	----
Diflubenzuron	35367-38-5	0.1	µg/L	<0.1	<0.1	----	----	----
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	----	----	----
Diphenamid	957-51-7	0.1	µg/L	<0.1	<0.1	----	----	----
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	----	----	----
Diuron	330-54-1	0.02	µg/L	**0.02**	**0.03**	----	----	----
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	----	----	----
EPTC	759-94-4	0.1	µg/L	<0.1	<0.1	----	----	----
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	----	----	----
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	----	----	----
Etridiazole	2593-15-9	0.5	µg/L	<0.5	<0.5	----	----	----
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	----	----	----
Fenarimol	60168-88-9	0.02	µg/L	<0.02	<0.02	----	----	----
Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	<10	----	----	----
Fenitrothion	122-14-5	2	µg/L	<2	<2	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S3	S4	----	----	----
			Client sampling date / time	12-Jun-2019 09:30	12-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1918074-001	ES1918074-002	--------	--------	--------
				Result	Result	----	----	----
EP234: Multiresidue Pesticides (ESI Positive) - Continued								
Fenoxycarb	79127-80-3	0.1	µg/L	<0.1	<0.1	----	----	----
Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	----	----	----
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	----	----	----
Flamprop methyl	52756-25-9	0.1	µg/L	<0.1	<0.1	----	----	----
Fluometuron	2164-17-2	0.01	µg/L	<0.01	<0.01	----	----	----
Flusilazole	85509-19-9	0.02	µg/L	<0.02	<0.02	----	----	----
Formothion	2540-82-1	20	µg/L	<20	<20	----	----	----
Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	----	----	----
Haloxyfop	69806-34-4	0.1	µg/L	<0.1	<0.1	----	----	----
Hexaconazole	79983-71-4	0.02	µg/L	<0.02	<0.02	----	----	----
Hexazinone	51235-04-2	0.02	µg/L	<0.02	<0.02	----	----	----
Imazapyr	94795-74-1	10.0	µg/L	<10.0	<10.0	----	----	----
Indoxacarb	173584-44-6	0.1	µg/L	<0.1	<0.1	----	----	----
Iodosulfuron methyl	144550-36-7	0.1	µg/L	<0.1	<0.1	----	----	----
Irgarol	28159-98-0	0.002	µg/L	<0.002	<0.002	----	----	----
Isoproturon	34123-59-6	0.1	µg/L	<0.1	<0.1	----	----	----
Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	----	----	----
Metalaxyl	57837-19-1	0.1	µg/L	<0.1	<0.1	----	----	----
Metalaxyl-M	70630-17-0	0.1	µg/L	<0.1	<0.1	----	----	----
Metaldehyde	108-62-3	10	µg/L	<10	<10	----	----	----
Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	----	----	----
Methiocarb	2032-65-7	0.01	µg/L	<0.01	<0.01	----	----	----
Methomyl	16752-77-5	0.01	µg/L	<0.01	<0.01	----	----	----
Metolachlor	51218-45-2	0.01	µg/L	<0.01	<0.01	----	----	----
Metribuzin	21087-64-9	0.02	µg/L	<0.02	<0.02	----	----	----
Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	----	----	----
Molinate	2212-67-1	0.1	µg/L	<0.1	<0.1	----	----	----
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	----	----	----
Myclobutanil	88671-89-0	0.1	µg/L	<0.1	<0.1	----	----	----
Naftalofos	1491-41-4	1.0	µg/L	<1.0	<1.0	----	----	----
Napropamide	15299-99-7	0.1	µg/L	<0.1	<0.1	----	----	----
Nitralin	4726-14-1	0.1	µg/L	<0.1	<0.1	----	----	----
Norflurazon	27314-13-2	0.1	µg/L	<0.1	<0.1	----	----	----
Novaluron	116714-46-6	0.1	µg/L	<0.1	<0.1	----	----	----
Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S3	S4	----	----	----
			Client sampling date / time	12-Jun-2019 09:30	12-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1918074-001	ES1918074-002	--------	--------	--------
				Result	Result	----	----	----
EP234: Multiresidue Pesticides (ESI Positive) - Continued								
Oxamyl	23135-22-0	0.01	µg/L	<0.01	<0.01	----	----	----
Oxyfluorfen	42874-03-3	1.0	µg/L	<1.0	<1.0	----	----	----
Paclobutrazole	76738-62-0	0.05	µg/L	<0.05	<0.05	----	----	----
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	----	----	----
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	----	----	----
Pebulate	1114-71-2	0.1	µg/L	<0.1	<0.1	----	----	----
Penconazole	66246-88-6	0.01	µg/L	<0.01	<0.01	----	----	----
Pendimethalin	40487-42-1	0.05	µg/L	<0.05	<0.05	----	----	----
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	----	----	----
Pirimicarb	23103-98-2	0.1	µg/L	<0.1	<0.1	----	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	----	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	----	----	----
Prochloraz	67747-09-5	0.1	µg/L	<0.1	<0.1	----	----	----
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	----	----	----
Promecarb	2631-37-0	0.1	µg/L	<0.1	<0.1	----	----	----
Prometryn	7287-19-6	0.01	µg/L	<0.01	<0.01	----	----	----
Propachlor	1918-16-7	0.1	µg/L	<0.1	<0.1	----	----	----
Propamocarb	24579-73-5	0.1	µg/L	<0.1	<0.1	----	----	----
Propargite	2312-35-8	0.1	µg/L	<0.1	<0.1	----	----	----
Propazine	139-40-2	0.01	µg/L	<0.01	<0.01	----	----	----
Propiconazole	60207-90-1	0.05	µg/L	<0.05	<0.05	----	----	----
Propyzamide	23950-58-5	0.1	µg/L	<0.1	<0.1	----	----	----
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	----	----	----
Pyraclostrobin	175013-18-0	0.1	µg/L	<0.1	<0.1	----	----	----
Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	----	----	----
Pyrimethanil	53112-28-0	0.02	µg/L	<0.02	<0.02	----	----	----
Pyriproxyfen	95737-68-1	0.1	µg/L	<0.1	<0.1	----	----	----
Pyroxsulam	422556-08-9	0.1	µg/L	<0.1	<0.1	----	----	----
Quinclorac	84087-01-4	0.1	µg/L	<0.1	<0.1	----	----	----
Rimsulfuron	122931-48-0	0.1	µg/L	<0.1	<0.1	----	----	----
Siduron	1982-49-6	0.1	µg/L	<0.1	<0.1	----	----	----
Simazine	122-34-9	0.02	µg/L	<0.02	<0.02	----	----	----
Spirotetramat	203313-25-1	0.1	µg/L	<0.1	<0.1	----	----	----
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	----	----	----
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S3	S4	----	----	----
				Client sampling date / time	12-Jun-2019 09:30	12-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1918074-001	ES1918074-002	--------	--------	--------
					Result	Result	----	----	----
EP234: Multiresidue Pesticides (ESI Positive) - Continued									
Tebuconazole	107534-96-3	0.01	µg/L		<0.01	<0.01	----	----	----
Tebuthiuron	34014-18-1	0.02	µg/L		<0.02	<0.02	----	----	----
Temephos	3383-96-8	0.02	µg/L		<0.02	<0.02	----	----	----
Terbufos	13071-79-9	0.01	µg/L		<0.01	<0.01	----	----	----
Terbuthylazine	5915-41-3	0.01	µg/L		<0.01	<0.01	----	----	----
Terbutryn	886-50-0	0.01	µg/L		<0.01	<0.01	----	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L		<0.01	<0.01	----	----	----
Tetraconazole	112281-77-3	0.1	µg/L		<0.1	<0.1	----	----	----
Thiamethoxam	153719-23-4	0.02	µg/L		<0.02	<0.02	----	----	----
Thiobencarb	28249-77-6	0.01	µg/L		<0.01	<0.01	----	----	----
Thiodicarb	59669-26-0	0.01	µg/L		<0.01	<0.01	----	----	----
Thiometon	640-15-3	0.5	µg/L		<0.5	<0.5	----	----	----
Toltrazuril	69004-03-1	0.5	µg/L		<0.5	<0.5	----	----	----
Triadimefon	43121-43-3	0.1	µg/L		<0.1	<0.1	----	----	----
Triadimenol	55219-65-3	0.1	µg/L		<0.1	<0.1	----	----	----
Triazophos	24017-47-8	0.005	µg/L		<0.005	<0.005	----	----	----
Trichlorfon	52-68-6	0.02	µg/L		<0.02	<0.02	----	----	----
Trichloronate	327-98-0	0.5	µg/L		<0.5	<0.5	----	----	----
Trifloxystrobin	141517-21-7	0.1	µg/L		<0.1	<0.1	----	----	----
Trifloxysulfuron-sodium	199119-58-9	0.1	µg/L		<0.1	<0.1	----	----	----
Trifluralin	1582-09-8	10.0	µg/L		<10.0	<10.0	----	----	----
Trinexapac Ethyl	95266-40-3	1	µg/L		<1	<1	----	----	----
Vernolate	1929-77-7	0.1	µg/L		<0.1	<0.1	----	----	----
EP234I: Miscellaneous (ESI Positive Mode) Pesticides									
2-Aminobenzimidazole	934-32-7	0.01	µg/L		<0.01	<0.01	----	----	----
Imidacloprid	----	0.01	µg/L		<0.01	<0.01	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		**95.2**	**113**	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		**99.2**	**94.7**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		**81.5**	**88.1**	----	----	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	1	%		**125**	**122**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S3	S4	----	----	----
				Client sampling date / time	12-Jun-2019 09:30	12-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1918074-001	ES1918074-002	--------	--------	--------
					Result	Result	----	----	----
EP074S: VOC Surrogates - Continued									
Toluene-D8	2037-26-5	1	%		108	107	----	----	----
4-Bromofluorobenzene	460-00-4	1	%		103	104	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		22.8	25.9	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		60.6	52.1	----	----	----
2.4.6-Tribromophenol	118-79-6	1.0	%		60.7	49.9	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		71.0	68.5	----	----	----
Anthracene-d10	1719-06-8	1.0	%		71.0	71.5	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		86.4	90.4	----	----	----
EP075S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	2	%		32.0	30.9	----	----	----
Phenol-d6	13127-88-3	2	%		28.8	28.0	----	----	----
2-Chlorophenol-D4	93951-73-6	2	%		53.3	49.1	----	----	----
2.4.6-Tribromophenol	118-79-6	2	%		42.9	43.5	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	2	%		59.8	54.3	----	----	----
1.2-Dichlorobenzene-D4	2199-69-1	2	%		54.4	50.1	----	----	----
2-Fluorobiphenyl	321-60-8	2	%		54.0	54.2	----	----	----
Anthracene-d10	1719-06-8	2	%		78.4	81.0	----	----	----
4-Terphenyl-d14	1718-51-0	2	%		89.8	97.2	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		121	118	----	----	----
Toluene-D8	2037-26-5	2	%		105	104	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		97.4	97.6	----	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	5	%		69.4	84.1	----	----	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2.4-Dichlorophenyl Acetic Acid	19719-28-9	10	%		93.1	89.4	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		109	112	----	----	----
13C8-PFOA	----	0.02	%		111	110	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	29	129
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	67	111
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	67	111
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	125
Toluene-D8	2037-26-5	69	127
4-Bromofluorobenzene	460-00-4	75	123
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP075S: Acid Extractable Surrogates			
2-Fluorophenol	367-12-4	10	117
Phenol-d6	13127-88-3	10	69
2-Chlorophenol-D4	93951-73-6	21	130
2.4.6-Tribromophenol	118-79-6	10	151
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	142
1.2-Dichlorobenzene-D4	2199-69-1	24	121
2-Fluorobiphenyl	321-60-8	27	135
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	21	123
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128
EP090S: Organotin Surrogate			
Tripropyltin	----	24	116
EP202S: Phenoxyacetic Acid Herbicide Surrogate			
2.4-Dichlorophenyl Acetic Acid	19719-28-9	64	140
EP231S: PFAS Surrogate			

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

CERTIFICATE OF ANALYSIS

Client	**INNERWEST COUNCIL**	**Laboratory :**	Environmental Division Sydney		
Contact	AMOS BRANCH	**Contact**	CUSTOMER.SERVICES.ES	**Work Order:**	**ES1990028**
Address:	SYDNEY SYDNEY	**Address:**	277-289 Woodpark Road Smithfield NSW 2164 Australia		
Project	Parramatta Rive Risk Assesement	**Quote #**	----	**Received:**	12 Jun 2019
Order #	- Not provided -			**Issued**	18 Jun 2019
C-O-C #	- Not provided -				
Site	- Not provided -				
E-mail	amos.branch@unsw.edu.au	**E-mail**	ALSEnviro.Sydney@alsglobal.com	**Number of Samples**	
Phone	- Not provided -	**Phone**	+61-2-8784 8555	**Received:**	2
Fax	- Not provided -	**Fax**	+61-2-8784 8500	**Analysed:**	2

Notes
LOR = Limit of reporting
I-TEF = International toxic equivalency factor
I-TEQ = International toxic equivalence
WHO-TEF = World Health Organistaion toxic equivalency factor
WHO-TEQ = World Health Organisation toxic equivalence

1 I -TEQ(zero) and WHO-TEQ(zero) calculated treating <LOR as zero concentration
2 I -TEQ(0.5 LOR) and WHO-TEQ(0.5 zero) calculated treating <LOR as 0.5 LoR concentration
3 I-TEQ(LOR) and WHO-TEQ(LOR) calculated treating <LOR as LoR concentration
4 Totals LORs are calculated by multiplying the number of peaks by the individual LOR per compound
5 13C12 Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency.

T = tetra
Pe = penta
Hx = hexa
Hp =hepta
O = octa
CDD, dioxin = chlorinated dibenzo-p-dioxin
CDF, furan = chlorinated dibenzofuran

Work order specific comments

Samples analysed 'as received', results reported on 'dry weight' basis.

Samples S3, S4: Lower than the standard sample volume was available for these samples. The LOR is raised based on the volume available.

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Accredited for compliance with ISO/IED 17025

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)

Client	: INNERWEST COUNCIL	**Work Order**	: ES1990028
Project	: Parramatta Rive Risk Assesement	**ALS Quote Reference**	: ----

ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: ES1990028001
Client Sample ID: S3

Qc Lot Number: 4537386
Sample Matrix: WATER

Date Sampled: 11-Jun-2019
Date Extracted: 16-Jun-2019
Date Analysed: 16-Jun-2019

Compound	Conc pg/L	LOR pg/L	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<9.3	9.3	1	0.00	4.63	9.26	1	0.00	4.63	9.26	93.9
12378-PeCDD	<46.3	46.3	1	0.00	23.15	46.30	0.5	0.00	11.57	23.15	91.0
123478-HxCDD	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	54.3
123678-HxCDD	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	75.7
123789-HxCDD	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	-
1234678-HpCDD	<46.3	46.3	0.01	0.00	0.23	0.46	0.01	0.00	0.23	0.46	74.9
OCDD	341.0	185.2	0.0003	0.10	0.10	0.10	0.001	0.34	0.34	0.34	52.3
2378-TCDF	<9.3	9.3	0.1	0.00	0.46	0.93	0.1	0.00	0.46	0.93	65.9
12378-PeCDF	<46.3	46.3	0.03	0.00	0.69	1.39	0.05	0.00	1.16	2.31	76.5
23478-PeCDF	<46.3	46.3	0.3	0.00	6.94	13.89	0.5	0.00	11.57	23.15	81.8
123478-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	40.7
123678-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	69.3
234678-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	62.9
123789-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	67.3
1234678-HpCDF	<46.3	46.3	0.01	0.00	0.23	0.46	0.01	0.00	0.23	0.46	45.4
1234789-HpCDF	<46.3	46.3	0.01	0.00	0.23	0.46	0.01	0.00	0.23	0.46	63.5
OCDF	<92.6	92.6	0.0003	0.00	0.01	0.03	0.001	0.00	0.05	0.09	-
Total TEQ	-	-	-	0.10	52.89	105.69	-	0.34	46.68	93.03	-

Group Totals	Conc pg/L	LOR$_4$ pg/L	No. of Peaks
Tetra-Dioxins	<9.3	9.3	1
Penta-Dioxins	<46.3	46.3	1
Hexa-Dioxins	<46.3	46.3	1
Hepta-Dioxins	<92.6	92.6	2
Octa-Dioxin	341.0	185.2	1
Tetra-Furans	<9.3	9.3	1
Penta-Furans	<46.3	46.3	1
Hexa-Furans	<46.3	46.3	1
Hepta-Furans	<46.3	46.3	1
Octa-Furan	<92.6	92.6	1
S **PCDD/Fs**	341.0		

Client	: INNERWEST COUNCIL	**Work Order**	: ES1990028
Project	: Parramatta Rive Risk Assesement	**ALS Quote Reference**	: ----

ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: ES1990028002
Client Sample ID: S4

Qc Lot Number: 4537387
Sample Matrix: WATER

Date Sampled: 11-Jun-2019
Date Extracted: 16-Jun-2019
Date Analysed: 16-Jun-2019

Compound	Conc pg/L	LOR pg/L	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<9.3	9.3	1	0.00	4.63	9.26	1	0.00	4.63	9.26	97.2
12378-PeCDD	<46.3	46.3	1	0.00	23.15	46.30	0.5	0.00	11.57	23.15	105.2
123478-HxCDD	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	54.7
123678-HxCDD	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	77.5
123789-HxCDD	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	-
1234678-HpCDD	<46.3	46.3	0.01	0.00	0.23	0.46	0.01	0.00	0.23	0.46	73.9
OCDD	888.0	185.2	0.0003	0.27	0.27	0.27	0.001	0.89	0.89	0.89	44.8
2378-TCDF	<9.3	9.3	0.1	0.00	0.46	0.93	0.1	0.00	0.46	0.93	77.2
12378-PeCDF	<46.3	46.3	0.03	0.00	0.69	1.39	0.05	0.00	1.16	2.31	90.9
23478-PeCDF	<46.3	46.3	0.3	0.00	6.94	13.89	0.5	0.00	11.57	23.15	94.2
123478-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	46.7
123678-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	67.4
234678-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	63.6
123789-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	71.8
1234678-HpCDF	<46.3	46.3	0.01	0.00	0.23	0.46	0.01	0.00	0.23	0.46	44.4
1234789-HpCDF	<46.3	46.3	0.01	0.00	0.23	0.46	0.01	0.00	0.23	0.46	68.0
OCDF	<92.6	92.6	0.0003	0.00	0.01	0.03	0.001	0.00	0.05	0.09	-
Total TEQ	-	-	-	0.27	53.06	105.85	-	0.89	47.23	93.57	-

Group Totals	Conc pg/L	LOR$_4$ pg/L	No. of Peaks
Tetra-Dioxins	<9.3	9.3	1
Penta-Dioxins	<46.3	46.3	1
Hexa-Dioxins	<324.1	324.1	7
Hepta-Dioxins	97.0	92.6	2
Octa-Dioxin	888.0	185.2	1
Tetra-Furans	<9.3	9.3	1
Penta-Furans	<46.3	46.3	1
Hexa-Furans	<46.3	46.3	1
Hepta-Furans	<46.3	46.3	1
Octa-Furan	<92.6	92.6	1
S **PCDD/Fs**	985.0		

Australian Government
National Measurement Institute

CERTIFICATE OF ANALYSIS # DAU19_194

Client	ALS Environmental 277-284 Woodpark Road Smithfield NSW 2164	**Job No.**	AUSL01/190617
		Sampled by	Client
		Date Sampled	not specified
		Date Received	17-Jun-19
Contact	Jacob Waugh		

The results relate only to the sample(s) tested.

Method AUTL_03 **Date Reported** 5-Jul-2019

Details

The method is for determination of tri through deca-brominated diphenyl ethers (PBDEs) in aqueous samples by high resolution gas chromatography/high resolution mass spectrometry (HRGC/HRMS). All results are corrected for labelled surrogates.

Prior to extraction, the sample is spiked with a range of isotopically labelled surrogate standards. Clean up is effected by partitioning with sulphuric acid then distilled water. Further purification is performed using column chromatography on acid and base modified silica gels plus basic alumina.

Immediately prior to injection, internal standards are added to each extract, and an aliquot of the extract is injected into the GC. The analytes are separated by the GC and detected by a high-resolution (>10,000) mass spectrometer.

Authorisation

Nino Piro
Senior Chemist
Australian Ultra Trace Laboratory

Robert Crough
Chemist
Australian Ultra Trace Laboratory

Sample Details : Job No. AUSL01/190617

Laboratory Reg. No.	Client Sample Ref.	Matrix	Description
N19/015436	S3	Aqueous	Water
N19/015437	S4	Aqueous	Water

Project Details

Project Name	*Not specified*
Project Number	*Work Order No. ES1918074 / Purchase Order 409286*

Key

Analytes	
BDE 17	2,2,'4-Tribromodiphenyl ether
BDE 28 + 33	2,4,4'-Tribromodiphenyl ether + 2',3,4-Tribromodiphenyl ether
BDE 30	2,4,6-Tribromodiphenyl ether
BDE 47	2,2',4,4'-Tetrabromodiphenyl ether
BDE 49	2,2,'4,5'-Tetrabromodiphenyl ether
BDE 66	2,3',4,4'-Tetrabromodiphenyl ether
BDE 71	2,3,'4',6-Tetrabromodiphenyl ether
BDE 77	3,3',4,4'-Tetrabromodiphenyl ether
BDE 85	2,2',3,4,4'-Pentabromodiphenyl ether
BDE 99	2,2',4,4',5-Pentabromodiphenyl ether
BDE 100	2,2',4,4',6-Pentabromodiphenyl ether
BDE 119	2,3',4,4',6-Pentabromodiphenyl ether
BDE 126	3,3',4,4',5-Pentabromodiphenyl ether
BDE 138 + 166	2,2',3,4,4',5'-Hexabromodiphenyl ether + 2,3,4,4',5,6-Hexabromodiphenyl ether
BDE 139	2,2',3,4,4',6-Hexabromodiphenyl ether
BDE 140	2,2',3,4,4',6'-Hexabromodiphenyl ether
BDE 153	2,2',4,4',5,5'-Hexabromodiphenyl ether
BDE 154	2,2',4,4',5,6'-Hexabromodiphenyl ether
BDE 156 + 169	2,3,3',4,4',5-Hexabromodiphenyl ether + 3,3',4,4',5,5'-Hexabromodiphenyl ether
BB 153	2,2',4,4',5,5'-Hexabromobiphenyl
BDE 171	2,2',3,3',4,4',6-Heptabromodiphenyl ether
BDE 180	2,2',3,4,4',5,5'-Heptabromodiphenyl ether
BDE 183	2,2',3,4,4',5',6-Heptabromodiphenyl ether
BDE 184	2,2',3,4,4',6,6'-Heptabromodiphenyl ether
BDE 191	2,3,3',4,4',5',6-Heptabromodiphenyl ether
BDE 196	2,2',3,3',4,4',5,6'-Octabromodiphenyl ether
BDE 197	2,2',3,3',4,4',6,6'-Octabromodiphenyl ether
BDE 201	2,2',3,3',4,5',6,6'-Octabromodiphenyl ether
BDE 203	2,2',3,4,4',5,5',6-Octabromodiphenyl ether
BDE 204	2,2',3,4,4',5,6,6'-Octabromodiphenyl ether
BDE 205	2,3,3',4,4',5,5',6-Octabromodiphenyl ether
BDE 206	2,2',3,3',4,4',5,5',6-Nonabromodiphenyl ether
BDE 207	2,2',3,3',4,4',5,6,6'-Nonabromodiphenyl ether
BDE 208	2,2',3,3',4,5,5',6,6'-Nonabromodiphenyl ether
BDE 209	2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether

Units & Abbreviations	
ng/kg	nanograms per kilogram
<	level less than limit of detection (LOD)
Surrogate Recovery	percentage recovery for $^{13}C_{12}$ labelled surrogate standard
⚐	Laboratory surrogate recovery outside normal acceptance criteria (25 - 125%)

Results : Job No. AUSL01/190617

Laboratory Reg. No.	N19/015436	**Date Extracted**	26-Jun-19
Client Sample Ref.	S3	**DB5 Analysis**	3-Jul-19
Matrix	Aqueous		
Description	Water		

PBDE Congener	Level ng/kg	Labelled Surrogate recovery	
BDE 17	<0.003		
BDE 28 + 33	<0.009	66	
BDE 30	<0.004		
BDE 47	<0.05	83	
BDE 49	<0.002		
BDE 66	<0.002		
BDE 71	<0.002		
BDE 77	<0.001	95	
BDE 85	<0.003		
BDE 99	<0.04	86	
BDE 100	<0.01	84	
BDE 119	<0.003		
BDE 126	<0.002	96	
BDE 138 + 166	<0.004		
BDE 139	<0.004		
BDE 140	<0.003		
BDE 153	<0.01	89	
BDE 154	<0.003	90	
BDE 156 + 169	<0.003	90	
BB 153	<0.005	91	
BDE 171	<0.004		
BDE 180	<0.004		
BDE 183	<0.02	77	
BDE 184	<0.004		
BDE 191	<0.004		
BDE 196	<0.007		
BDE 197	<0.01	84	
BDE 201	<0.005		
BDE 203	<0.009		
BDE 204	<0.007		
BDE 205	<0.01	87	
BDE 206	<0.03		
BDE 207	<0.04	78	
BDE 208	<0.01		
BDE 209	<0.5	69	

Summary Results		
Sum of PBDE congeners		
Excluding LOD values	0	ng/kg

Results : Job No. AUSL01/190617

Laboratory Reg. No.	N19/015437	**Date Extracted**	26-Jun-19
Client Sample Ref.	S4	**DB5 Analysis**	3-Jul-19
Matrix	Aqueous		
Description	Water		

PBDE Congener	Level ng/kg	Labelled Surrogate recovery	
BDE 17	<0.004		
BDE 28 + 33	<0.007	64	
BDE 30	<0.005		
BDE 47	<0.02	82	
BDE 49	<0.002		
BDE 66	<0.002		
BDE 71	<0.002		
BDE 77	<0.001	93	
BDE 85	<0.003		
BDE 99	<0.01	83	
BDE 100	<0.003	81	
BDE 119	<0.003		
BDE 126	<0.002	91	
BDE 138 + 166	<0.004		
BDE 139	<0.003		
BDE 140	<0.003		
BDE 153	<0.003	86	
BDE 154	<0.003	80	
BDE 156 + 169	<0.004	81	
BB 153	<0.004	81	
BDE 171	<0.004		
BDE 180	<0.004		
BDE 183	<0.01	78	
BDE 184	<0.003		
BDE 191	<0.003		
BDE 196	<0.008		
BDE 197	<0.006	90	
BDE 201	<0.004		
BDE 203	<0.008		
BDE 204	<0.006		
BDE 205	<0.009	83	
BDE 206	<0.02		
BDE 207	<0.04	80	
BDE 208	<0.01		
BDE 209	<0.3	58	

Summary Results		
Sum of PBDE congeners		
Excluding LOD values	0	ng/kg

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1919027**	Page	: 1 of 21
Client	: **INNER WEST COUNCIL**	Laboratory	: Environmental Division Sydney
Contact	: AMOS BRANCH	Contact	: Customer Services ES
Address	: PO Box 14 Petersham 2019	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: Parramatta River Risk Assessment	Date Samples Received	: 19-Jun-2019 17:35
Order number	: ----	Date Analysis Commenced	: 21-Jun-2019
C-O-C number	: ----	Issue Date	: 22-Jul-2019 16:49
Sampler	: ----		
Site	: ----		
Quote number	: SY/284/19		
No. of samples received	: 2		
No. of samples analysed	: 2		

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
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Santusha Pandra	Organic Chemist	Brisbane Organics, Stafford, QLD
Uma Nagendiram	Subcontracting Coordinator	WRG Subcontracting, 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.

- EP202: Poor matrix spike recovery due to matrix interference. Confirmed by re-preparation and re-analysis.
- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP244: Limit of Reporting has been raised due to high moisture content, insufficient sample or matrix interference.
- EG020: Some samples were diluted and rerun due to matrix interference and LOR's have been raised accordingly. (High Total Dissolved Solids)
- EP231X: Particular samples required dilution prior to extraction due to matrix interferences. LOR values have been adjusted accordingly.
- EP075: 'Sum of PAH' is the sum of the USEPA 16 priority PAHs
- EDC (EP244) is conducted by ALS Scoresby NATA accreditation no. 992, site no. 989.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S5	S6	----	----	----
			Client sampling date / time	19-Jun-2019 10:30	19-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1919027-001	ES1919027-002	--------	--------	--------
				Result	Result	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	----	----	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.010	----	----	----
Boron	7440-42-8	0.05	mg/L	**4.18**	**3.95**	----	----	----
Barium	7440-39-3	0.001	mg/L	<0.010	<0.010	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.010	<0.010	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0010	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.010	<0.010	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.010	<0.010	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.010	<0.010	----	----	----
Manganese	7439-96-5	0.001	mg/L	<0.010	<0.010	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.010	<0.010	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.010	<0.010	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.10	<0.10	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.10	<0.10	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.052	<0.052	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5	----	----	----
beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5	----	----	----
gamma-BHC	58-89-9	0.5	µg/L	<0.5	<0.5	----	----	----
delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S5	S6	----	----	----
			Client sampling date / time	19-Jun-2019 10:30	19-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1919027-001	ES1919027-002	--------	--------	--------
				Result	Result	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued								
Endrin	72-20-8	0.5	µg/L	<0.5	<0.5	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	----	----	----
4.4`-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	----	----	----
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	----	----	----
^ **Total Chlordane (sum)**	----	0.5	µg/L	<0.5	<0.5	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.5	µg/L	<0.5	<0.5	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----
Toluene	108-88-3	1	µg/L	<1	<1	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S5	S6	----	----	----
				Client sampling date / time	19-Jun-2019 10:30	19-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1919027-001	ES1919027-002	--------	--------	--------
					Result	Result	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
Ethylbenzene	100-41-4	1	µg/L		<1	<1	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	1	µg/L		<1	<1	----	----	----
Styrene	100-42-5	1	µg/L		<1	<1	----	----	----
ortho-Xylene	95-47-6	1	µg/L		<1	<1	----	----	----
Isopropylbenzene	98-82-8	1	µg/L		<1	<1	----	----	----
n-Propylbenzene	103-65-1	1	µg/L		<1	<1	----	----	----
1.3.5-Trimethylbenzene	108-67-8	1	µg/L		<1	<1	----	----	----
sec-Butylbenzene	135-98-8	1	µg/L		<1	<1	----	----	----
1.2.4-Trimethylbenzene	95-63-6	1	µg/L		<1	<1	----	----	----
tert-Butylbenzene	98-06-6	1	µg/L		<1	<1	----	----	----
p-Isopropyltoluene	99-87-6	1	µg/L		<1	<1	----	----	----
n-Butylbenzene	104-51-8	1	µg/L		<1	<1	----	----	----
^ Total Xylenes	----	1	µg/L		<1	<1	----	----	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	10	µg/L		<10	<10	----	----	----
2-Butanone (MEK)	78-93-3	10	µg/L		<10	<10	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L		<10	<10	----	----	----
2-Hexanone (MBK)	591-78-6	10	µg/L		<10	<10	----	----	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	1	µg/L		<1	<1	----	----	----
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	1	µg/L		<1	<1	----	----	----
1.2-Dichloropropane	78-87-5	1	µg/L		<1	<1	----	----	----
cis-1.3-Dichloropropylene	10061-01-5	2	µg/L		<2	<2	----	----	----
trans-1.3-Dichloropropylene	10061-02-6	2	µg/L		<2	<2	----	----	----
1.2-Dibromoethane (EDB)	106-93-4	1	µg/L		<1	<1	----	----	----
^ 1.3-Dichloropropylene (cis & trans)	----	2	µg/L		<2	<2	----	----	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	10	µg/L		<10	<10	----	----	----
Chloromethane	74-87-3	10	µg/L		<10	<10	----	----	----
Vinyl chloride	75-01-4	0.2	µg/L		<0.2	<0.2	----	----	----
Bromomethane	74-83-9	10	µg/L		<10	<10	----	----	----
Chloroethane	75-00-3	10	µg/L		<10	<10	----	----	----
Trichlorofluoromethane	75-69-4	10	µg/L		<10	<10	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S5	S6	----	----	----
			Client sampling date / time	19-Jun-2019 10:30	19-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1919027-001	ES1919027-002	--------	--------	--------
				Result	Result	----	----	----
EP074E: Halogenated Aliphatic Compounds - Continued								
1.1-Dichloroethene	75-35-4	1	µg/L	<1	<1	----	----	----
Iodomethane	74-88-4	1	µg/L	<1	<1	----	----	----
Methylene chloride	75-09-2	2	µg/L	<2	<2	----	----	----
trans-1.2-Dichloroethene	156-60-5	1	µg/L	<1	<1	----	----	----
1.1-Dichloroethane	75-34-3	1	µg/L	<1	<1	----	----	----
cis-1.2-Dichloroethene	156-59-2	1	µg/L	<1	<1	----	----	----
1.1.1-Trichloroethane	71-55-6	1	µg/L	<1	<1	----	----	----
1.1-Dichloropropylene	563-58-6	1	µg/L	<1	<1	----	----	----
Carbon Tetrachloride	56-23-5	1	µg/L	<1	<1	----	----	----
1.2-Dichloroethane	107-06-2	1	µg/L	<1	<1	----	----	----
Trichloroethene	79-01-6	1	µg/L	<1	<1	----	----	----
Dibromomethane	74-95-3	1	µg/L	<1	<1	----	----	----
1.1.2-Trichloroethane	79-00-5	1	µg/L	<1	<1	----	----	----
1.3-Dichloropropane	142-28-9	1	µg/L	<1	<1	----	----	----
Tetrachloroethene	127-18-4	1	µg/L	<1	<1	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	1	µg/L	<1	<1	----	----	----
trans-1.4-Dichloro-2-butene	110-57-6	1	µg/L	<1	<1	----	----	----
cis-1.4-Dichloro-2-butene	1476-11-5	1	µg/L	<1	<1	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	1	µg/L	<1	<1	----	----	----
1.2.3-Trichloropropane	96-18-4	1	µg/L	<1	<1	----	----	----
Pentachloroethane	76-01-7	1	µg/L	<1	<1	----	----	----
1.2-Dibromo-3-chloropropane	96-12-8	1	µg/L	<1	<1	----	----	----
Hexachlorobutadiene	87-68-3	0.5	µg/L	<0.5	<0.5	----	----	----
Bromochloromethane	74-97-5	1	µg/L	<1	<1	----	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	1	µg/L	<1	<1	----	----	----
Bromobenzene	108-86-1	1	µg/L	<1	<1	----	----	----
2-Chlorotoluene	95-49-8	1	µg/L	<1	<1	----	----	----
4-Chlorotoluene	106-43-4	1	µg/L	<1	<1	----	----	----
1.3-Dichlorobenzene	541-73-1	1	µg/L	<1	<1	----	----	----
1.4-Dichlorobenzene	106-46-7	0.1	µg/L	<0.1	<0.1	----	----	----
1.2-Dichlorobenzene	95-50-1	1	µg/L	<1	<1	----	----	----
1.2.4-Trichlorobenzene	120-82-1	1	µg/L	<1	<1	----	----	----
1.2.3-Trichlorobenzene	87-61-6	1	µg/L	<1	<1	----	----	----
^ Sum of Trichlorobenzenes	----	1	µg/L	<1	<1	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S5	S6	----	----	----
			Client sampling date / time	19-Jun-2019 10:30	19-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1919027-001	ES1919027-002	--------	--------	--------
				Result	Result	----	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	1	µg/L	<1	<1	----	----	----
Bromodichloromethane	75-27-4	1	µg/L	<1	<1	----	----	----
Dibromochloromethane	124-48-1	1	µg/L	<1	<1	----	----	----
Bromoform	75-25-2	1	µg/L	<1	<1	----	----	----
^ Total Trihalomethanes	----	1	µg/L	<1	<1	----	----	----
EP074H: Naphthalene								
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	----	----	----
2.4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	----	----	----
2.4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	----	----	----
2.6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	----	----	----
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	----	----	----
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S5	S6	----	----	----
				Client sampling date / time	19-Jun-2019 10:30	19-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1919027-001	ES1919027-002	--------	--------	--------
					Result	Result	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
2-Methylnaphthalene	91-57-6	2	µg/L		<2	<2	----	----	----
2-Chloronaphthalene	91-58-7	2	µg/L		<2	<2	----	----	----
N-2-Fluorenyl Acetamide	53-96-3	2	µg/L		<2	<2	----	----	----
7.12-Dimethylbenz(a)anthracene	57-97-6	2	µg/L		<2	<2	----	----	----
3-Methylcholanthrene	56-49-5	2	µg/L		<2	<2	----	----	----
EP075C: Phthalate Esters									
Dimethyl phthalate	131-11-3	2	µg/L		<2	<2	----	----	----
Diethyl phthalate	84-66-2	2	µg/L		<2	<2	----	----	----
Di-n-butyl phthalate	84-74-2	2	µg/L		<2	<2	----	----	----
Butyl benzyl phthalate	85-68-7	2	µg/L		<2	<2	----	----	----
bis(2-ethylhexyl) phthalate	117-81-7	10	µg/L		<10	<10	----	----	----
Di-n-octylphthalate	117-84-0	2	µg/L		<2	<2	----	----	----
EP075D: Nitrosamines									
N-Nitrosomethylethylamine	10595-95-6	2	µg/L		<2	<2	----	----	----
N-Nitrosodiethylamine	55-18-5	2	µg/L		<2	<2	----	----	----
N-Nitrosopyrrolidine	930-55-2	4	µg/L		<4	<4	----	----	----
N-Nitrosomorpholine	59-89-2	2	µg/L		<2	<2	----	----	----
N-Nitrosodi-n-propylamine	621-64-7	2	µg/L		<2	<2	----	----	----
N-Nitrosopiperidine	100-75-4	2	µg/L		<2	<2	----	----	----
N-Nitrosodibutylamine	924-16-3	2	µg/L		<2	<2	----	----	----
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	4	µg/L		<4	<4	----	----	----
Methapyrilene	91-80-5	2	µg/L		<2	<2	----	----	----
EP075E: Nitroaromatics and Ketones									
2-Picoline	109-06-8	2	µg/L		<2	<2	----	----	----
Acetophenone	98-86-2	2	µg/L		<2	<2	----	----	----
Nitrobenzene	98-95-3	2	µg/L		<2	<2	----	----	----
Isophorone	78-59-1	2	µg/L		<2	<2	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S5	S6	----	----	----
			Client sampling date / time	19-Jun-2019 10:30	19-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1919027-001	ES1919027-002	--------	--------	--------
				Result	Result	----	----	----
EP075E: Nitroaromatics and Ketones - Continued								
2.6-Dinitrotoluene	606-20-2	4	µg/L	<4	<4	----	----	----
2.4-Dinitrotoluene	121-14-2	4	µg/L	<4	<4	----	----	----
1-Naphthylamine	134-32-7	2	µg/L	<2	<2	----	----	----
4-Nitroquinoline-N-oxide	56-57-5	2	µg/L	<2	<2	----	----	----
5-Nitro-o-toluidine	99-55-8	2	µg/L	<2	<2	----	----	----
Azobenzene	103-33-3	2	µg/L	<2	<2	----	----	----
1.3.5-Trinitrobenzene	99-35-4	2	µg/L	<2	<2	----	----	----
Phenacetin	62-44-2	2	µg/L	<2	<2	----	----	----
4-Aminobiphenyl	92-67-1	2	µg/L	<2	<2	----	----	----
Pentachloronitrobenzene	82-68-8	2	µg/L	<2	<2	----	----	----
Pronamide	23950-58-5	2	µg/L	<2	<2	----	----	----
Dimethylaminoazobenzene	60-11-7	2	µg/L	<2	<2	----	----	----
Chlorobenzilate	510-15-6	2	µg/L	<2	<2	----	----	----
EP075F: Haloethers								
Bis(2-chloroethyl) ether	111-44-4	2	µg/L	<2	<2	----	----	----
Bis(2-chloroethoxy) methane	111-91-1	2	µg/L	<2	<2	----	----	----
4-Chlorophenyl phenyl ether	7005-72-3	2	µg/L	<2	<2	----	----	----
4-Bromophenyl phenyl ether	101-55-3	2	µg/L	<2	<2	----	----	----
EP075G: Chlorinated Hydrocarbons								
1.3-Dichlorobenzene	541-73-1	2	µg/L	<2	<2	----	----	----
1.4-Dichlorobenzene	106-46-7	2	µg/L	<2	<2	----	----	----
1.2-Dichlorobenzene	95-50-1	2	µg/L	<2	<2	----	----	----
Hexachloroethane	67-72-1	2	µg/L	<2	<2	----	----	----
1.2.4-Trichlorobenzene	120-82-1	2	µg/L	<2	<2	----	----	----
Hexachloropropylene	1888-71-7	2	µg/L	<2	<2	----	----	----
Hexachlorobutadiene	87-68-3	2	µg/L	<2	<2	----	----	----
Hexachlorocyclopentadiene	77-47-4	10	µg/L	<10	<10	----	----	----
Pentachlorobenzene	608-93-5	2	µg/L	<2	<2	----	----	----
Hexachlorobenzene (HCB)	118-74-1	4	µg/L	<4	<4	----	----	----
EP075H: Anilines and Benzidines								
Aniline	62-53-3	2	µg/L	<2	<2	----	----	----
4-Chloroaniline	106-47-8	2	µg/L	<2	<2	----	----	----
2-Nitroaniline	88-74-4	4	µg/L	<4	<4	----	----	----
3-Nitroaniline	99-09-2	4	µg/L	<4	<4	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S5	S6	----	----	----
				Client sampling date / time	19-Jun-2019 10:30	19-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1919027-001	ES1919027-002	--------	--------	--------
					Result	Result	----	----	----
EP075H: Anilines and Benzidines - Continued									
Dibenzofuran	132-64-9	2	µg/L		<2	<2	----	----	----
4-Nitroaniline	100-01-6	2	µg/L		<2	<2	----	----	----
Carbazole	86-74-8	2	µg/L		<2	<2	----	----	----
3.3`-Dichlorobenzidine	91-94-1	2	µg/L		<2	<2	----	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	2	µg/L		<2	<2	----	----	----
beta-BHC	319-85-7	2	µg/L		<2	<2	----	----	----
gamma-BHC	58-89-9	2	µg/L		<2	<2	----	----	----
delta-BHC	319-86-8	2	µg/L		<2	<2	----	----	----
Heptachlor	76-44-8	2	µg/L		<2	<2	----	----	----
Aldrin	309-00-2	2	µg/L		<2	<2	----	----	----
Heptachlor epoxide	1024-57-3	2	µg/L		<2	<2	----	----	----
alpha-Endosulfan	959-98-8	2	µg/L		<2	<2	----	----	----
4.4`-DDE	72-55-9	2	µg/L		<2	<2	----	----	----
Dieldrin	60-57-1	2	µg/L		<2	<2	----	----	----
Endrin	72-20-8	2	µg/L		<2	<2	----	----	----
beta-Endosulfan	33213-65-9	2	µg/L		<2	<2	----	----	----
4.4`-DDD	72-54-8	2	µg/L		<2	<2	----	----	----
Endosulfan sulfate	1031-07-8	2	µg/L		<2	<2	----	----	----
4.4`-DDT	50-29-3	4	µg/L		<4	<4	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	4	µg/L		<4	<4	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	4	µg/L		<4	<4	----	----	----
EP075J: Organophosphorus Pesticides									
Dichlorvos	62-73-7	2	µg/L		<2	<2	----	----	----
Dimethoate	60-51-5	2	µg/L		<2	<2	----	----	----
Diazinon	333-41-5	2	µg/L		<2	<2	----	----	----
Chlorpyrifos-methyl	5598-13-0	2	µg/L		<2	<2	----	----	----
Malathion	121-75-5	2	µg/L		<2	<2	----	----	----
Fenthion	55-38-9	2	µg/L		<2	<2	----	----	----
Chlorpyrifos	2921-88-2	2	µg/L		<2	<2	----	----	----
Pirimphos-ethyl	23505-41-1	2	µg/L		<2	<2	----	----	----
Chlorfenvinphos	470-90-6	2	µg/L		<2	<2	----	----	----
Prothiofos	34643-46-4	2	µg/L		<2	<2	----	----	----
Ethion	563-12-2	2	µg/L		<2	<2	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S5	S6	----	----	----
				Client sampling date / time	19-Jun-2019 10:30	19-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1919027-001	ES1919027-002	--------	--------	--------
					Result	Result	----	----	----
EP075J: Organophosphorus Pesticides - Continued									
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	----	----	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	<20	----	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	----	----	----
Toluene	108-88-3	2	µg/L		<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	----	----	----
^ **Total Xylenes**	----	2	µg/L		<2	<2	----	----	----
^ **Sum of BTEX**	----	1	µg/L		<1	<1	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	----	----	----
EP090: Organotin Compounds (Soluble)									
Monobutyltin	78763-54-9	5	ngSn/L		<5	<5	----	----	----
Dibutyltin	1002-53-5	5	ngSn/L		<5	<5	----	----	----
Tributyltin	56573-85-4	2	ngSn/L		<2	<2	----	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS									
4-Chlorophenoxy acetic acid	122-88-3	10	µg/L		<10	<10	----	----	----
2.4-DB	94-82-6	10	µg/L		<10	<10	----	----	----
Dicamba	1918-00-9	10	µg/L		<10	<10	----	----	----
Mecoprop	93-65-2	10	µg/L		<10	<10	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S5	S6	----	----	----
				Client sampling date / time	19-Jun-2019 10:30	19-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1919027-001	ES1919027-002	--------	--------	--------
					Result	Result	----	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS - Continued									
MCPA	94-74-6	10	µg/L		<10	<10	----	----	----
2.4-DP	120-36-5	10	µg/L		<10	<10	----	----	----
2.4-D	94-75-7	10	µg/L		<10	<10	----	----	----
Triclopyr	55335-06-3	10	µg/L		<10	<10	----	----	----
Silvex (2.4.5-TP/Fenoprop)	93-72-1	10	µg/L		<10	<10	----	----	----
2.4.5-T	93-76-5	10	µg/L		<10	<10	----	----	----
MCPB	94-81-5	10	µg/L		<10	<10	----	----	----
Picloram	1918-02-1	10	µg/L		<10	<10	----	----	----
Clopyralid	1702-17-6	10	µg/L		<10	<10	----	----	----
Fluroxypyr	69377-81-7	10	µg/L		<10	<10	----	----	----
2.6-D	575-90-6	10	µg/L		<10	<10	----	----	----
2.4.6-T	575-89-3	10	µg/L		<10	<10	----	----	----
EP204: Glyphosate and AMPA									
Glyphosate	1071-83-6	10	µg/L		<10	<10	----	----	----
AMPA	1066-51-9	10	µg/L		<10	<10	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.05	<0.05	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.05	<0.05	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.05	<0.05	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.2	<0.2	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.05	<0.05	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.05	<0.05	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.05	<0.05	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.05	<0.05	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S5	S6	----	----	----
			Client sampling date / time	19-Jun-2019 10:30	19-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1919027-001	ES1919027-002	--------	--------	--------
				Result	Result	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
EP231P: PFAS Sums								
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.05	<0.05	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.05	<0.05	----	----	----
EP234: Multiresidue Pesticides (ESI Positive)								
3-Hydroxy Carbofuran	16655-82-6	0.02	µg/L	<0.02	<0.02	----	----	----
Abamectin	71751-41-2	0.1	µg/L	<0.1	<0.1	----	----	----
Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	----	----	----
Alachlor	15972-60-8	0.1	µg/L	<0.1	<0.1	----	----	----
Aldicarb	116-06-3	0.05	µg/L	<0.05	<0.05	----	----	----
Ametryn	834-12-8	0.01	µg/L	<0.01	<0.01	----	----	----
Aminopyralid	150114-71-9	0.1	µg/L	<0.1	<0.1	----	----	----
Amitraz	33089-61-1	100	µg/L	<100	<100	----	----	----
Atrazine	1912-24-9	0.01	µg/L	<0.01	<0.01	----	----	----
Atrazine-desethyl	6190-65-4	0.1	µg/L	<0.1	<0.1	----	----	----
Atrazine-desisopropyl	1007-28-9	0.1	µg/L	<0.1	<0.1	----	----	----
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	----	----	----
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	----	----	----
Azoxystrobin	131860-33-8	0.1	µg/L	<0.1	<0.1	----	----	----
Bendiocarb	22781-23-3	0.10	µg/L	<0.10	<0.10	----	----	----
Benomyl	17804-35-2	0.01	µg/L	<0.01	<0.01	----	----	----
Bensulfuron methyl	83055-99-6	0.1	µg/L	<0.1	<0.1	----	----	----
Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	----	----	----
Boscalid	188425-85-6	0.1	µg/L	<0.1	<0.1	----	----	----
Bromacil	314-40-9	0.02	µg/L	<0.02	<0.02	----	----	----
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	----	----	----
Butachlor	23184-66-9	0.1	µg/L	<0.1	<0.1	----	----	----
Carbaryl	63-25-2	0.01	µg/L	<0.01	<0.01	----	----	----
Carbendazim (Thiophanate methyl)	10605-21-7	0.1	µg/L	<0.1	<0.1	----	----	----
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	----	----	----
Carbofuran	1563-66-2	0.01	µg/L	<0.01	<0.01	----	----	----
Carboxin	5234-68-4	0.1	µg/L	<0.1	<0.1	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S5	S6	----	----	----
			Client sampling date / time	19-Jun-2019 10:30	19-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1919027-001	ES1919027-002	--------	--------	--------
				Result	Result	----	----	----
EP234: Multiresidue Pesticides (ESI Positive) - Continued								
Carfentrazone-ethyl	128639-02-1	0.1	µg/L	<0.1	<0.1	----	----	----
Chlorantraniliprole	500008-45-7	0.1	µg/L	<0.1	<0.1	----	----	----
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	----	----	----
Chloroxuron	1982-47-4	0.1	µg/L	<0.1	<0.1	----	----	----
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.1	µg/L	<0.2	<0.2	----	----	----
Chlorsulfuron	64902-72-3	0.2	µg/L	<0.2	<0.2	----	----	----
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	----	----	----
Cyanazine	21725-46-2	0.02	µg/L	<0.02	<0.02	----	----	----
Cyproconazole	94361-06-5	0.02	µg/L	<0.02	<0.02	----	----	----
Cyprodinil	121552-61-2	0.01	µg/L	<0.01	<0.01	----	----	----
Cyromazine	66215-27-8	0.05	µg/L	<0.05	<0.05	----	----	----
Demeton-O	298-03-0	0.02	µg/L	<0.02	<0.02	----	----	----
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	----	----	----
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	----	----	----
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	----	----	----
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	----	----	----
Dichlobenil	1194-65-6	0.1	µg/L	<0.1	<0.1	----	----	----
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	----	----	----
Diclofop-methyl	51338-27-3	0.05	µg/L	<0.05	<0.05	----	----	----
Difenoconazole	119446-68-3	0.02	µg/L	<0.02	<0.02	----	----	----
Diflubenzuron	35367-38-5	0.1	µg/L	<0.1	<0.1	----	----	----
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	----	----	----
Diphenamid	957-51-7	0.1	µg/L	<0.1	<0.1	----	----	----
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	----	----	----
Diuron	330-54-1	0.02	µg/L	**0.04**	**0.04**	----	----	----
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	----	----	----
EPTC	759-94-4	0.1	µg/L	<0.1	<0.1	----	----	----
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	----	----	----
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	----	----	----
Etridiazole	2593-15-9	0.5	µg/L	<0.5	<0.5	----	----	----
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	----	----	----
Fenarimol	60168-88-9	0.02	µg/L	<0.02	<0.02	----	----	----
Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	<10	----	----	----
Fenitrothion	122-14-5	2	µg/L	<2	<2	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S5	S6	----	----	----
			Client sampling date / time	19-Jun-2019 10:30	19-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1919027-001	ES1919027-002	--------	--------	--------
				Result	Result	----	----	----
EP234: Multiresidue Pesticides (ESI Positive) - Continued								
Fenoxycarb	79127-80-3	0.1	µg/L	<0.1	<0.1	----	----	----
Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	----	----	----
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	----	----	----
Flamprop methyl	52756-25-9	0.1	µg/L	<0.1	<0.1	----	----	----
Fluometuron	2164-17-2	0.01	µg/L	<0.01	<0.01	----	----	----
Flusilazole	85509-19-9	0.02	µg/L	<0.02	<0.02	----	----	----
Formothion	2540-82-1	20	µg/L	<20	<20	----	----	----
Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	----	----	----
Haloxyfop	69806-34-4	0.1	µg/L	<0.1	<0.1	----	----	----
Hexaconazole	79983-71-4	0.02	µg/L	<0.02	<0.02	----	----	----
Hexazinone	51235-04-2	0.02	µg/L	<0.02	<0.02	----	----	----
Imazapyr	94795-74-1	10.0	µg/L	<10.0	<10.0	----	----	----
Indoxacarb	173584-44-6	0.1	µg/L	<0.1	<0.1	----	----	----
Iodosulfuron methyl	144550-36-7	0.1	µg/L	<0.1	<0.1	----	----	----
Irgarol	28159-98-0	0.002	µg/L	<0.002	<0.002	----	----	----
Isoproturon	34123-59-6	0.1	µg/L	<0.1	<0.1	----	----	----
Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	----	----	----
Metalaxyl	57837-19-1	0.1	µg/L	<0.1	<0.1	----	----	----
Metalaxyl-M	70630-17-0	0.1	µg/L	<0.1	<0.1	----	----	----
Metaldehyde	108-62-3	10	µg/L	<10	<10	----	----	----
Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	----	----	----
Methiocarb	2032-65-7	0.01	µg/L	<0.01	<0.01	----	----	----
Methomyl	16752-77-5	0.01	µg/L	<0.01	<0.01	----	----	----
Metolachlor	51218-45-2	0.01	µg/L	<0.01	<0.01	----	----	----
Metribuzin	21087-64-9	0.02	µg/L	<0.02	<0.02	----	----	----
Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	----	----	----
Molinate	2212-67-1	0.1	µg/L	<0.1	<0.1	----	----	----
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	----	----	----
Myclobutanil	88671-89-0	0.1	µg/L	<0.1	<0.1	----	----	----
Naftalofos	1491-41-4	1.0	µg/L	<1.0	<1.0	----	----	----
Napropamide	15299-99-7	0.1	µg/L	<0.1	<0.1	----	----	----
Nitralin	4726-14-1	0.1	µg/L	<0.1	<0.1	----	----	----
Norflurazon	27314-13-2	0.1	µg/L	<0.1	<0.1	----	----	----
Novaluron	116714-46-6	0.1	µg/L	<0.1	<0.1	----	----	----
Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S5	S6	----	----	----
			Client sampling date / time	19-Jun-2019 10:30	19-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1919027-001	ES1919027-002	--------	--------	--------
				Result	Result	----	----	----
EP234: Multiresidue Pesticides (ESI Positive) - Continued								
Oxamyl	23135-22-0	0.01	µg/L	<0.01	<0.01	----	----	----
Oxyfluorfen	42874-03-3	1.0	µg/L	<1.0	<1.0	----	----	----
Paclobutrazole	76738-62-0	0.05	µg/L	<0.05	<0.05	----	----	----
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	----	----	----
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	----	----	----
Pebulate	1114-71-2	0.1	µg/L	<0.1	<0.1	----	----	----
Penconazole	66246-88-6	0.01	µg/L	<0.01	<0.01	----	----	----
Pendimethalin	40487-42-1	0.05	µg/L	<0.05	<0.05	----	----	----
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	----	----	----
Pirimicarb	23103-98-2	0.1	µg/L	<0.1	<0.1	----	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	----	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	----	----	----
Prochloraz	67747-09-5	0.1	µg/L	<0.1	<0.1	----	----	----
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	----	----	----
Promecarb	2631-37-0	0.1	µg/L	<0.1	<0.1	----	----	----
Prometryn	7287-19-6	0.01	µg/L	<0.01	<0.01	----	----	----
Propachlor	1918-16-7	0.1	µg/L	<0.1	<0.1	----	----	----
Propamocarb	24579-73-5	0.1	µg/L	<0.1	<0.1	----	----	----
Propargite	2312-35-8	0.1	µg/L	<0.1	<0.1	----	----	----
Propazine	139-40-2	0.01	µg/L	<0.01	<0.01	----	----	----
Propiconazole	60207-90-1	0.05	µg/L	<0.05	<0.05	----	----	----
Propyzamide	23950-58-5	0.1	µg/L	<0.1	<0.1	----	----	----
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	----	----	----
Pyraclostrobin	175013-18-0	0.1	µg/L	<0.1	<0.1	----	----	----
Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	----	----	----
Pyrimethanil	53112-28-0	0.02	µg/L	<0.02	<0.02	----	----	----
Pyriproxyfen	95737-68-1	0.1	µg/L	<0.1	<0.1	----	----	----
Pyroxsulam	422556-08-9	0.1	µg/L	<0.1	<0.1	----	----	----
Quinclorac	84087-01-4	0.1	µg/L	<0.1	<0.1	----	----	----
Rimsulfuron	122931-48-0	0.1	µg/L	<0.1	<0.1	----	----	----
Siduron	1982-49-6	0.1	µg/L	<0.1	<0.1	----	----	----
Simazine	122-34-9	0.02	µg/L	<0.02	<0.02	----	----	----
Spirotetramat	203313-25-1	0.1	µg/L	<0.1	<0.1	----	----	----
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	----	----	----
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S5	S6	----	----	----
				Client sampling date / time	19-Jun-2019 10:30	19-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1919027-001	ES1919027-002	--------	--------	--------
					Result	Result	----	----	----
EP234: Multiresidue Pesticides (ESI Positive) - Continued									
Tebuconazole	107534-96-3	0.01	µg/L		<0.01	<0.01	----	----	----
Tebuthiuron	34014-18-1	0.02	µg/L		<0.02	<0.02	----	----	----
Temephos	3383-96-8	0.02	µg/L		<0.02	<0.02	----	----	----
Terbufos	13071-79-9	0.01	µg/L		<0.01	<0.01	----	----	----
Terbuthylazine	5915-41-3	0.01	µg/L		<0.01	<0.01	----	----	----
Terbutryn	886-50-0	0.01	µg/L		<0.01	<0.01	----	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L		<0.01	<0.01	----	----	----
Tetraconazole	112281-77-3	0.1	µg/L		<0.1	<0.1	----	----	----
Thiamethoxam	153719-23-4	0.02	µg/L		<0.02	<0.02	----	----	----
Thiobencarb	28249-77-6	0.01	µg/L		<0.01	<0.01	----	----	----
Thiodicarb	59669-26-0	0.01	µg/L		<0.01	<0.01	----	----	----
Thiometon	640-15-3	0.5	µg/L		<0.5	<0.5	----	----	----
Toltrazuril	69004-03-1	0.5	µg/L		<0.5	<0.5	----	----	----
Triadimefon	43121-43-3	0.1	µg/L		<0.1	<0.1	----	----	----
Triadimenol	55219-65-3	0.1	µg/L		<0.1	<0.1	----	----	----
Triazophos	24017-47-8	0.005	µg/L		<0.005	<0.005	----	----	----
Trichlorfon	52-68-6	0.02	µg/L		<0.02	<0.02	----	----	----
Trichloronate	327-98-0	0.5	µg/L		<0.5	<0.5	----	----	----
Trifloxystrobin	141517-21-7	0.1	µg/L		<0.1	<0.1	----	----	----
Trifloxysulfuron-sodium	199119-58-9	0.1	µg/L		<0.1	<0.1	----	----	----
Trifluralin	1582-09-8	10.0	µg/L		<10.0	<10.0	----	----	----
Trinexapac Ethyl	95266-40-3	1	µg/L		<1	<1	----	----	----
Vernolate	1929-77-7	0.1	µg/L		<0.1	<0.1	----	----	----
EP234I: Miscellaneous (ESI Positive Mode) Pesticides									
2-Aminobenzimidazole	934-32-7	0.01	µg/L		<0.01	<0.01	----	----	----
Imidacloprid	----	0.01	µg/L		<0.01	<0.01	----	----	----
EP244: Phenolic Endocrine Disrupting Compounds (EDC)									
4-n-Nonylphenol	104-40-5	2	µg/L		<20	<20	----	----	----
Bisphenol A	80-05-7	2	µg/L		<20	<20	----	----	----
Diethylstilbestrol	56-53-1	2	µg/L		<20	<20	----	----	----
4-t-Octylphenol	140-66-9	2	µg/L		<20	<20	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		**100**	**110**	----	----	----
EP068S: Organochlorine Pesticide Surrogate									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S5	S6	----	----	----
				Client sampling date / time	19-Jun-2019 10:30	19-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1919027-001	ES1919027-002	--------	--------	--------
					Result	Result	----	----	----
EP068S: Organochlorine Pesticide Surrogate - Continued									
Dibromo-DDE	21655-73-2	0.5	%		76.0	91.0	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		81.7	92.2	----	----	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	1	%		86.1	87.6	----	----	----
Toluene-D8	2037-26-5	1	%		98.9	101	----	----	----
4-Bromofluorobenzene	460-00-4	1	%		94.2	97.3	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		29.4	30.6	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		53.9	59.3	----	----	----
2.4.6-Tribromophenol	118-79-6	1.0	%		62.3	65.6	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		65.5	74.8	----	----	----
Anthracene-d10	1719-06-8	1.0	%		83.8	93.1	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		79.4	87.8	----	----	----
EP075S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	2	%		34.7	35.5	----	----	----
Phenol-d6	13127-88-3	2	%		30.1	31.0	----	----	----
2-Chlorophenol-D4	93951-73-6	2	%		50.8	54.0	----	----	----
2.4.6-Tribromophenol	118-79-6	2	%		20.1	21.2	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	2	%		56.4	62.3	----	----	----
1.2-Dichlorobenzene-D4	2199-69-1	2	%		48.7	51.7	----	----	----
2-Fluorobiphenyl	321-60-8	2	%		55.4	63.3	----	----	----
Anthracene-d10	1719-06-8	2	%		70.7	80.8	----	----	----
4-Terphenyl-d14	1718-51-0	2	%		65.8	76.2	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		90.6	92.5	----	----	----
Toluene-D8	2037-26-5	2	%		93.7	96.3	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		106	111	----	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	5	%		66.2	90.1	----	----	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2.4-Dichlorophenyl Acetic Acid	19719-28-9	10	%		93.0	99.0	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S5	S6	----	----	----
				Client sampling date / time	19-Jun-2019 10:30	19-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1919027-001	ES1919027-002	--------	--------	--------
					Result	Result	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**93.4**	**93.7**	**----**	**----**	**----**
13C8-PFOA	----	0.02	%		**90.7**	**92.2**	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	29	129
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	67	111
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	67	111
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	125
Toluene-D8	2037-26-5	69	127
4-Bromofluorobenzene	460-00-4	75	123
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP075S: Acid Extractable Surrogates			
2-Fluorophenol	367-12-4	10	117
Phenol-d6	13127-88-3	10	69
2-Chlorophenol-D4	93951-73-6	21	130
2.4.6-Tribromophenol	118-79-6	10	151
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	142
1.2-Dichlorobenzene-D4	2199-69-1	24	121
2-Fluorobiphenyl	321-60-8	27	135
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	21	123
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128
EP090S: Organotin Surrogate			
Tripropyltin	----	24	116
EP202S: Phenoxyacetic Acid Herbicide Surrogate			
2.4-Dichlorophenyl Acetic Acid	19719-28-9	64	140
EP231S: PFAS Surrogate			

Sub-Matrix: **WATER**

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

CERTIFICATE OF ANALYSIS

Client	**INNERWEST COUNCIL**	**Laboratory :**	Environmental Division Sydney		
Contact	S KHAN	**Contact**	CUSTOMER.SERVICES.ES	**Work Order:**	**ES1990030**
Address:	SYDNEY SYDNEY	**Address:**	277-289 Woodpark Road Smithfield NSW 2164 Australia		
Project	Parramatta River Risk Assessment	**Quote #**	----	**Received:**	19 Jun 2019
Order #	- Not provided -			**Issued**	28 Jun 2019
C-O-C #	- Not provided -				
Site	- Not provided -				
E-mail	S.khan@unsw.edu.au	**E-mail**	ALSEnviro.Sydney@alsglobal.com	**Number of Samples**	
Phone	- Not provided -	**Phone**	+61-2-8784 8555	**Received:**	2
Fax	- Not provided -	**Fax**	+61-2-8784 8500	**Analysed:**	2

Notes

LOR = Limit of reporting
I-TEF = International toxic equivalency factor
I-TEQ = International toxic equivalence
WHO-TEF = World Health Organistaion toxic equivalency factor
WHO-TEQ = World Health Organisation toxic equivalence

1 I -TEQ(zero) and WHO-TEQ(zero) calculated treating <LOR as zero concentration
2 I -TEQ(0.5 LOR) and WHO-TEQ(0.5 zero) calculated treating <LOR as 0.5 LoR concentration
3 I-TEQ(LOR) and WHO-TEQ(LOR) calculated treating <LOR as LoR concentration
4 Totals LORs are calculated by multiplying the number of peaks by the individual LOR per compound
5 13C12 Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency.

T = tetra
Pe = penta
Hx = hexa
Hp =hepta
O = octa
CDD, dioxin = chlorinated dibenzo-p-dioxin
CDF, furan = chlorinated dibenzofuran

Samples analysed 'as received', results reported on 'dry weight' basis.

ALSE - Excellence in Analytical Testing

NATA Accredited Laboratory - 825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IED 17025

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)

Client	: INNERWEST COUNCIL	**Work Order**	: ES1990030
Project	: Parramatta River Risk Assessment	**ALS Quote Reference**	: ----

ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: ES1990030001
Client Sample ID: S5

Qc Lot Number: 4537517
Sample Matrix: WATER

Date Sampled: 19-Jun-2019
Date Extracted: 27-Jun-2019
Date Analysed: 27-Jun-2019

Compound	Conc pg/L	LOR pg/L	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<4.7	4.7	1	0.00	2.34	4.67	1	0.00	2.34	4.67	86.3
12378-PeCDD	<23.4	23.4	1	0.00	11.68	23.36	0.5	0.00	5.84	11.68	98.6
123478-HxCDD	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	59.2
123678-HxCDD	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	89.1
123789-HxCDD	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	-
1234678-HpCDD	<23.4	23.4	0.01	0.00	0.12	0.23	0.01	0.00	0.12	0.23	70.9
OCDD	<93.5	93.5	0.0003	0.00	0.01	0.03	0.001	0.00	0.05	0.09	40.3
2378-TCDF	<4.7	4.7	0.1	0.00	0.23	0.47	0.1	0.00	0.23	0.47	69.7
12378-PeCDF	<23.4	23.4	0.03	0.00	0.35	0.70	0.05	0.00	0.58	1.17	81.7
23478-PeCDF	<23.4	23.4	0.3	0.00	3.50	7.01	0.5	0.00	5.84	11.68	82.9
123478-HxCDF	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	51.2
123678-HxCDF	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	78.9
234678-HxCDF	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	67.6
123789-HxCDF	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	60.4
1234678-HpCDF	<23.4	23.4	0.01	0.00	0.12	0.23	0.01	0.00	0.12	0.23	50.4
1234789-HpCDF	<23.4	23.4	0.01	0.00	0.12	0.23	0.01	0.00	0.12	0.23	53.7
OCDF	<46.7	46.7	0.0003	0.00	0.01	0.01	0.001	0.00	0.02	0.05	-
Total TEQ	-	-	-	0.00	26.66	53.31	-	0.00	23.43	46.87	-

Group Totals	Conc pg/L	LOR$_4$ pg/L	No. of Peaks
Tetra-Dioxins	<4.7	4.7	1
Penta-Dioxins	<23.4	23.4	1
Hexa-Dioxins	<23.4	23.4	1
Hepta-Dioxins	<23.4	23.4	1
Octa-Dioxin	<93.5	93.5	1
Tetra-Furans	<4.7	4.7	1
Penta-Furans	<23.4	23.4	1
Hexa-Furans	<23.4	23.4	1
Hepta-Furans	<23.4	23.4	1
Octa-Furan	<46.7	46.7	1
S **PCDD/Fs**	0.0		

ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: ES1990030002
Client Sample ID: S6
Qc Lot Number: 4537518
Sample Matrix: WATER
Date Sampled: 19-Jun-2019
Date Extracted: 27-Jun-2019
Date Analysed: 27-Jun-2019

Compound	Conc pg/L	LOR pg/L	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<4.7	4.7	1	0.00	2.34	4.67	1	0.00	2.34	4.67	84.0
12378-PeCDD	<23.4	23.4	1	0.00	11.68	23.36	0.5	0.00	5.84	11.68	99.8
123478-HxCDD	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	59.1
123678-HxCDD	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	83.7
123789-HxCDD	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	-
1234678-HpCDD	<23.4	23.4	0.01	0.00	0.12	0.23	0.01	0.00	0.12	0.23	70.6
OCDD	<93.5	93.5	0.0003	0.00	0.01	0.03	0.001	0.00	0.05	0.09	45.8
2378-TCDF	<4.7	4.7	0.1	0.00	0.23	0.47	0.1	0.00	0.23	0.47	70.7
12378-PeCDF	<23.4	23.4	0.03	0.00	0.35	0.70	0.05	0.00	0.58	1.17	82.7
23478-PeCDF	<23.4	23.4	0.3	0.00	3.50	7.01	0.5	0.00	5.84	11.68	86.4
123478-HxCDF	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	47.2
123678-HxCDF	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	72.1
234678-HxCDF	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	64.2
123789-HxCDF	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	62.1
1234678-HpCDF	<23.4	23.4	0.01	0.00	0.12	0.23	0.01	0.00	0.12	0.23	49.8
1234789-HpCDF	<23.4	23.4	0.01	0.00	0.12	0.23	0.01	0.00	0.12	0.23	59.2
OCDF	<46.7	46.7	0.0003	0.00	0.01	0.01	0.001	0.00	0.02	0.05	-
Total TEQ	-	-	-	0.00	26.66	53.31	-	0.00	23.43	46.87	-

Group Totals	Conc pg/L	LOR$_4$ pg/L	No. of Peaks
Tetra-Dioxins	<4.7	4.7	1
Penta-Dioxins	<23.4	23.4	1
Hexa-Dioxins	<23.4	23.4	1
Hepta-Dioxins	<23.4	23.4	1
Octa-Dioxin	<93.5	93.5	1
Tetra-Furans	<4.7	4.7	1
Penta-Furans	<23.4	23.4	1
Hexa-Furans	<23.4	23.4	1
Hepta-Furans	<23.4	23.4	1
Octa-Furan	<46.7	46.7	1
S **PCDD/Fs**	0.0		

Australian Government
National Measurement Institute

CERTIFICATE OF ANALYSIS # DAU19_195

Client	ALS Environmental 277-284 Woodpark Road Smithfield NSW 2164	**Job No.**	AUSL01/190621
		Sampled by	Client
		Date Sampled	not specified
		Date Received	21-Jun-19
Contact	Jacob Waugh		

The results relate only to the sample(s) tested.

Method AUTL_03 **Date Reported** 5-Jul-2019

Details

The method is for determination of tri through deca-brominated diphenyl ethers (PBDEs) in aqueous samples by high resolution gas chromatography/high resolution mass spectrometry (HRGC/HRMS). All results are corrected for labelled surrogates.

Prior to extraction, the sample is spiked with a range of isotopically labelled surrogate standards. Clean up is effected by partitioning with sulphuric acid then distilled water. Further purification is performed using column chromatography on acid and base modified silica gels plus basic alumina.

Immediately prior to injection, internal standards are added to each extract, and an aliquot of the extract is injected into the GC. The analytes are separated by the GC and detected by a high-resolution (>10,000) mass spectrometer.

Authorisation

Nino Piro
Senior Chemist
Australian Ultra Trace Laboratory

Robert Crough
Chemist
Australian Ultra Trace Laboratory

Sample Details : Job No. AUSL01/190621

Laboratory Reg. No.	Client Sample Ref.	Matrix	Description
N19/015873	S5	Aqueous	Water
N19/015874	S6	Aqueous	Water

Project Details

Project Name	*Not specified*
Project Number	*Work Order No. ES1919027 / Purchase Order 409297*

Key

Analytes

BDE 17	2,2,'4-Tribromodiphenyl ether
BDE 28 + 33	2,4,4'-Tribromodiphenyl ether + 2',3,4-Tribromodiphenyl ether
BDE 30	2,4,6-Tribromodiphenyl ether
BDE 47	2,2',4,4'-Tetrabromodiphenyl ether
BDE 49	2,2,'4,5'-Tetrabromodiphenyl ether
BDE 66	2,3',4,4'-Tetrabromodiphenyl ether
BDE 71	2,3,'4',6-Tetrabromodiphenyl ether
BDE 77	3,3',4,4'-Tetrabromodiphenyl ether
BDE 85	2,2',3,4,4'-Pentabromodiphenyl ether
BDE 99	2,2',4,4',5-Pentabromodiphenyl ether
BDE 100	2,2',4,4',6-Pentabromodiphenyl ether
BDE 119	2,3',4,4',6-Pentabromodiphenyl ether
BDE 126	3,3',4,4',5-Pentabromodiphenyl ether
BDE 138 + 166	2,2',3,4,4',5'-Hexabromodiphenyl ether + 2,3,4,4',5,6-Hexabromodiphenyl ether
BDE 139	2,2',3,4,4',6-Hexabromodiphenyl ether
BDE 140	2,2',3,4,4',6'-Hexabromodiphenyl ether
BDE 153	2,2',4,4',5,5'-Hexabromodiphenyl ether
BDE 154	2,2',4,4',5,6'-Hexabromodiphenyl ether
BDE 156 + 169	2,3,3',4,4',5-Hexabromodiphenyl ether + 3,3',4,4',5,5'-Hexabromodiphenyl ether
BB 153	2,2',4,4',5,5'-Hexabromobiphenyl
BDE 171	2,2',3,3',4,4',6-Heptabromodiphenyl ether
BDE 180	2,2',3,4,4',5,5'-Heptabromodiphenyl ether
BDE 183	2,2',3,4,4',5',6-Heptabromodiphenyl ether
BDE 184	2,2',3,4,4',6,6'-Heptabromodiphenyl ether
BDE 191	2,3,3',4,4',5',6-Heptabromodiphenyl ether
BDE 196	2,2',3,3',4,4',5,6'-Octabromodiphenyl ether
BDE 197	2,2',3,3',4,4',6,6'-Octabromodiphenyl ether
BDE 201	2,2',3,3',4,5',6,6'-Octabromodiphenyl ether
BDE 203	2,2',3,4,4',5,5',6-Octabromodiphenyl ether
BDE 204	2,2',3,4,4',5,6,6'-Octabromodiphenyl ether
BDE 205	2,3,3',4,4',5,5',6-Octabromodiphenyl ether
BDE 206	2,2',3,3',4,4',5,5',6-Nonabromodiphenyl ether
BDE 207	2,2',3,3',4,4',5,6,6'-Nonabromodiphenyl ether
BDE 208	2,2',3,3',4,5,5',6,6'-Nonabromodiphenyl ether
BDE 209	2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether

Units & Abbreviations

ng/kg	nanograms per kilogram
<	level less than limit of detection (LOD)
Surrogate Recovery	percentage recovery for $^{13}C_{12}$ labelled surrogate standard
⚐	Laboratory surrogate recovery outside normal acceptance criteria (25 - 125%)

Results : Job No. AUSL01/190621

Laboratory Reg. No.	N19/015873	**Date Extracted**	26-Jun-19
Client Sample Ref.	S5	**DB5 Analysis**	3-Jul-19
Matrix	Aqueous		
Description	Water		

PBDE Congener	Level ng/kg	Labelled Surrogate recovery	
BDE 17	<0.003		
BDE 28 + 33	<0.005	63	
BDE 30	<0.003		
BDE 47	<0.02	89	
BDE 49	<0.001		
BDE 66	<0.001		
BDE 71	<0.001		
BDE 77	<0.0008	105	
BDE 85	<0.002		
BDE 99	<0.008	101	
BDE 100	<0.002	95	
BDE 119	<0.001		
BDE 126	<0.001	116	
BDE 138 + 166	<0.002		
BDE 139	<0.002		
BDE 140	<0.002		
BDE 153	<0.003	93	
BDE 154	<0.001	95	
BDE 156 + 169	<0.002	101	
BB 153	<0.002	94	
BDE 171	<0.002		
BDE 180	<0.002		
BDE 183	<0.005	80	
BDE 184	<0.002		
BDE 191	<0.002		
BDE 196	<0.003		
BDE 197	<0.002	94	
BDE 201	<0.002		
BDE 203	<0.003		
BDE 204	<0.003		
BDE 205	<0.004	104	
BDE 206	<0.008		
BDE 207	<0.01	81	
BDE 208	<0.005		
BDE 209	<0.1	95	

Summary Results		
Sum of PBDE congeners		
Excluding LOD values	0	ng/kg

Results : Job No. AUSL01/190621

Laboratory Reg. No.	N19/015874	**Date Extracted**	26-Jun-19
Client Sample Ref.	S6	**DB5 Analysis**	3-Jul-19
Matrix	Aqueous		
Description	Water		

PBDE Congener	Level ng/kg	Labelled Surrogate recovery	
BDE 17	<0.003		
BDE 28 + 33	<0.02	69	
BDE 30	<0.004		
BDE 47	<0.1	86	
BDE 49	<0.002		
BDE 66	<0.002		
BDE 71	<0.002		
BDE 77	<0.001	102	
BDE 85	<0.003		
BDE 99	<0.05	95	
BDE 100	<0.02	89	
BDE 119	<0.003		
BDE 126	<0.002	116	
BDE 138 + 166	<0.003		
BDE 139	<0.003		
BDE 140	<0.003		
BDE 153	<0.01	99	
BDE 154	<0.007	87	
BDE 156 + 169	<0.003	98	
BB 153	<0.01	86	
BDE 171	<0.005		
BDE 180	<0.01		
BDE 183	<0.05	81	
BDE 184	<0.004		
BDE 191	<0.003		
BDE 196	<0.03		
BDE 197	<0.03	101	
BDE 201	<0.01		
BDE 203	<0.02		
BDE 204	<0.007		
BDE 205	<0.009	106	
BDE 206	<0.07		
BDE 207	<0.1	86	
BDE 208	<0.04		
BDE 209	<0.7	93	

Summary Results		
Sum of PBDE congeners		
Excluding LOD values	0	ng/kg

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1920000**	Page	: 1 of 21
Client	: **INNER WEST COUNCIL**	Laboratory	: Environmental Division Sydney
Contact	: AMOS BRANCH	Contact	: Customer Services ES
Address	: PO Box 14 Petersham 2019	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: Parramatta River Risk Assessment	Date Samples Received	: 26-Jun-2019 17:30
Order number	: ----	Date Analysis Commenced	: 28-Jun-2019
C-O-C number	: ----	Issue Date	: 22-Jul-2019 17:15
Sampler	: ----		
Site	: ----		
Quote number	: SY/284/19		
No. of samples received	: 2		
No. of samples analysed	: 2		

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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Santusha Pandra	Organic Chemist	Brisbane Organics, Stafford, QLD
Uma Nagendiram	Subcontracting Coordinator	WRG Subcontracting, 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.

- EP090S: High LCS recovery deemed acceptable as all associated analyte results are less than LOR.
- EP202: Poor matrix spike recovery due to matrix interference
- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences.
- EP231: Particular samples required dilution due to sample matrix (conductivity) . LOR values have been adjusted accordingly.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EDC Phenols:Limit of Reporting has been raised due to high moisture content, insufficient sample or matrix interference.
- EP075: 'Sum of PAH' is the sum of the USEPA 16 priority PAHs
- EDC (EP244) is conducted by ALS Scoresby NATA accreditation no. 992, site no. 989.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S7	S8	----	----	----
			Client sampling date / time	26-Jun-2019 10:00	26-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1920000-001	ES1920000-002	--------	--------	--------
				Result	Result	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**25**	**22**	----	----	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.003**	**0.003**	----	----	----
Boron	7440-42-8	0.05	mg/L	**3.40**	**3.47**	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.012**	**0.013**	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	**0.002**	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.004**	**0.008**	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.014**	**0.014**	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.001**	**0.001**	----	----	----
Lead	7439-92-1	0.001	mg/L	**0.002**	**0.010**	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.015**	**0.033**	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5	----	----	----
beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5	----	----	----
gamma-BHC	58-89-9	0.5	µg/L	<0.5	<0.5	----	----	----
delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S7	S8	----	----	----
			Client sampling date / time	26-Jun-2019 10:00	26-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1920000-001	ES1920000-002	--------	--------	--------
				Result	Result	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued								
Endrin	72-20-8	0.5	µg/L	<0.5	<0.5	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	----	----	----
4.4`-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	----	----	----
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	----	----	----
^ **Total Chlordane (sum)**	----	0.5	µg/L	<0.5	<0.5	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.5	µg/L	<0.5	<0.5	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	----	----	----
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----
Toluene	108-88-3	1	µg/L	<1	<1	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S7	S8	----	----	----
				Client sampling date / time	26-Jun-2019 10:00	26-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1920000-001	ES1920000-002	--------	--------	--------
					Result	Result	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
Ethylbenzene	100-41-4	1	µg/L		<1	<1	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	1	µg/L		<1	<1	----	----	----
Styrene	100-42-5	1	µg/L		<1	<1	----	----	----
ortho-Xylene	95-47-6	1	µg/L		<1	<1	----	----	----
Isopropylbenzene	98-82-8	1	µg/L		<1	<1	----	----	----
n-Propylbenzene	103-65-1	1	µg/L		<1	<1	----	----	----
1.3.5-Trimethylbenzene	108-67-8	1	µg/L		<1	<1	----	----	----
sec-Butylbenzene	135-98-8	1	µg/L		<1	<1	----	----	----
1.2.4-Trimethylbenzene	95-63-6	1	µg/L		<1	<1	----	----	----
tert-Butylbenzene	98-06-6	1	µg/L		<1	<1	----	----	----
p-Isopropyltoluene	99-87-6	1	µg/L		<1	<1	----	----	----
n-Butylbenzene	104-51-8	1	µg/L		<1	<1	----	----	----
^ Total Xylenes	----	1	µg/L		<1	<1	----	----	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	10	µg/L		<10	<10	----	----	----
2-Butanone (MEK)	78-93-3	10	µg/L		<10	<10	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	10	µg/L		<10	<10	----	----	----
2-Hexanone (MBK)	591-78-6	10	µg/L		<10	<10	----	----	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	1	µg/L		<1	<1	----	----	----
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	1	µg/L		<1	<1	----	----	----
1.2-Dichloropropane	78-87-5	1	µg/L		<1	<1	----	----	----
cis-1.3-Dichloropropylene	10061-01-5	2	µg/L		<2	<2	----	----	----
trans-1.3-Dichloropropylene	10061-02-6	2	µg/L		<2	<2	----	----	----
1.2-Dibromoethane (EDB)	106-93-4	1	µg/L		<1	<1	----	----	----
^ 1.3-Dichloropropylene (cis & trans)	----	2	µg/L		<2	<2	----	----	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	10	µg/L		<10	<10	----	----	----
Chloromethane	74-87-3	10	µg/L		<10	<10	----	----	----
Vinyl chloride	75-01-4	0.2	µg/L		<0.2	<0.2	----	----	----
Bromomethane	74-83-9	10	µg/L		<10	<10	----	----	----
Chloroethane	75-00-3	10	µg/L		<10	<10	----	----	----
Trichlorofluoromethane	75-69-4	10	µg/L		<10	<10	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S7	S8	----	----	----
			Client sampling date / time	26-Jun-2019 10:00	26-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1920000-001	ES1920000-002	--------	--------	--------
				Result	Result	----	----	----
EP074E: Halogenated Aliphatic Compounds - Continued								
1.1-Dichloroethene	75-35-4	1	µg/L	<1	<1	----	----	----
Iodomethane	74-88-4	1	µg/L	<1	<1	----	----	----
Methylene chloride	75-09-2	2	µg/L	<2	<2	----	----	----
trans-1.2-Dichloroethene	156-60-5	1	µg/L	<1	<1	----	----	----
1.1-Dichloroethane	75-34-3	1	µg/L	<1	<1	----	----	----
cis-1.2-Dichloroethene	156-59-2	1	µg/L	<1	<1	----	----	----
1.1.1-Trichloroethane	71-55-6	1	µg/L	<1	<1	----	----	----
1.1-Dichloropropylene	563-58-6	1	µg/L	<1	<1	----	----	----
Carbon Tetrachloride	56-23-5	1	µg/L	<1	<1	----	----	----
1.2-Dichloroethane	107-06-2	1	µg/L	<1	<1	----	----	----
Trichloroethene	79-01-6	1	µg/L	<1	<1	----	----	----
Dibromomethane	74-95-3	1	µg/L	<1	<1	----	----	----
1.1.2-Trichloroethane	79-00-5	1	µg/L	<1	<1	----	----	----
1.3-Dichloropropane	142-28-9	1	µg/L	<1	<1	----	----	----
Tetrachloroethene	127-18-4	1	µg/L	<1	<1	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	1	µg/L	<1	<1	----	----	----
trans-1.4-Dichloro-2-butene	110-57-6	1	µg/L	<1	<1	----	----	----
cis-1.4-Dichloro-2-butene	1476-11-5	1	µg/L	<1	<1	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	1	µg/L	<1	<1	----	----	----
1.2.3-Trichloropropane	96-18-4	1	µg/L	<1	<1	----	----	----
Pentachloroethane	76-01-7	1	µg/L	<1	<1	----	----	----
1.2-Dibromo-3-chloropropane	96-12-8	1	µg/L	<1	<1	----	----	----
Hexachlorobutadiene	87-68-3	0.5	µg/L	<0.5	<0.5	----	----	----
Bromochloromethane	74-97-5	1	µg/L	<1	<1	----	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	1	µg/L	<1	<1	----	----	----
Bromobenzene	108-86-1	1	µg/L	<1	<1	----	----	----
2-Chlorotoluene	95-49-8	1	µg/L	<1	<1	----	----	----
4-Chlorotoluene	106-43-4	1	µg/L	<1	<1	----	----	----
1.3-Dichlorobenzene	541-73-1	1	µg/L	<1	<1	----	----	----
1.4-Dichlorobenzene	106-46-7	0.1	µg/L	<0.1	<0.1	----	----	----
1.2-Dichlorobenzene	95-50-1	1	µg/L	<1	<1	----	----	----
1.2.4-Trichlorobenzene	120-82-1	1	µg/L	<1	<1	----	----	----
1.2.3-Trichlorobenzene	87-61-6	1	µg/L	<1	<1	----	----	----
^ Sum of Trichlorobenzenes	----	1	µg/L	<1	<1	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S7	S8	----	----	----
			Client sampling date / time	26-Jun-2019 10:00	26-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1920000-001	ES1920000-002	--------	--------	--------
				Result	Result	----	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	1	µg/L	<1	<1	----	----	----
Bromodichloromethane	75-27-4	1	µg/L	<1	<1	----	----	----
Dibromochloromethane	124-48-1	1	µg/L	<1	<1	----	----	----
Bromoform	75-25-2	1	µg/L	<1	<1	----	----	----
^ Total Trihalomethanes	----	1	µg/L	<1	<1	----	----	----
EP074H: Naphthalene								
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	----	----	----
2.4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	----	----	----
2.4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	----	----	----
2.6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	----	----	----
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	----	----	----
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S7	S8	----	----	----
				Client sampling date / time	26-Jun-2019 10:00	26-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1920000-001	ES1920000-002	--------	--------	--------
					Result	Result	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
2-Methylnaphthalene	91-57-6	2	µg/L		<2	<2	----	----	----
2-Chloronaphthalene	91-58-7	2	µg/L		<2	<2	----	----	----
N-2-Fluorenyl Acetamide	53-96-3	2	µg/L		<2	<2	----	----	----
7.12-Dimethylbenz(a)anthracene	57-97-6	2	µg/L		<2	<2	----	----	----
3-Methylcholanthrene	56-49-5	2	µg/L		<2	<2	----	----	----
EP075C: Phthalate Esters									
Dimethyl phthalate	131-11-3	2	µg/L		<2	<2	----	----	----
Diethyl phthalate	84-66-2	2	µg/L		<2	<2	----	----	----
Di-n-butyl phthalate	84-74-2	2	µg/L		<2	<2	----	----	----
Butyl benzyl phthalate	85-68-7	2	µg/L		<2	<2	----	----	----
bis(2-ethylhexyl) phthalate	117-81-7	10	µg/L		<10	<10	----	----	----
Di-n-octylphthalate	117-84-0	2	µg/L		<2	<2	----	----	----
EP075D: Nitrosamines									
N-Nitrosomethylethylamine	10595-95-6	2	µg/L		<2	<2	----	----	----
N-Nitrosodiethylamine	55-18-5	2	µg/L		<2	<2	----	----	----
N-Nitrosopyrrolidine	930-55-2	4	µg/L		<4	<4	----	----	----
N-Nitrosomorpholine	59-89-2	2	µg/L		<2	<2	----	----	----
N-Nitrosodi-n-propylamine	621-64-7	2	µg/L		<2	<2	----	----	----
N-Nitrosopiperidine	100-75-4	2	µg/L		<2	<2	----	----	----
N-Nitrosodibutylamine	924-16-3	2	µg/L		<2	<2	----	----	----
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	4	µg/L		<4	<4	----	----	----
Methapyrilene	91-80-5	2	µg/L		<2	<2	----	----	----
EP075E: Nitroaromatics and Ketones									
2-Picoline	109-06-8	2	µg/L		<2	<2	----	----	----
Acetophenone	98-86-2	2	µg/L		<2	<2	----	----	----
Nitrobenzene	98-95-3	2	µg/L		<2	<2	----	----	----
Isophorone	78-59-1	2	µg/L		<2	<2	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S7	S8	----	----	----
			Client sampling date / time	26-Jun-2019 10:00	26-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1920000-001	ES1920000-002	--------	--------	--------
				Result	Result	----	----	----
EP075E: Nitroaromatics and Ketones - Continued								
2.6-Dinitrotoluene	606-20-2	4	µg/L	<4	<4	----	----	----
2.4-Dinitrotoluene	121-14-2	4	µg/L	<4	<4	----	----	----
1-Naphthylamine	134-32-7	2	µg/L	<2	<2	----	----	----
4-Nitroquinoline-N-oxide	56-57-5	2	µg/L	<2	<2	----	----	----
5-Nitro-o-toluidine	99-55-8	2	µg/L	<2	<2	----	----	----
Azobenzene	103-33-3	2	µg/L	<2	<2	----	----	----
1.3.5-Trinitrobenzene	99-35-4	2	µg/L	<2	<2	----	----	----
Phenacetin	62-44-2	2	µg/L	<2	<2	----	----	----
4-Aminobiphenyl	92-67-1	2	µg/L	<2	<2	----	----	----
Pentachloronitrobenzene	82-68-8	2	µg/L	<2	<2	----	----	----
Pronamide	23950-58-5	2	µg/L	<2	<2	----	----	----
Dimethylaminoazobenzene	60-11-7	2	µg/L	<2	<2	----	----	----
Chlorobenzilate	510-15-6	2	µg/L	<2	<2	----	----	----
EP075F: Haloethers								
Bis(2-chloroethyl) ether	111-44-4	2	µg/L	<2	<2	----	----	----
Bis(2-chloroethoxy) methane	111-91-1	2	µg/L	<2	<2	----	----	----
4-Chlorophenyl phenyl ether	7005-72-3	2	µg/L	<2	<2	----	----	----
4-Bromophenyl phenyl ether	101-55-3	2	µg/L	<2	<2	----	----	----
EP075G: Chlorinated Hydrocarbons								
1.3-Dichlorobenzene	541-73-1	2	µg/L	<2	<2	----	----	----
1.4-Dichlorobenzene	106-46-7	2	µg/L	<2	<2	----	----	----
1.2-Dichlorobenzene	95-50-1	2	µg/L	<2	<2	----	----	----
Hexachloroethane	67-72-1	2	µg/L	<2	<2	----	----	----
1.2.4-Trichlorobenzene	120-82-1	2	µg/L	<2	<2	----	----	----
Hexachloropropylene	1888-71-7	2	µg/L	<2	<2	----	----	----
Hexachlorobutadiene	87-68-3	2	µg/L	<2	<2	----	----	----
Hexachlorocyclopentadiene	77-47-4	10	µg/L	<10	<10	----	----	----
Pentachlorobenzene	608-93-5	2	µg/L	<2	<2	----	----	----
Hexachlorobenzene (HCB)	118-74-1	4	µg/L	<4	<4	----	----	----
EP075H: Anilines and Benzidines								
Aniline	62-53-3	2	µg/L	<2	<2	----	----	----
4-Chloroaniline	106-47-8	2	µg/L	<2	<2	----	----	----
2-Nitroaniline	88-74-4	4	µg/L	<4	<4	----	----	----
3-Nitroaniline	99-09-2	4	µg/L	<4	<4	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S7	S8	----	----	----
			Client sampling date / time	26-Jun-2019 10:00	26-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1920000-001	ES1920000-002	--------	--------	--------
				Result	Result	----	----	----
EP075H: Anilines and Benzidines - Continued								
Dibenzofuran	132-64-9	2	µg/L	<2	<2	----	----	----
4-Nitroaniline	100-01-6	2	µg/L	<2	<2	----	----	----
Carbazole	86-74-8	2	µg/L	<2	<2	----	----	----
3.3`-Dichlorobenzidine	91-94-1	2	µg/L	<2	<2	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	2	µg/L	<2	<2	----	----	----
beta-BHC	319-85-7	2	µg/L	<2	<2	----	----	----
gamma-BHC	58-89-9	2	µg/L	<2	<2	----	----	----
delta-BHC	319-86-8	2	µg/L	<2	<2	----	----	----
Heptachlor	76-44-8	2	µg/L	<2	<2	----	----	----
Aldrin	309-00-2	2	µg/L	<2	<2	----	----	----
Heptachlor epoxide	1024-57-3	2	µg/L	<2	<2	----	----	----
alpha-Endosulfan	959-98-8	2	µg/L	<2	<2	----	----	----
4.4`-DDE	72-55-9	2	µg/L	<2	<2	----	----	----
Dieldrin	60-57-1	2	µg/L	<2	<2	----	----	----
Endrin	72-20-8	2	µg/L	<2	<2	----	----	----
beta-Endosulfan	33213-65-9	2	µg/L	<2	<2	----	----	----
4.4`-DDD	72-54-8	2	µg/L	<2	<2	----	----	----
Endosulfan sulfate	1031-07-8	2	µg/L	<2	<2	----	----	----
4.4`-DDT	50-29-3	4	µg/L	<4	<4	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	4	µg/L	<4	<4	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	4	µg/L	<4	<4	----	----	----
EP075J: Organophosphorus Pesticides								
Dichlorvos	62-73-7	2	µg/L	<2	<2	----	----	----
Dimethoate	60-51-5	2	µg/L	<2	<2	----	----	----
Diazinon	333-41-5	2	µg/L	<2	<2	----	----	----
Chlorpyrifos-methyl	5598-13-0	2	µg/L	<2	<2	----	----	----
Malathion	121-75-5	2	µg/L	<2	<2	----	----	----
Fenthion	55-38-9	2	µg/L	<2	<2	----	----	----
Chlorpyrifos	2921-88-2	2	µg/L	<2	<2	----	----	----
Pirimphos-ethyl	23505-41-1	2	µg/L	<2	<2	----	----	----
Chlorfenvinphos	470-90-6	2	µg/L	<2	<2	----	----	----
Prothiofos	34643-46-4	2	µg/L	<2	<2	----	----	----
Ethion	563-12-2	2	µg/L	<2	<2	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S7	S8	----	----	----
				Client sampling date / time	26-Jun-2019 10:00	26-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1920000-001	ES1920000-002	--------	--------	--------
					Result	Result	----	----	----
EP075J: Organophosphorus Pesticides - Continued									
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	----	----	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	<20	----	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	----	----	----
Toluene	108-88-3	2	µg/L		<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	----	----	----
^ **Total Xylenes**	----	2	µg/L		<2	<2	----	----	----
^ **Sum of BTEX**	----	1	µg/L		<1	<1	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	----	----	----
EP090: Organotin Compounds (Soluble)									
Monobutyltin	78763-54-9	5	ngSn/L		<5	<5	----	----	----
Dibutyltin	1002-53-5	5	ngSn/L		<5	<5	----	----	----
Tributyltin	56573-85-4	2	ngSn/L		<2	<2	----	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS									
4-Chlorophenoxy acetic acid	122-88-3	10	µg/L		<10	<10	----	----	----
2.4-DB	94-82-6	10	µg/L		<10	<10	----	----	----
Dicamba	1918-00-9	10	µg/L		<10	<10	----	----	----
Mecoprop	93-65-2	10	µg/L		<10	<10	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S7	S8	----	----	----
				Client sampling date / time	26-Jun-2019 10:00	26-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1920000-001	ES1920000-002	--------	--------	--------
					Result	Result	----	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS - Continued									
MCPA	94-74-6	10	µg/L		<10	<10	----	----	----
2.4-DP	120-36-5	10	µg/L		<10	<10	----	----	----
2.4-D	94-75-7	10	µg/L		<10	<10	----	----	----
Triclopyr	55335-06-3	10	µg/L		<10	<10	----	----	----
Silvex (2.4.5-TP/Fenoprop)	93-72-1	10	µg/L		<10	<10	----	----	----
2.4.5-T	93-76-5	10	µg/L		<10	<10	----	----	----
MCPB	94-81-5	10	µg/L		<10	<10	----	----	----
Picloram	1918-02-1	10	µg/L		<10	<10	----	----	----
Clopyralid	1702-17-6	10	µg/L		<10	<10	----	----	----
Fluroxypyr	69377-81-7	10	µg/L		<10	<10	----	----	----
2.6-D	575-90-6	10	µg/L		<10	<10	----	----	----
2.4.6-T	575-89-3	10	µg/L		<10	<10	----	----	----
EP204: Glyphosate and AMPA									
Glyphosate	1071-83-6	10	µg/L		<10	<10	----	----	----
AMPA	1066-51-9	10	µg/L		<10	<10	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.05	<0.05	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L		<0.05	<0.05	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.05	<0.05	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.2	<0.2	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.05	<0.05	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.05	<0.05	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.05	<0.05	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.05	<0.05	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S7	S8	----	----	----
			Client sampling date / time	26-Jun-2019 10:00	26-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1920000-001	ES1920000-002	--------	--------	--------
				Result	Result	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
EP231P: PFAS Sums								
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.05	<0.05	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.05	<0.05	----	----	----
EP234: Multiresidue Pesticides (ESI Positive)								
3-Hydroxy Carbofuran	16655-82-6	0.02	µg/L	<0.02	<0.02	----	----	----
Abamectin	71751-41-2	0.1	µg/L	<0.1	<0.1	----	----	----
Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	----	----	----
Alachlor	15972-60-8	0.1	µg/L	<0.1	<0.1	----	----	----
Aldicarb	116-06-3	0.05	µg/L	<0.05	<0.05	----	----	----
Ametryn	834-12-8	0.01	µg/L	<0.01	<0.01	----	----	----
Aminopyralid	150114-71-9	0.1	µg/L	<0.1	<0.1	----	----	----
Amitraz	33089-61-1	100	µg/L	<100	<100	----	----	----
Atrazine	1912-24-9	0.01	µg/L	<0.01	<0.01	----	----	----
Atrazine-desethyl	6190-65-4	0.1	µg/L	<0.1	<0.1	----	----	----
Atrazine-desisopropyl	1007-28-9	0.1	µg/L	<0.1	<0.1	----	----	----
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	----	----	----
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	----	----	----
Azoxystrobin	131860-33-8	0.1	µg/L	<0.1	<0.1	----	----	----
Bendiocarb	22781-23-3	0.10	µg/L	<0.10	<0.10	----	----	----
Benomyl	17804-35-2	0.01	µg/L	**0.02**	**0.02**	----	----	----
Bensulfuron methyl	83055-99-6	0.1	µg/L	<0.1	<0.1	----	----	----
Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	----	----	----
Boscalid	188425-85-6	0.1	µg/L	<0.1	<0.1	----	----	----
Bromacil	314-40-9	0.02	µg/L	<0.02	<0.02	----	----	----
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	----	----	----
Butachlor	23184-66-9	0.1	µg/L	<0.1	<0.1	----	----	----
Carbaryl	63-25-2	0.01	µg/L	<0.01	<0.01	----	----	----
Carbendazim (Thiophanate methyl)	10605-21-7	0.1	µg/L	<0.1	<0.1	----	----	----
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	----	----	----
Carbofuran	1563-66-2	0.01	µg/L	<0.01	<0.01	----	----	----
Carboxin	5234-68-4	0.1	µg/L	<0.1	<0.1	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S7	S8	----	----	----
			Client sampling date / time	26-Jun-2019 10:00	26-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1920000-001	ES1920000-002	--------	--------	--------
				Result	Result	----	----	----
EP234: Multiresidue Pesticides (ESI Positive) - Continued								
Carfentrazone-ethyl	128639-02-1	0.1	µg/L	<0.1	<0.1	----	----	----
Chlorantraniliprole	500008-45-7	0.1	µg/L	<0.1	<0.1	----	----	----
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	----	----	----
Chloroxuron	1982-47-4	0.1	µg/L	<0.1	<0.1	----	----	----
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.1	µg/L	<0.2	<0.2	----	----	----
Chlorsulfuron	64902-72-3	0.2	µg/L	<0.2	<0.2	----	----	----
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	----	----	----
Cyanazine	21725-46-2	0.02	µg/L	<0.02	<0.02	----	----	----
Cyproconazole	94361-06-5	0.02	µg/L	<0.02	<0.02	----	----	----
Cyprodinil	121552-61-2	0.01	µg/L	<0.01	<0.01	----	----	----
Cyromazine	66215-27-8	0.05	µg/L	<0.05	<0.05	----	----	----
Demeton-O	298-03-0	0.02	µg/L	<0.02	<0.02	----	----	----
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	----	----	----
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	----	----	----
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	----	----	----
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	----	----	----
Dichlobenil	1194-65-6	0.1	µg/L	<0.1	<0.1	----	----	----
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	----	----	----
Diclofop-methyl	51338-27-3	0.05	µg/L	<0.05	<0.05	----	----	----
Difenoconazole	119446-68-3	0.02	µg/L	<0.02	<0.02	----	----	----
Diflubenzuron	35367-38-5	0.1	µg/L	<0.1	<0.1	----	----	----
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	----	----	----
Diphenamid	957-51-7	0.1	µg/L	<0.1	<0.1	----	----	----
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	----	----	----
Diuron	330-54-1	0.02	µg/L	**0.09**	**0.06**	----	----	----
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	----	----	----
EPTC	759-94-4	0.1	µg/L	<0.1	<0.1	----	----	----
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	----	----	----
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	----	----	----
Etridiazole	2593-15-9	0.5	µg/L	<0.5	<0.5	----	----	----
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	----	----	----
Fenarimol	60168-88-9	0.02	µg/L	<0.02	<0.02	----	----	----
Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	<10	----	----	----
Fenitrothion	122-14-5	2	µg/L	<2	<2	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S7	S8	----	----	----
				Client sampling date / time	26-Jun-2019 10:00	26-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1920000-001	ES1920000-002	--------	--------	--------
					Result	Result	----	----	----
EP234: Multiresidue Pesticides (ESI Positive) - Continued									
Fenoxycarb	79127-80-3	0.1	µg/L		<0.1	<0.1	----	----	----
Fensulfothion	115-90-2	0.01	µg/L		<0.01	<0.01	----	----	----
Fenthion	55-38-9	0.05	µg/L		<0.05	<0.05	----	----	----
Flamprop methyl	52756-25-9	0.1	µg/L		<0.1	<0.1	----	----	----
Fluometuron	2164-17-2	0.01	µg/L		<0.01	<0.01	----	----	----
Flusilazole	85509-19-9	0.02	µg/L		<0.02	<0.02	----	----	----
Formothion	2540-82-1	20	µg/L		<20	<20	----	----	----
Fosetyl Aluminium	39148-24-8	10	µg/L		<10	<10	----	----	----
Haloxyfop	69806-34-4	0.1	µg/L		<0.1	<0.1	----	----	----
Hexaconazole	79983-71-4	0.02	µg/L		<0.02	<0.02	----	----	----
Hexazinone	51235-04-2	0.02	µg/L		<0.02	<0.02	----	----	----
Imazapyr	94795-74-1	10.0	µg/L		<10.0	<10.0	----	----	----
Indoxacarb	173584-44-6	0.1	µg/L		<0.1	<0.1	----	----	----
Iodosulfuron methyl	144550-36-7	0.1	µg/L		<0.1	<0.1	----	----	----
Irgarol	28159-98-0	0.002	µg/L		<0.002	<0.002	----	----	----
Isoproturon	34123-59-6	0.1	µg/L		<0.1	<0.1	----	----	----
Malathion	121-75-5	0.02	µg/L		<0.02	<0.02	----	----	----
Metalaxyl	57837-19-1	0.1	µg/L		<0.1	<0.1	----	----	----
Metalaxyl-M	70630-17-0	0.1	µg/L		<0.1	<0.1	----	----	----
Metaldehyde	108-62-3	10	µg/L		<10	<10	----	----	----
Methidathion	950-37-8	0.1	µg/L		<0.1	<0.1	----	----	----
Methiocarb	2032-65-7	0.01	µg/L		<0.01	<0.01	----	----	----
Methomyl	16752-77-5	0.01	µg/L		<0.01	<0.01	----	----	----
Metolachlor	51218-45-2	0.01	µg/L		<0.01	<0.01	----	----	----
Metribuzin	21087-64-9	0.02	µg/L		<0.02	<0.02	----	----	----
Mevinphos	7786-34-7	0.02	µg/L		<0.02	<0.02	----	----	----
Molinate	2212-67-1	0.1	µg/L		<0.1	<0.1	----	----	----
Monocrotophos	6923-22-4	0.02	µg/L		<0.02	<0.02	----	----	----
Myclobutanil	88671-89-0	0.1	µg/L		<0.1	<0.1	----	----	----
Naftalofos	1491-41-4	1.0	µg/L		<1.0	<1.0	----	----	----
Napropamide	15299-99-7	0.1	µg/L		<0.1	<0.1	----	----	----
Nitralin	4726-14-1	0.1	µg/L		<0.1	<0.1	----	----	----
Norflurazon	27314-13-2	0.1	µg/L		<0.1	<0.1	----	----	----
Novaluron	116714-46-6	0.1	µg/L		<0.1	<0.1	----	----	----
Omethoate	1113-02-6	0.01	µg/L		<0.01	<0.01	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S7	S8	----	----	----
			Client sampling date / time	26-Jun-2019 10:00	26-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1920000-001	ES1920000-002	--------	--------	--------
				Result	Result	----	----	----
EP234: Multiresidue Pesticides (ESI Positive) - Continued								
Oxamyl	23135-22-0	0.01	µg/L	<0.01	<0.01	----	----	----
Oxyfluorfen	42874-03-3	1.0	µg/L	<1.0	<1.0	----	----	----
Paclobutrazole	76738-62-0	0.05	µg/L	<0.05	<0.05	----	----	----
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	----	----	----
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	----	----	----
Pebulate	1114-71-2	0.1	µg/L	<0.1	<0.1	----	----	----
Penconazole	66246-88-6	0.01	µg/L	<0.01	<0.01	----	----	----
Pendimethalin	40487-42-1	0.05	µg/L	<0.05	<0.05	----	----	----
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	----	----	----
Pirimicarb	23103-98-2	0.1	µg/L	<0.1	<0.1	----	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	----	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	----	----	----
Prochloraz	67747-09-5	0.1	µg/L	<0.1	<0.1	----	----	----
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	----	----	----
Promecarb	2631-37-0	0.1	µg/L	<0.1	<0.1	----	----	----
Prometryn	7287-19-6	0.01	µg/L	<0.01	<0.01	----	----	----
Propachlor	1918-16-7	0.1	µg/L	<0.1	<0.1	----	----	----
Propamocarb	24579-73-5	0.1	µg/L	<0.1	<0.1	----	----	----
Propargite	2312-35-8	0.1	µg/L	<0.1	<0.1	----	----	----
Propazine	139-40-2	0.01	µg/L	<0.01	<0.01	----	----	----
Propiconazole	60207-90-1	0.05	µg/L	<0.05	<0.05	----	----	----
Propyzamide	23950-58-5	0.1	µg/L	<0.1	<0.1	----	----	----
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	----	----	----
Pyraclostrobin	175013-18-0	0.1	µg/L	<0.1	<0.1	----	----	----
Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	----	----	----
Pyrimethanil	53112-28-0	0.02	µg/L	<0.02	<0.02	----	----	----
Pyriproxyfen	95737-68-1	0.1	µg/L	<0.1	<0.1	----	----	----
Pyroxsulam	422556-08-9	0.1	µg/L	<0.1	<0.1	----	----	----
Quinclorac	84087-01-4	0.1	µg/L	<0.1	<0.1	----	----	----
Rimsulfuron	122931-48-0	0.1	µg/L	<0.1	<0.1	----	----	----
Siduron	1982-49-6	0.1	µg/L	<0.1	<0.1	----	----	----
Simazine	122-34-9	0.02	µg/L	<0.02	<0.02	----	----	----
Spirotetramat	203313-25-1	0.1	µg/L	<0.1	<0.1	----	----	----
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	----	----	----
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	S7	S8	----	----	----
			Client sampling date / time	26-Jun-2019 10:00	26-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1920000-001	ES1920000-002	--------	--------	--------
				Result	Result	----	----	----
EP234: Multiresidue Pesticides (ESI Positive) - Continued								
Tebuconazole	107534-96-3	0.01	µg/L	**0.03**	**0.02**	----	----	----
Tebuthiuron	34014-18-1	0.02	µg/L	<0.02	<0.02	----	----	----
Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	----	----	----
Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	----	----	----
Terbuthylazine	5915-41-3	0.01	µg/L	<0.01	<0.01	----	----	----
Terbutryn	886-50-0	0.01	µg/L	<0.01	<0.01	----	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	----	----	----
Tetraconazole	112281-77-3	0.1	µg/L	<0.1	<0.1	----	----	----
Thiamethoxam	153719-23-4	0.02	µg/L	<0.02	<0.02	----	----	----
Thiobencarb	28249-77-6	0.01	µg/L	<0.01	<0.01	----	----	----
Thiodicarb	59669-26-0	0.01	µg/L	<0.01	<0.01	----	----	----
Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	----	----	----
Toltrazuril	69004-03-1	0.5	µg/L	<0.5	<0.5	----	----	----
Triadimefon	43121-43-3	0.1	µg/L	<0.1	<0.1	----	----	----
Triadimenol	55219-65-3	0.1	µg/L	<0.1	<0.1	----	----	----
Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	----	----	----
Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	----	----	----
Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	----	----	----
Trifloxystrobin	141517-21-7	0.1	µg/L	<0.1	<0.1	----	----	----
Trifloxysulfuron-sodium	199119-58-9	0.1	µg/L	<0.1	<0.1	----	----	----
Trifluralin	1582-09-8	10.0	µg/L	<10.0	<10.0	----	----	----
Trinexapac Ethyl	95266-40-3	1	µg/L	<1	<1	----	----	----
Vernolate	1929-77-7	0.1	µg/L	<0.1	<0.1	----	----	----
EP234I: Miscellaneous (ESI Positive Mode) Pesticides								
2-Aminobenzimidazole	934-32-7	0.01	µg/L	<0.01	<0.01	----	----	----
Imidacloprid	----	0.01	µg/L	<0.01	<0.01	----	----	----
EP244: Phenolic Endocrine Disrupting Compounds (EDC)								
4-n-Nonylphenol	104-40-5	2	µg/L	<20	<20	----	----	----
Bisphenol A	80-05-7	2	µg/L	<20	<20	----	----	----
Diethylstilbestrol	56-53-1	2	µg/L	<20	<20	----	----	----
4-t-Octylphenol	140-66-9	2	µg/L	<20	<20	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	1	%	**96.5**	**92.1**	----	----	----
EP068S: Organochlorine Pesticide Surrogate								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	S7	S8	----	----	----
				Client sampling date / time	26-Jun-2019 10:00	26-Jun-2019 10:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1920000-001	ES1920000-002	--------	--------	--------
					Result	Result	----	----	----
EP068S: Organochlorine Pesticide Surrogate - Continued									
Dibromo-DDE	21655-73-2	0.5	%		93.6	99.8	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		89.8	93.1	----	----	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	1	%		87.1	91.5	----	----	----
Toluene-D8	2037-26-5	1	%		98.6	103	----	----	----
4-Bromofluorobenzene	460-00-4	1	%		94.8	98.2	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		29.4	27.6	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		58.2	66.2	----	----	----
2.4.6-Tribromophenol	118-79-6	1.0	%		83.6	74.5	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		90.4	91.9	----	----	----
Anthracene-d10	1719-06-8	1.0	%		89.2	89.8	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		90.5	88.6	----	----	----
EP075S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	2	%		33.0	36.5	----	----	----
Phenol-d6	13127-88-3	2	%		27.6	30.6	----	----	----
2-Chlorophenol-D4	93951-73-6	2	%		49.7	56.4	----	----	----
2.4.6-Tribromophenol	118-79-6	2	%		45.7	44.9	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	2	%		53.4	59.4	----	----	----
1.2-Dichlorobenzene-D4	2199-69-1	2	%		40.8	46.2	----	----	----
2-Fluorobiphenyl	321-60-8	2	%		54.0	58.6	----	----	----
Anthracene-d10	1719-06-8	2	%		73.9	77.6	----	----	----
4-Terphenyl-d14	1718-51-0	2	%		86.3	81.6	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		92.0	96.6	----	----	----
Toluene-D8	2037-26-5	2	%		94.3	98.5	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		107	111	----	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	5	%		77.6	70.9	----	----	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2.4-Dichlorophenyl Acetic Acid	19719-28-9	10	%		115	119	----	----	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**S7**	**S8**	**----**	**----**	**----**
				Client sampling date / time	26-Jun-2019 10:00	26-Jun-2019 10:00	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES1920000-001**	**ES1920000-002**	**--------**	**--------**	**--------**
					Result	Result	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**94.5**	**98.2**	**----**	**----**	**----**
13C8-PFOA	----	0.02	%		**101**	**99.4**	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	29	129
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	67	111
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	67	111
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	125
Toluene-D8	2037-26-5	69	127
4-Bromofluorobenzene	460-00-4	75	123
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP075S: Acid Extractable Surrogates			
2-Fluorophenol	367-12-4	10	117
Phenol-d6	13127-88-3	10	69
2-Chlorophenol-D4	93951-73-6	21	130
2.4.6-Tribromophenol	118-79-6	10	151
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	142
1.2-Dichlorobenzene-D4	2199-69-1	24	121
2-Fluorobiphenyl	321-60-8	27	135
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	21	123
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128
EP090S: Organotin Surrogate			
Tripropyltin	----	24	116
EP202S: Phenoxyacetic Acid Herbicide Surrogate			
2.4-Dichlorophenyl Acetic Acid	19719-28-9	64	140
EP231S: PFAS Surrogate			

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

CERTIFICATE OF ANALYSIS

Client	**INNERWEST COUNCIL**	**Laboratory :**	Environmental Division Sydney		
Contact	AMOS BRANCH	**Contact**	CUSTOMER.SERVICES.ES	**Work Order:**	**ES1990031**
Address:	SYDNEY SYDNEY	**Address:**	277-289 Woodpark Road Smithfield NSW 2164 Australia		
Project	- Not provided -	**Quote #**	----	**Received:**	27 Jun 2019
Order #	- Not provided -			**Issued**	10 Jul 2019
C-O-C #	- Not provided -				
Site	- Not provided -				
E-mail	amos.branch@unsw.edu.au	**E-mail**	ALSEnviro.Sydney@alsglobal.com	**Number of Samples**	
Phone	- Not provided -	**Phone**	+61-2-8784 8555	**Received:**	2
Fax	- Not provided -	**Fax**	+61-2-8784 8500	**Analysed:**	2

Notes

LOR = Limit of reporting
I-TEF = International toxic equivalency factor
I-TEQ = International toxic equivalence
WHO-TEF = World Health Organistaion toxic equivalency factor
WHO-TEQ = World Health Organisation toxic equivalence

1 I -TEQ(zero) and WHO-TEQ(zero) calculated treating <LOR as zero concentration
2 I -TEQ(0.5 LOR) and WHO-TEQ(0.5 zero) calculated treating <LOR as 0.5 LoR concentration
3 I-TEQ(LOR) and WHO-TEQ(LOR) calculated treating <LOR as LoR concentration
4 Totals LORs are calculated by multiplying the number of peaks by the individual LOR per compound
5 13C12 Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency.

T = tetra
Pe = penta
Hx = hexa
Hp =hepta
O = octa
CDD, dioxin = chlorinated dibenzo-p-dioxin
CDF, furan = chlorinated dibenzofuran

Samples analysed 'as received', results reported on 'dry weight' basis.

ALSE - Excellence in Analytical Testing

NATA Accredited Laboratory - 825

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Accredited for compliance with ISO/IED 17025

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)

Client	: INNERWEST COUNCIL	**Work Order**	: ES1990031
Project	: - Not provided -	**ALS Quote Reference**	: ----

ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300	**Laboratory Sample ID:**	ES1990031001	**Qc Lot Number:**	4537547	**Date Sampled:** 26-Jun-2019
	Client Sample ID:	S7	**Sample Matrix:**	WATER	**Date Extracted:** 01-Jul-2019
					Date Analysed: 01-Jul-2019

Compound	Conc pg/L	LOR pg/L	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<4.7	4.7	1	0.00	2.36	4.72	1	0.00	2.36	4.72	93.5
12378-PeCDD	<23.6	23.6	1	0.00	11.79	23.58	0.5	0.00	5.90	11.79	95.3
123478-HxCDD	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	58.0
123678-HxCDD	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	78.4
123789-HxCDD	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	-
1234678-HpCDD	34.0	23.6	0.01	0.34	0.34	0.34	0.01	0.34	0.34	0.34	70.2
OCDD	800.0	94.3	0.0003	0.24	0.24	0.24	0.001	0.80	0.80	0.80	44.0
2378-TCDF	<4.7	4.7	0.1	0.00	0.24	0.47	0.1	0.00	0.24	0.47	73.6
12378-PeCDF	<23.6	23.6	0.03	0.00	0.35	0.71	0.05	0.00	0.59	1.18	79.8
23478-PeCDF	<23.6	23.6	0.3	0.00	3.54	7.08	0.5	0.00	5.90	11.79	82.3
123478-HxCDF	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	51.6
123678-HxCDF	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	77.7
234678-HxCDF	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	70.1
123789-HxCDF	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	75.9
1234678-HpCDF	<23.6	23.6	0.01	0.00	0.12	0.24	0.01	0.00	0.12	0.24	50.9
1234789-HpCDF	<23.6	23.6	0.01	0.00	0.12	0.24	0.01	0.00	0.12	0.24	62.6
OCDF	<47.2	47.2	0.0003	0.00	0.01	0.01	0.001	0.00	0.02	0.05	-
Total TEQ	-	-	-	0.58	27.36	54.13	-	1.14	24.63	48.12	-

Group Totals	Conc pg/L	LOR$_4$ pg/L	No. of Peaks
Tetra-Dioxins	<4.7	4.7	1
Penta-Dioxins	<23.6	23.6	1
Hexa-Dioxins	<117.9	117.9	5
Hepta-Dioxins	94.3	47.2	2
Octa-Dioxin	800.0	94.3	1
Tetra-Furans	<4.7	4.7	1
Penta-Furans	<23.6	23.6	1
Hexa-Furans	<23.6	23.6	1
Hepta-Furans	<23.6	23.6	1
Octa-Furan	<47.2	47.2	1
S **PCDD/Fs**	894.3		

Client	: INNERWEST COUNCIL	**Work Order**	: ES1990031
Project	: - Not provided -	**ALS Quote Reference**	: ----

ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: ES1990031002
Client Sample ID: S8

Qc Lot Number: 4537548
Sample Matrix: WATER

Date Sampled: 26-Jun-2019
Date Extracted: 01-Jul-2019
Date Analysed: 01-Jul-2019

Compound	Conc pg/L	LOR pg/L	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<4.7	4.7	1	0.00	2.36	4.72	1	0.00	2.36	4.72	98.2
12378-PeCDD	<23.6	23.6	1	0.00	11.79	23.58	0.5	0.00	5.90	11.79	89.6
123478-HxCDD	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	59.9
123678-HxCDD	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	75.6
123789-HxCDD	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	-
1234678-HpCDD	24.9	23.6	0.01	0.25	0.25	0.25	0.01	0.25	0.25	0.25	66.7
OCDD	635.0	94.3	0.0003	0.19	0.19	0.19	0.001	0.64	0.64	0.64	41.8
2378-TCDF	<4.7	4.7	0.1	0.00	0.24	0.47	0.1	0.00	0.24	0.47	74.1
12378-PeCDF	<23.6	23.6	0.03	0.00	0.35	0.71	0.05	0.00	0.59	1.18	91.5
23478-PeCDF	<23.6	23.6	0.3	0.00	3.54	7.08	0.5	0.00	5.90	11.79	90.0
123478-HxCDF	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	53.1
123678-HxCDF	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	73.4
234678-HxCDF	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	67.5
123789-HxCDF	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	71.9
1234678-HpCDF	<23.6	23.6	0.01	0.00	0.12	0.24	0.01	0.00	0.12	0.24	51.4
1234789-HpCDF	<23.6	23.6	0.01	0.00	0.12	0.24	0.01	0.00	0.12	0.24	62.9
OCDF	<47.2	47.2	0.0003	0.00	0.01	0.01	0.001	0.00	0.02	0.05	-
Total TEQ	-	-	-	0.44	27.22	53.99	-	0.88	24.37	47.87	-

Group Totals	Conc pg/L	LOR$_4$ pg/L	No. of Peaks
Tetra-Dioxins	<4.7	4.7	1
Penta-Dioxins	<23.6	23.6	1
Hexa-Dioxins	<94.3	94.3	4
Hepta-Dioxins	64.2	47.2	2
Octa-Dioxin	635.0	94.3	1
Tetra-Furans	<4.7	4.7	1
Penta-Furans	<23.6	23.6	1
Hexa-Furans	<23.6	23.6	1
Hepta-Furans	<23.6	23.6	1
Octa-Furan	<47.2	47.2	1
S **PCDD/Fs**	699.2		

Australian Government
National Measurement Institute

CERTIFICATE OF ANALYSIS # DAU19_210

Client	ALS Environmental 277-284 Woodpark Road Smithfield NSW 2164	**Job No.**	AUSL01/190628
		Sampled by	Client
		Date Sampled	not specified
		Date Received	28-Jun-19
Contact	Jacob Waugh		

The results relate only to the sample(s) tested.

Method AUTL_03 **Date Reported** 17-Jul-2019

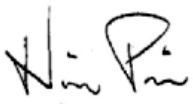
Details

The method is for determination of tri through deca-brominated diphenyl ethers (PBDEs) in aqueous samples by high resolution gas chromatography/high resolution mass spectrometry (HRGC/HRMS). All results are corrected for labelled surrogates.

Prior to extraction, the sample is spiked with a range of isotopically labelled surrogate standards. Clean up is effected by partitioning with sulphuric acid then distilled water. Further purification is performed using column chromatography on acid and base modified silica gels plus basic alumina.

Immediately prior to injection, internal standards are added to each extract, and an aliquot of the extract is injected into the GC. The analytes are separated by the GC and detected by a high-resolution (>10,000) mass spectrometer.

Authorisation



Nino Piro
Senior Chemist
Australian Ultra Trace Laboratory

Dr Alan Yates
Senior Analyst
Australian Ultra Trace Laboratory

Sample Details : Job No. AUSL01/190628

Laboratory Reg. No.	Client Sample Ref.	Matrix	Description
N19/016272	S7	Aqueous	Water
N19/016273	S8	Aqueous	Water

Project Details

Project Name	*Not specified*
Project Number	*Work Order No. ES1920000 / Purchase Order 409312*

Key

Analytes

BDE 17	2,2,'4-Tribromodiphenyl ether
BDE 28 + 33	2,4,4'-Tribromodiphenyl ether + 2',3,4-Tribromodiphenyl ether
BDE 30	2,4,6-Tribromodiphenyl ether
BDE 47	2,2',4,4'-Tetrabromodiphenyl ether
BDE 49	2,2,'4,5'-Tetrabromodiphenyl ether
BDE 66	2,3',4,4'-Tetrabromodiphenyl ether
BDE 71	2,3,'4',6-Tetrabromodiphenyl ether
BDE 77	3,3',4,4'-Tetrabromodiphenyl ether
BDE 85	2,2',3,4,4'-Pentabromodiphenyl ether
BDE 99	2,2',4,4',5-Pentabromodiphenyl ether
BDE 100	2,2',4,4',6-Pentabromodiphenyl ether
BDE 119	2,3',4,4',6-Pentabromodiphenyl ether
BDE 126	3,3',4,4',5-Pentabromodiphenyl ether
BDE 138 + 166	2,2',3,4,4',5'-Hexabromodiphenyl ether + 2,3,4,4',5,6-Hexabromodiphenyl ether
BDE 139	2,2',3,4,4',6-Hexabromodiphenyl ether
BDE 140	2,2',3,4,4',6'-Hexabromodiphenyl ether
BDE 153	2,2',4,4',5,5'-Hexabromodiphenyl ether
BDE 154	2,2',4,4',5,6'-Hexabromodiphenyl ether
BDE 156 + 169	2,3,3',4,4',5-Hexabromodiphenyl ether + 3,3',4,4',5,5'-Hexabromodiphenyl ether
BB 153	2,2',4,4',5,5'-Hexabromobiphenyl
BDE 171	2,2',3,3',4,4',6-Heptabromodiphenyl ether
BDE 180	2,2',3,4,4',5,5'-Heptabromodiphenyl ether
BDE 183	2,2',3,4,4',5',6-Heptabromodiphenyl ether
BDE 184	2,2',3,4,4',6,6'-Heptabromodiphenyl ether
BDE 191	2,3,3',4,4',5',6-Heptabromodiphenyl ether
BDE 196	2,2',3,3',4,4',5,6'-Octabromodiphenyl ether
BDE 197	2,2',3,3',4,4',6,6'-Octabromodiphenyl ether
BDE 201	2,2',3,3',4,5',6,6'-Octabromodiphenyl ether
BDE 203	2,2',3,4,4',5,5',6-Octabromodiphenyl ether
BDE 204	2,2',3,4,4',5,6,6'-Octabromodiphenyl ether
BDE 205	2,3,3',4,4',5,5',6-Octabromodiphenyl ether
BDE 206	2,2',3,3',4,4',5,5',6-Nonabromodiphenyl ether
BDE 207	2,2',3,3',4,4',5,6,6'-Nonabromodiphenyl ether
BDE 208	2,2',3,3',4,5,5',6,6'-Nonabromodiphenyl ether
BDE 209	2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether

Units & Abbreviations

ng/kg	nanograms per kilogram
<	level less than limit of detection (LOD)
Surrogate Recovery	percentage recovery for $^{13}C_{12}$ labelled surrogate standard
⚐	Laboratory surrogate recovery outside normal acceptance criteria (25 - 125%)

Results : Job No. AUSL01/190628

Laboratory Reg. No.	N19/016272	**Date Extracted**	9-Jul-19
Client Sample Ref.	S7	**DB5 Analysis**	15-Jul-19
Matrix	Aqueous		
Description	Water		

PBDE Congener	Level ng/kg	Labelled Surrogate recovery	
BDE 17	<0.003		
BDE 28 + 33	<0.006	74	
BDE 30	<0.004		
BDE 47	<0.04	83	
BDE 49	<0.002		
BDE 66	<0.002		
BDE 71	<0.002		
BDE 77	<0.001	99	
BDE 85	<0.003		
BDE 99	<0.02	90	
BDE 100	<0.004	82	
BDE 119	<0.002		
BDE 126	<0.001	115	
BDE 138 + 166	<0.002		
BDE 139	<0.002		
BDE 140	<0.002		
BDE 153	<0.002	95	
BDE 154	<0.004	83	
BDE 156 + 169	<0.002	103	
BB 153	<0.004	92	
BDE 171	<0.003		
BDE 180	<0.003		
BDE 183	<0.003	74	
BDE 184	<0.003		
BDE 191	<0.003		
BDE 196	<0.003		
BDE 197	<0.003	101	
BDE 201	<0.003		
BDE 203	<0.004		
BDE 204	<0.005		
BDE 205	<0.004	116	
BDE 206	<0.02		
BDE 207	<0.04	86	
BDE 208	<0.02		
BDE 209	<0.3	106	

Summary Results		
Sum of PBDE congeners		
Excluding LOD values	0	ng/kg

Results : Job No. AUSL01/190628

Laboratory Reg. No.	N19/016273	**Date Extracted**	9-Jul-19
Client Sample Ref.	S8	**DB5 Analysis**	15-Jul-19
Matrix	Aqueous		
Description	Water		

PBDE Congener	Level ng/kg	Labelled Surrogate recovery	
BDE 17	<0.004		
BDE 28 + 33	<0.008	78	
BDE 30	<0.005		
BDE 47	<0.05	87	
BDE 49	<0.002		
BDE 66	<0.002		
BDE 71	<0.002		
BDE 77	<0.001	102	
BDE 85	<0.003		
BDE 99	<0.02	92	
BDE 100	<0.004	85	
BDE 119	<0.003		
BDE 126	<0.002	114	
BDE 138 + 166	<0.003		
BDE 139	<0.003		
BDE 140	<0.002		
BDE 153	<0.003	94	
BDE 154	<0.004	84	
BDE 156 + 169	<0.002	104	
BB 153	<0.004	96	
BDE 171	<0.004		
BDE 180	<0.004		
BDE 183	<0.01	75	
BDE 184	<0.004		
BDE 191	<0.003		
BDE 196	<0.004		
BDE 197	<0.009	101	
BDE 201	<0.004		
BDE 203	<0.005		
BDE 204	<0.005		
BDE 205	<0.006	126	
BDE 206	<0.01		
BDE 207	<0.03	86	
BDE 208	<0.01		
BDE 209	<0.3	113	

Summary Results		
Sum of PBDE congeners		
Excluding LOD values	0	ng/kg

CERTIFICATE OF ANALYSIS

Client	**INNERWEST COUNCIL**	**Laboratory :**	Environmental Division Sydney		
Contact	S KHAN	**Contact**	CUSTOMER.SERVICES.ES	**Work Order:**	**ES1990034**
Address:	SYDNEY SYDNEY	**Address:**	277-289 Woodpark Road Smithfield NSW 2164 Australia		
Project	Parramatta River Risk Assessment	**Quote #**	----	**Received:**	1 Jul 2019
Order #	- Not provided -			**Issued**	10 Jul 2019
C-O-C #	- Not provided -				
Site	- Not provided -				
E-mail	S.khan@unsw.edu.au	**E-mail**	ALSEnviro.Sydney@alsglobal.com	**Number of Samples**	
Phone	- Not provided -	**Phone**	+61-2-8784 8555	**Received:**	2
Fax	- Not provided -	**Fax**	+61-2-8784 8500	**Analysed:**	2

Notes

LOR = Limit of reporting
I-TEF = International toxic equivalency factor
I-TEQ = International toxic equivalence
WHO-TEF = World Health Organistaion toxic equivalency factor
WHO-TEQ = World Health Organisation toxic equivalence

1 I -TEQ(zero) and WHO-TEQ(zero) calculated treating <LOR as zero concentration
2 I -TEQ(0.5 LOR) and WHO-TEQ(0.5 zero) calculated treating <LOR as 0.5 LoR concentration
3 I-TEQ(LOR) and WHO-TEQ(LOR) calculated treating <LOR as LoR concentration
4 Totals LORs are calculated by multiplying the number of peaks by the individual LOR per compound
5 13C12 Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency.

T = tetra
Pe = penta
Hx = hexa
Hp =hepta
O = octa
CDD, dioxin = chlorinated dibenzo-p-dioxin
CDF, furan = chlorinated dibenzofuran

Samples analysed 'as received', results reported on 'dry weight' basis.

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NATA Accredited Laboratory - 825

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Accredited for compliance with ISO/IED 17025

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)

Client	: INNERWEST COUNCIL	**Work Order**	: ES1990034
Project	: Parramatta River Risk Assessment	**ALS Quote Reference**	: ----

ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: ES1990034001
Client Sample ID: S9

Qc Lot Number: 4537616
Sample Matrix: WATER

Date Sampled: 30-Jun-2019
Date Extracted: 04-Jul-2019
Date Analysed: 04-Jul-2019

Compound	Conc pg/L	LOR pg/L	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<4.7	4.7	1	0.00	2.36	4.72	1	0.00	2.36	4.72	80.8
12378-PeCDD	<23.6	23.6	1	0.00	11.79	23.58	0.5	0.00	5.90	11.79	85.2
123478-HxCDD	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	48.1
123678-HxCDD	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	71.0
123789-HxCDD	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	-
1234678-HpCDD	<23.6	23.6	0.01	0.00	0.12	0.24	0.01	0.00	0.12	0.24	51.2
OCDD	<94.3	94.3	0.0003	0.00	0.01	0.03	0.001	0.00	0.05	0.09	24.0
2378-TCDF	<4.7	4.7	0.1	0.00	0.24	0.47	0.1	0.00	0.24	0.47	71.8
12378-PeCDF	<23.6	23.6	0.03	0.00	0.35	0.71	0.05	0.00	0.59	1.18	71.5
23478-PeCDF	<23.6	23.6	0.3	0.00	3.54	7.08	0.5	0.00	5.90	11.79	79.6
123478-HxCDF	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	43.4
123678-HxCDF	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	64.6
234678-HxCDF	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	60.1
123789-HxCDF	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	54.7
1234678-HpCDF	<23.6	23.6	0.01	0.00	0.12	0.24	0.01	0.00	0.12	0.24	39.2
1234789-HpCDF	<23.6	23.6	0.01	0.00	0.12	0.24	0.01	0.00	0.12	0.24	44.0
OCDF	<47.2	47.2	0.0003	0.00	0.01	0.01	0.001	0.00	0.02	0.05	-
Total TEQ	-	-	-	0.00	26.91	53.82	-	0.00	23.66	47.31	-

Group Totals	Conc pg/L	LOR$_4$ pg/L	No. of Peaks
Tetra-Dioxins	<4.7	4.7	1
Penta-Dioxins	<23.6	23.6	1
Hexa-Dioxins	<23.6	23.6	1
Hepta-Dioxins	<23.6	23.6	1
Octa-Dioxin	<94.3	94.3	1
Tetra-Furans	<4.7	4.7	1
Penta-Furans	<23.6	23.6	1
Hexa-Furans	<23.6	23.6	1
Hepta-Furans	<23.6	23.6	1
Octa-Furan	<47.2	47.2	1
S **PCDD/Fs**	0.0		

ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: ES1990034002
Client Sample ID: S10
Qc Lot Number: 4537617
Sample Matrix: WATER
Date Sampled: 30-Jun-2019
Date Extracted: 04-Jul-2019
Date Analysed: 04-Jul-2019

Compound	Conc pg/L	LOR pg/L	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<4.7	4.7	1	0.00	2.36	4.72	1	0.00	2.36	4.72	70.7
12378-PeCDD	<23.6	23.6	1	0.00	11.79	23.58	0.5	0.00	5.90	11.79	73.4
123478-HxCDD	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	49.4
123678-HxCDD	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	65.5
123789-HxCDD	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	-
1234678-HpCDD	<23.6	23.6	0.01	0.00	0.12	0.24	0.01	0.00	0.12	0.24	47.7
OCDD	249.0	94.3	0.0003	0.07	0.07	0.07	0.001	0.25	0.25	0.25	25.9
2378-TCDF	<4.7	4.7	0.1	0.00	0.24	0.47	0.1	0.00	0.24	0.47	58.0
12378-PeCDF	<23.6	23.6	0.03	0.00	0.35	0.71	0.05	0.00	0.59	1.18	61.5
23478-PeCDF	<23.6	23.6	0.3	0.00	3.54	7.08	0.5	0.00	5.90	11.79	65.8
123478-HxCDF	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	43.9
123678-HxCDF	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	65.4
234678-HxCDF	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	58.6
123789-HxCDF	<23.6	23.6	0.1	0.00	1.18	2.36	0.1	0.00	1.18	2.36	55.0
1234678-HpCDF	<23.6	23.6	0.01	0.00	0.12	0.24	0.01	0.00	0.12	0.24	38.3
1234789-HpCDF	<23.6	23.6	0.01	0.00	0.12	0.24	0.01	0.00	0.12	0.24	40.5
OCDF	<47.2	47.2	0.0003	0.00	0.01	0.01	0.001	0.00	0.02	0.05	-
Total TEQ	-	-	-	0.07	26.97	53.86	-	0.25	23.86	47.47	-

Group Totals	Conc pg/L	LOR$_4$ pg/L	No. of Peaks
Tetra-Dioxins	<4.7	4.7	1
Penta-Dioxins	<23.6	23.6	1
Hexa-Dioxins	<23.6	23.6	1
Hepta-Dioxins	<47.2	47.2	2
Octa-Dioxin	249.0	94.3	1
Tetra-Furans	<4.7	4.7	1
Penta-Furans	<23.6	23.6	1
Hexa-Furans	<23.6	23.6	1
Hepta-Furans	<23.6	23.6	1
Octa-Furan	<47.2	47.2	1
S **PCDD/Fs**	249.0		

CERTIFICATE OF ANALYSIS

Client	**INNERWEST COUNCIL**	**Laboratory :**	Environmental Division Sydney		
Contact	AMOS BRANCH	**Contact**	CUSTOMER.SERVICES.ES	**Work Order:**	**ES1990035**
Address:	PO Box 14 Petersham NSW 2019	**Address:**	277-289 Woodpark Road Smithfield NSW 2164 Australia		
Project	Parramatta River Risk Assessment	**Quote #**	----	**Received:**	2 Jul 2019
Order #	- Not provided -			**Issued**	12 Jul 2019
C-O-C #	- Not provided -				
Site	- Not provided -				
E-mail	amos.branch@unsw.edu.au	**E-mail**	ALSEnviro.Sydney@alsglobal.com	**Number of Samples**	
Phone	- Not provided -	**Phone**	+61-2-8784 8555	**Received:**	2
Fax	- Not provided -	**Fax**	+61-2-8784 8500	**Analysed:**	2

Notes

LOR = Limit of reporting
I-TEF = International toxic equivalency factor
I-TEQ = International toxic equivalence
WHO-TEF = World Health Organistaion toxic equivalency factor
WHO-TEQ = World Health Organisation toxic equivalence

1 I -TEQ(zero) and WHO-TEQ(zero) calculated treating <LOR as zero concentration
2 I -TEQ(0.5 LOR) and WHO-TEQ(0.5 zero) calculated treating <LOR as 0.5 LoR concentration
3 I-TEQ(LOR) and WHO-TEQ(LOR) calculated treating <LOR as LoR concentration
4 Totals LORs are calculated by multiplying the number of peaks by the individual LOR per compound
5 13C12 Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency.

T = tetra
Pe = penta
Hx = hexa
Hp =hepta
O = octa
CDD, dioxin = chlorinated dibenzo-p-dioxin
CDF, furan = chlorinated dibenzofuran

Samples analysed 'as received', results reported on 'dry weight' basis.

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Accredited for compliance with ISO/IED 17025

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Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)

Client	: INNERWEST COUNCIL	**Work Order**	: ES1990035
Project	: Parramatta River Risk Assessment	**ALS Quote Reference**	: ----

ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: ES1990035001
Client Sample ID: S11

Qc Lot Number: 4537720
Sample Matrix: WATER

Date Sampled: 01-Jul-2019
Date Extracted: 12-Jul-2019
Date Analysed: 12-Jul-2019

Compound	Conc pg/L	LOR pg/L	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<4.7	4.7	1	0.00	2.34	4.67	1	0.00	2.34	4.67	84.1
12378-PeCDD	<23.4	23.4	1	0.00	11.68	23.36	0.5	0.00	5.84	11.68	73.0
123478-HxCDD	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	69.8
123678-HxCDD	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	95.9
123789-HxCDD	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	-
1234678-HpCDD	<23.4	23.4	0.01	0.00	0.12	0.23	0.01	0.00	0.12	0.23	55.8
OCDD	<93.5	93.5	0.0003	0.00	0.01	0.03	0.001	0.00	0.05	0.09	19.0
2378-TCDF	<4.7	4.7	0.1	0.00	0.23	0.47	0.1	0.00	0.23	0.47	58.4
12378-PeCDF	<23.4	23.4	0.03	0.00	0.35	0.70	0.05	0.00	0.58	1.17	55.7
23478-PeCDF	<23.4	23.4	0.3	0.00	3.50	7.01	0.5	0.00	5.84	11.68	53.6
123478-HxCDF	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	55.8
123678-HxCDF	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	86.3
234678-HxCDF	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	70.0
123789-HxCDF	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	56.4
1234678-HpCDF	<23.4	23.4	0.01	0.00	0.12	0.23	0.01	0.00	0.12	0.23	43.9
1234789-HpCDF	<23.4	23.4	0.01	0.00	0.12	0.23	0.01	0.00	0.12	0.23	37.7
OCDF	<46.7	46.7	0.0003	0.00	0.01	0.01	0.001	0.00	0.02	0.05	-
Total TEQ	-	-	-	0.00	26.66	53.31	-	0.00	23.43	46.87	-

Group Totals	Conc pg/L	LOR$_4$ pg/L	No. of Peaks
Tetra-Dioxins	<4.7	4.7	1
Penta-Dioxins	<23.4	23.4	1
Hexa-Dioxins	<23.4	23.4	1
Hepta-Dioxins	<23.4	23.4	1
Octa-Dioxin	<93.5	93.5	1
Tetra-Furans	<4.7	4.7	1
Penta-Furans	<23.4	23.4	1
Hexa-Furans	<23.4	23.4	1
Hepta-Furans	<23.4	23.4	1
Octa-Furan	<46.7	46.7	1
S **PCDD/Fs**	0.0		

ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: ES1990035002
Client Sample ID: S12
Qc Lot Number: 4537721
Sample Matrix: WATER
Date Sampled: 01-Jul-2019
Date Extracted: 12-Jul-2019
Date Analysed: 12-Jul-2019

Compound	Conc pg/L	LOR pg/L	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<4.7	4.7	1	0.00	2.34	4.67	1	0.00	2.34	4.67	79.9
12378-PeCDD	<23.4	23.4	1	0.00	11.68	23.36	0.5	0.00	5.84	11.68	70.1
123478-HxCDD	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	58.3
123678-HxCDD	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	93.8
123789-HxCDD	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	-
1234678-HpCDD	<23.4	23.4	0.01	0.00	0.12	0.23	0.01	0.00	0.12	0.23	47.5
OCDD	<93.5	93.5	0.0003	0.00	0.01	0.03	0.001	0.00	0.05	0.09	17.2
2378-TCDF	<4.7	4.7	0.1	0.00	0.23	0.47	0.1	0.00	0.23	0.47	54.1
12378-PeCDF	<23.4	23.4	0.03	0.00	0.35	0.70	0.05	0.00	0.58	1.17	54.4
23478-PeCDF	<23.4	23.4	0.3	0.00	3.50	7.01	0.5	0.00	5.84	11.68	51.0
123478-HxCDF	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	51.3
123678-HxCDF	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	83.4
234678-HxCDF	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	64.1
123789-HxCDF	<23.4	23.4	0.1	0.00	1.17	2.34	0.1	0.00	1.17	2.34	49.8
1234678-HpCDF	<23.4	23.4	0.01	0.00	0.12	0.23	0.01	0.00	0.12	0.23	38.1
1234789-HpCDF	<23.4	23.4	0.01	0.00	0.12	0.23	0.01	0.00	0.12	0.23	27.4
OCDF	<46.7	46.7	0.0003	0.00	0.01	0.01	0.001	0.00	0.02	0.05	-
Total TEQ	-	-	-	0.00	26.66	53.31	-	0.00	23.43	46.87	-

Group Totals	Conc pg/L	LOR$_4$ pg/L	No. of Peaks
Tetra-Dioxins	<4.7	4.7	1
Penta-Dioxins	<23.4	23.4	1
Hexa-Dioxins	<23.4	23.4	1
Hepta-Dioxins	<23.4	23.4	1
Octa-Dioxin	<93.5	93.5	1
Tetra-Furans	<4.7	4.7	1
Penta-Furans	<23.4	23.4	1
Hexa-Furans	<23.4	23.4	1
Hepta-Furans	<23.4	23.4	1
Octa-Furan	<46.7	46.7	1
S **PCDD/Fs**	0.0		

Callan Park Samples May-July 2019 **POSITIVES ONLY**
ESI trace organics method results (UNSW)
ng/L

Sample Name	Results (ng/L)									
analyte	Saccharin	Bisphenol A	Diuron	Ibuprofen	PFOA	PFOS	Paracetamol	Caffeine	Benzotriazole	TCEP
LOQ ng/L	5	10	5	5	5	5	5	5	5	5
lab blank MQ grade water	< LOQ	< LOQ	< LOQ	< LOQ	11	< LOQ	< LOQ	32	< LOQ	< LOQ
Recovery 50 ng/L MQ grade water	58	50	52	42	340	53	53	55	57	58
N1	16	< LOQ	29	< LOQ	16	< LOQ	28	262	23	18
N2	18	341	34	< LOQ	22	< LOQ	30	254	29	19
N3-1	17	1020	34	< LOQ	35	< LOQ	31	256	26	22
N3-2	14	< LOQ	32	< LOQ	< LOQ	< LOQ	28	242	23	17
N3-3	12	< LOQ	29	< LOQ	< LOQ	< LOQ	26	221	24	18
N3-S	N.Q.	N.Q.	46	< LOQ	516	< LOQ	47	256	N.Q.	N.Q.
N4	19	< LOQ	65	< LOQ	66	< LOQ	55	449	69	42
lab blank MQ grade water	< LOQ	235	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
Recovery 10 ng/L MQ grade water	10	12	11	11	13	11	10	12	12	10
S-1	17	15	33	< LOQ	< LOQ	< LOQ	134	323	35	31
S-2	19	4730	34	72	< LOQ	< LOQ	141	326	34	33
S-3	14	19	32	< LOQ	< LOQ	< LOQ	39	298	29	19
S-3a	10	< LOQ	29	< LOQ	< LOQ	< LOQ	30	278	26	17
S-4	15	< LOQ	31	< LOQ	< LOQ	5	26	440	25	18
S-4a	15	18	29	< LOQ	< LOQ	< LOQ	26	388	26	18
S-5	14	97	31	< LOQ	< LOQ	5	93	193	30	31
S-5a	15	< LOQ	31	< LOQ	< LOQ	5	92	198	31	33
S-6	14	< LOQ	29	< LOQ	< LOQ	5	91	195	28	30
S-6a	16	< LOQ	30	< LOQ	< LOQ	5	91	191	28	35
lab blank MQ grade water	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
Recovery 10 ng/L MQ grade water	14	10	10	10	15	10	10	11	11	11
S7	32	13	41	8	6	< LOQ	328	432	44	88
S7a	39	26	44	10	6	< LOQ	375	481	47	100
S8	33	10	45	7	7	< LOQ	330	430	48	89
S8a	37	< LOQ	44	9	7	< LOQ	353	445	48	97
S9	22	< LOQ	53	< LOQ	5	5	130	395	46	59
S9a	23	< LOQ	52	< LOQ	< LOQ	< LOQ	125	388	45	64
lab blank MQ grade water	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
Recovery 50 ng/L MQ grade water	49	69	47	49	64	49	50	49	48	46
S10	20	< LOQ	51	< LOQ	6	11	127	362	46	64
S10a	19	16	49	< LOQ	< LOQ	13	121	365	44	54
S11	17	16	47	< LOQ	< LOQ	< LOQ	126	330	43	58
S11a	22	< LOQ	50	< LOQ	< LOQ	< LOQ	130	347	43	58
S12	22	< LOQ	49	< LOQ	5	< LOQ	128	349	45	57
S12a	18	< LOQ	48	< LOQ	< LOQ	< LOQ	122	329	39	54
lab blank MQ grade water	< LOQ	38	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
Recovery 10 ng/L MQ grade water	10	10	8	7	18	8	16	12	9	9

Callan Park Samples May-July 2019
ESI trace organics method results (UNSW)

Sample Name	Results (ng/L)																																		
analyte	saccharin	Ketoprofen	Naproxen	Bisphenol A	diclofenac	propylparaben	Diuron	Ibuprofen	phenylphenol	Gemfibrozil	triclocarban	Triclosan	4-n-nonylphenol	PFOA	PFOS	Atenolol	Paracetamol	Sulfamethoxazole	Caffeine	Trimethoprim	benzotriazole	triamterene	primidone	carazolol	TCEP	Dilantin	Simazine	Carbamazepine	omeprazole	Atrazine	Linuron	diazepam	clozapine	hydroxyzine	Diazinon
LOQ ng/L	5	5	5	10	5	20	5	5	10	5	10	5	10	5	5	5	5	5	5	5	5	5	10	5	5	10	5	5	5	5	5	5	5	10	5
lab blank MQ grade water	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	6	31	11	< LOQ	< LOQ	< LOQ	< LOQ	32	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	0	< LOQ	< LOQ	< LOQ
R10	58	49	41	50	60	7	52	42	< LOQ	49	53	52	73	340	53	53	53	48	55	49	57	50	55	65	58	49	98	51	< LOQ	66	50	49	60	42	53
N1	16	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	29	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	16	< LOQ	< LOQ	28	< LOQ	262	< LOQ	23	< LOQ	< LOQ	< LOQ	18	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
N2	18	< LOQ	< LOQ	341	< LOQ	< LOQ	34	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	22	< LOQ	< LOQ	30	< LOQ	254	< LOQ	29	< LOQ	< LOQ	< LOQ	19	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
N3-1	17	< LOQ	< LOQ	1020	N.Q.	< LOQ	34	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	35	< LOQ	< LOQ	31	< LOQ	256	< LOQ	26	< LOQ	< LOQ	< LOQ	22	< LOQ	N.Q.	< LOQ	< LOQ	N.Q.	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
N3-2	14	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	32	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	28	< LOQ	242	< LOQ	23	< LOQ	< LOQ	< LOQ	17	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
N3-3	12	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	29	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	26	< LOQ	221	< LOQ	24	< LOQ	< LOQ	< LOQ	18	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
N3-5	N.Q.	< LOQ	N.Q.	N.Q.	N.Q.	< LOQ	46	< LOQ	< LOQ	11	< LOQ	N.Q.	< LOQ	516	< LOQ	< LOQ	47	8	256	< LOQ	N.Q.	N.Q.	< LOQ	< LOQ	N.Q.	< LOQ	N.Q.	N.Q.	< LOQ	12	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
N4	19	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	65	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	66	< LOQ	< LOQ	55	< LOQ	449	< LOQ	69	< LOQ	< LOQ	< LOQ	42	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
lab blank MQ grade water	< LOQ	< LOQ	< LOQ	235	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
R10 -1	10	10	10	12	11	7	11	11	6	11	11	12	11	13	11	11	10	11	12	10	12	12	12	11	10	12	11	11	11	10	10	9	10	10	11
S-1	17	< LOQ	< LOQ	15	< LOQ	< LOQ	33	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	134	< LOQ	323	< LOQ	35	< LOQ	< LOQ	< LOQ	31	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
S-2	19	< LOQ	< LOQ	4730	< LOQ	< LOQ	34	72	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	141	< LOQ	326	< LOQ	34	< LOQ	< LOQ	< LOQ	33	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
S-3	14	< LOQ	< LOQ	19	< LOQ	< LOQ	32	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	39	< LOQ	298	< LOQ	29	< LOQ	< LOQ	< LOQ	19	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
S-3a	10	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	29	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	30	< LOQ	278	< LOQ	26	< LOQ	< LOQ	< LOQ	17	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
S-4	15	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	31	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	5	< LOQ	26	< LOQ	440	< LOQ	25	< LOQ	< LOQ	< LOQ	18	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	11	< LOQ	< LOQ	< LOQ
S-4a	15	< LOQ	< LOQ	18	< LOQ	< LOQ	29	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	26	< LOQ	388	< LOQ	26	< LOQ	< LOQ	< LOQ	18	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
S-5	14	< LOQ	< LOQ	97	< LOQ	< LOQ	31	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	5	< LOQ	93	< LOQ	193	< LOQ	30	< LOQ	< LOQ	< LOQ	31	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
S-5a	15	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	31	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	5	< LOQ	92	< LOQ	198	< LOQ	31	< LOQ	< LOQ	< LOQ	33	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
S-6	14	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	29	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	5	< LOQ	91	< LOQ	195	< LOQ	28	< LOQ	< LOQ	< LOQ	30	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
S-6a	16	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	30	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	5	< LOQ	91	< LOQ	191	< LOQ	28	< LOQ	< LOQ	< LOQ	35	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
lab blank MQ grade water	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
R10-2	14	10	9	10	10	8	10	10	5	10	10	11	9	15	10	10	10	10	11	10	11	10	9	10	11	10	13	10	10	11	10	10	11	10	10
S7	32	< LOQ	< LOQ	13	< LOQ	< LOQ	41	8	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	6	< LOQ	< LOQ	328	< LOQ	432	< LOQ	44	< LOQ	< LOQ	< LOQ	88	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
S7a	39	< LOQ	< LOQ	26	< LOQ	< LOQ	44	10	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	6	< LOQ	< LOQ	375	< LOQ	481	< LOQ	47	< LOQ	< LOQ	< LOQ	100	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
S8	33	< LOQ	< LOQ	10	< LOQ	< LOQ	45	7	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	7	< LOQ	< LOQ	330	< LOQ	430	< LOQ	48	< LOQ	< LOQ	< LOQ	89	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
S8a	37	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	44	9	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	7	< LOQ	< LOQ	353	< LOQ	445	< LOQ	48	< LOQ	< LOQ	< LOQ	97	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
S9	22	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	53	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	5	5	< LOQ	130	< LOQ	395	< LOQ	46	< LOQ	< LOQ	< LOQ	59	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
S9a	23	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	52	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	125	< LOQ	388	< LOQ	45	< LOQ	< LOQ	< LOQ	64	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
lab blank MQ grade water	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
R50	49	46	48	69	47	42	47	49	32	49	42	50	47	64	49	49	50	47	49	45	48	48	45	49	46	49	52	47	48	53	47	46	49	48	48
S10	20	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	51	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	6	11	< LOQ	127	< LOQ	362	< LOQ	46	< LOQ	< LOQ	< LOQ	64	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
S10a	19	< LOQ	< LOQ	16	< LOQ	< LOQ	49	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	13	< LOQ	121	< LOQ	365	< LOQ	44	< LOQ	< LOQ	< LOQ	54	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
S11	17	< LOQ	< LOQ	16	< LOQ	< LOQ	47	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	126	< LOQ	330	< LOQ	43	< LOQ	< LOQ	< LOQ	58	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
S11a	22	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	50	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	130	< LOQ	347	< LOQ	43	< LOQ	< LOQ	< LOQ	58	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
S12	22	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	49	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	5	< LOQ	< LOQ	128	< LOQ	349	< LOQ	45	< LOQ	< LOQ	< LOQ	57	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
S12a	18	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	48	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	122	< LOQ	329	< LOQ	39	< LOQ	< LOQ	< LOQ	54	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
lab blank MQ grade water	< LOQ	< LOQ	< LOQ	38	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ	< LOQ
R10	10	7	8	10	9	6	8	7	4	11	8	10	7	18	8	9	16	8	12	9	9	9	8	9	9	9	23	10	7	7	9	9	9	8	8

Appendix B Data evaluation

B1 Introduction

The validity of analytical data has been assessed by undertaking a review of the field and laboratory quality assurance and quality control (QA/QC) results. The focus of this assessment relates to water samples collected by staff from the UNSW and analysed from the proposed recreational area of Callan Park.

B2 Field duplicates/replicates

In relation to the sampling of surface water, no field duplicates were collected. While it is preferred that field duplicates are collected, it is noted that surface water was sampled from 2 locations in relative close proximity to each other on each occasion. Where detected, the anaytes detected and the concentrations reported were generally consistent. Given that the media being sampled was surface water which is expected to be well mixed, and the 2 samples collected showed good consistency on each sampling event, the lack of field duplicates is not considered to be critical to the overall reliability of the data.

B3 Rinsate results

The collection of surface water from the 2 locations on each sampling event did not require the decontamination of the sampler between samples. All water samples collected were poured into laboratory prepared bottles for analysis. All equipment was cleaned post sample collected, prior to other sampling events.

B4 Chain of custody and holding times

All water samples were submitted to the analytical laboratories under chain of custody procedures. Review of the COC forms indicates that these were properly completed, the samples were received with custody seal intact, chilled (ice bricks used). All samples were analysed within the relevant holding times.

B5 Laboratory QA/QC

The following table presents the results of laboratory QA/QC samples analysed.

Relevant QA/QC reports from ALS are also included in this appendix.

Table B1: Summary of laboratory QA/QC results

Sample IDs	Analysis	Laboratory report and date	Comments
Surrogate recoveries and notes on certificate of analysis			
S1 and S2	ALS analysis of inorganics and organics	ES1917456 22 July 2019	All surrogate recoveries reported within relevant limits for the analysis. Reporting of multiresidue pesticides noted to have poor matrix spike recovery due to matrix interferences. Matrix interference (high TDS) noted for phenolic endocrine disrupting compounds with the LOR raised. Reporting of dissolved metals required dilution due to matrix interference with raised LOR noted. High laboratory control sample (LCS) recovery noted for BTEXN and deemed acceptable by the laboratory.
	Analysis of PBDEs by NMI	DAU19_193 2 July 2019	All laboratory surrogate recoveries within acceptable limits.

Sample IDs	Analysis	Laboratory report and date	Comments
	Analysis of dioxins by ALS	ES1990025 17 June 2019	All surrogate recoveries within acceptable limits. Water volume was low and hence the LOR was raised.
S3 and S4	ALS analysis of inorganics and organics	ES1918074 30 July 2019	All surrogate recoveries reported within relevant limits for the analysis. Reporting of multiresidue pesticides noted to have poor matrix spike recovery due to matrix interferences. Matrix interference (high TDS) noted for total metals with the LOR raised. High laboratory control sample (LCS) recovery noted for organotin surrogate and deemed acceptable by the laboratory.
	Analysis of PBDEs by NMI	DAI19_194	All laboratory surrogate recoveries within acceptable limits.
	Analysis of dioxins by ALS	ES1990028 18 June 2019	All surrogate recoveries within acceptable limits. Water volume was low and hence the LOR was raised.
S5 and S6	ALS analysis of inorganics and organics	ES1919027 22 July 2019	All surrogate recoveries reported within relevant limits for the analysis. Reporting of phenoxylic acid herbicides by LCMS noted to have poor matrix spike recoveries due to matrix interference. Reporting of multiresidue pesticides noted to have poor matrix spike recovery due to matrix interferences. Matrix interference (high TDS) noted for total metals with the LOR raised as a result of dilution. Matrix interference noted for some PFAS compounds with the LOR raised as a result of dilution.
	Analysis of PBDEs by NMI	DAU19_195 5 July 2019	All laboratory surrogate recoveries within acceptable limits.
	Analysis of dioxins by ALS	ES199030 28 June 2019	All surrogate recoveries within acceptable limits.
S7 and S8	ALS analysis of inorganics and organics	ES1920000 22 July 2019	All surrogate recoveries reported within relevant limits for the analysis. Reporting of phenoxylic acid herbicides by LCMS noted to have poor matrix spike recoveries due to matrix interference. Reporting of multiresidue pesticides noted to have poor matrix spike recovery due to matrix interferences. Reporting of some PFAS compounds required dilution due to matrix interference (conductivity) and LOR raised. High laboratory control sample (LCS) recovery noted for organotin surrogate and deemed acceptable by the laboratory.
	Analysis of PBDEs by NMI	DAU19_210 17 July 2019	Laboratory surrogate recoveries within acceptable limits with the exception of BDE205 for sample S8, where the recover just exceeds the acceptable limits. This is not expected to affect the reliability of the data.
	Analysis of dioxins by ALS	ES1990031 10 July 2019	All surrogate recoveries within acceptable limits.
S9 and S10	Analysis of dioxins by ALS	ES1990034 10 July 2019	All surrogate recoveries within acceptable limits.
S11 and S12	Analysis of dioxins by ALS	ES1990035 12 July 2019	All surrogate recoveries within acceptable limits.
Laboratory duplicates			
S1 and S2	ALS analysis of inorganics and organics	ES1917456 22 July 2019	No duplicate results outside the acceptable recovery limits.
S3 and S4	ALS analysis of inorganics and organics	ES1918074 30 July 2019	No duplicate results outside the acceptable recovery limits.
S5 and S6	ALS analysis of inorganics and organics	ES1919027 22 July 2019	No duplicate results outside the acceptable recovery limits.

Sample IDs	Analysis	Laboratory report and date	Comments
S7 and S8	ALS analysis of inorganics and organics	ES1920000 22 July 2019	No duplicate results outside the acceptable recovery limits.
Method blank			
S1 and S2	ALS analysis of inorganics and organics	ES1917456 22 July 2019	No detections reported
	Analysis of dioxins by ALS	ES1990025 17 June 2019	No detections reported
S3 and S4	ALS analysis of inorganics and organics	ES1918074 30 July 2019	No detections reported
	Analysis of dioxins by ALS	ES1990028 18 June 2019	No detections reported
S5 and S6	ALS analysis of inorganics and organics	ES1919027 22 July 2019	No detections reported
	Analysis of dioxins by ALS	ES199030 28 June 2019	No detections reported
S7 and S8	ALS analysis of inorganics and organics	ES1920000 22 July 2019	No detections reported
	Analysis of dioxins by ALS	ES1990031 10 July 2019	No detections reported
S9 and S10	Analysis of dioxins by ALS	ES1990034 10 July 2019	No detections reported
S11 and S12	Analysis of dioxins by ALS	ES1990035 12 July 2019	No detections reported
Various	ESI trace organics by UNSW	NA	No detections in all lab blank samples
Laboratory Control Spike and Laboratory Control Samples (LCS)			
S1 and S2	ALS analysis of inorganics and organics	ES1917456_0 22 July 2019	LCS spike recovery outside the recovery limits for some individual phenolic compounds, PAHs, phthalate esters, nitrosamines, organophosphorus pesticides, organotin. These recoveries are not expected to affect the reliability of the results.
	Analysis of dioxins by ALS	ES1990025 17 June 2019	All LCS sample recoveries within acceptable limits
S3 and S4	ALS analysis of inorganics and organics	ES1918074 30 July 2019	LCS spike recovery outside the recovery limits for some individual nitrosamines, nitroaromatics and ketones, pesticides, organotin compounds. These recoveries are not expected to affect the reliability of the results.
	Analysis of dioxins by ALS	ES1990028 18 June 2019	All LCS sample recoveries within acceptable limits
S5 and S6	ALS analysis of inorganics and organics	ES1919027 22 July 2019	LCS spike recovery outside the recovery limits for some individual nitrosamines, nitroaromatics and ketones and haloethers. These recoveries are not expected to affect the reliability of the results.
	Analysis of dioxins by ALS	ES199030 28 June 2019	All LCS sample recoveries within acceptable limits
S7 and S8	ALS analysis of inorganics and organics	ES1920000 22 July 2019	LCS spike recovery outside the recovery limits for some individual phthalate esters, nitroaromatics and ketones, haloethers, pesticides and organotin compounds. These recoveries are not expected to affect the reliability of the results.
	Analysis of dioxins by ALS	ES1990031 10 July 2019	All LCS sample recoveries within acceptable limits
S9 and S10	Analysis of dioxins by ALS	ES1990034 10 July 2019	All LCS sample recoveries within acceptable limits
S11 and S12	Analysis of dioxins by ALS	ES1990035 12 July 2019	All LCS sample recoveries within acceptable limits

Sample IDs	Analysis	Laboratory report and date	Comments
Matrix spike (MS) recovery			
S1 and S2	ALS analysis of inorganics and organics	ES1917456 22 July 2019	Matrix spike recoveries are all within acceptable recovery limits with the exception of some individual pesticides, thiocarbamates and carbamates. These individual compounds are not expected to be contaminants of concern in the area evaluated and hence the recoveries are not considered to affect the reliability of the data.
S3 and S4	ALS analysis of inorganics and organics	ES1918074 30 July 2019	Matrix spike recoveries are all within acceptable recovery limits with the exception of some individual pesticides, thiocarbamates and carbamates. These individual compounds are not expected to be contaminants of concern in the area evaluated and hence the recoveries are not considered to affect the reliability of the data.
S5 and S6	ALS analysis of inorganics and organics	ES1919027 22 July 2019	Matrix spike recoveries are all within acceptable recovery limits with the exception of some individual phenoxylic acid herbicides, pesticides and herbicides, thiocarbamates and carbamates, fungicides, chloracetanilides. These individual compounds are not expected to be contaminants of concern in the area evaluated and hence the recoveries are not considered to affect the reliability of the data.
S7 and S8	ALS analysis of inorganics and organics	ES1920000 22 July 2019	Matrix spike recoveries are all within acceptable recovery limits with the exception of some individual phenoxylic acid herbicides, pesticides and herbicides, thiocarbamates and carbamates, fungicides, chloracetanilides. These individual compounds are not expected to be contaminants of concern in the area evaluated and hence the recoveries are not considered to affect the reliability of the data.
Various	ESI trace organics by UNSW	NA	Recoveries within acceptable limits. Note elevated recovery for PFOA in a number of samples. PFOA (and other PFAS) also reported by ALS hence this elevated recovery is not considered to be of concern.

B6 Overall assessment of data quality

On the basis of the review undertaken the overall quality of the analytical data is considered to be reliable for interpretative use.

It is noted that in some analysis the analytical LOR has been raised, however the higher LOR is not considered to be significant. Some laboratory recoveries exceed acceptable limits for some individual compounds. These individual compounds are not expected to be contaminants of concern in the area evaluated and hence the recoveries are not considered to affect the reliability of the data.

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1917456**	Page	: 1 of 10
Client	: **INNER WEST COUNCIL**	Laboratory	: Environmental Division Sydney
Contact	: AMOS BRANCH	Telephone	: +61-2-8784 8555
Project	: Parramatta River Risk Assessment	Date Samples Received	: 06-Jun-2019
Site	: ----	Issue Date	: 22-Jul-2019
Sampler	: ----	No. of samples received	: 2
Order number	: ----	No. of samples analysed	: 2

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075A: Phenolic Compounds	QC-2396786-002	----	**2.4-Dimethylphenol**	105-67-9	44.5 %	50-94%	**Recovery less than lower control limit**
EP075A: Phenolic Compounds	QC-2396786-002	----	**Pentachlorophenol**	87-86-5	103 %	13-95%	**Recovery greater than upper control limit**
EP075B: Polynuclear Aromatic Hydrocarbons	QC-2396786-002	----	**Benzo(b+j) & Benzo(k)fluoranthene**	205-99-2 207-08-9	113 %	60-111%	**Recovery greater than upper control limit**
EP075B: Polynuclear Aromatic Hydrocarbons	QC-2396786-002	----	**7.12-Dimethylbenz(a)anthracene**	57-97-6	112 %	50-108%	**Recovery greater than upper control limit**
EP075B: Polynuclear Aromatic Hydrocarbons	QC-2396786-002	----	**3-Methylcholanthrene**	56-49-5	113 %	60-110%	**Recovery greater than upper control limit**
EP075B: Polynuclear Aromatic Hydrocarbons	QC-2396786-002	----	**Indeno(1.2.3.cd)pyrene**	193-39-5	112 %	60-110%	**Recovery greater than upper control limit**
EP075B: Polynuclear Aromatic Hydrocarbons	QC-2396786-002	----	**Dibenz(a.h)anthracene**	53-70-3	112 %	57-109%	**Recovery greater than upper control limit**
EP075C: Phthalate Esters	QC-2396786-002	----	**Dimethyl phthalate**	131-11-3	117 %	64-112%	**Recovery greater than upper control limit**
EP075D: Nitrosamines	QC-2396786-002	----	**Methapyrilene**	91-80-5	12.0 %	23-125%	**Recovery less than lower control limit**
EP075J: Organophosphorus Pesticides	QC-2396786-002	----	**Dimethoate**	60-51-5	117 %	43-109%	**Recovery greater than upper control limit**
EP075J: Organophosphorus Pesticides	QC-2396786-002	----	**Chlorpyrifos**	2921-88-2	114 %	53-109%	**Recovery greater than upper control limit**
EP075J: Organophosphorus Pesticides	QC-2396786-002	----	**Ethion**	563-12-2	118 %	51-117%	**Recovery greater than upper control limit**
EP090: Organotin Compounds (Soluble)	QC-2398168-002	----	**Monobutyltin**	78763-54-9	157 %	31-134%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EP234A: OP Pesticides	ES1917470--001	Anonymous	**Fenamiphos**	22224-92-6	62.0 %	70-130%	**Recovery less than lower data quality objective**
EP234A: OP Pesticides	ES1917470--001	Anonymous	**Temephos**	3383-96-8	57.0 %	70-130%	**Recovery less than lower data quality objective**
EP234A: OP Pesticides	ES1917470--001	Anonymous	**Fosetyl Aluminium**	39148-24-8	4.44 %	70-130%	**Recovery less than lower data quality objective**
EP234B: Thiocarbamates and Carbamates	ES1917470--001	Anonymous	**Bendiocarb**	22781-23-3	60.2 %	70-130%	**Recovery less than lower data quality objective**
EP234B: Thiocarbamates and Carbamates	ES1917470--001	Anonymous	**Thiodicarb**	59669-26-0	0.00 %	70-130%	**Recovery less than lower data quality objective**
EP234I: Miscellaneous (ESI Positive Mode) Pesticides	ES1917470--001	Anonymous	**Aminopyralid**	150114-71-9	10.4 %	70-130%	**Recovery less than lower data quality objective**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
Organotin Compounds (Soluble)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	17	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	10	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	13	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	16	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Organotin Compounds (Soluble)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	17	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	10	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	13	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	16	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **WATER**

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

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H)							
S1, S2	**06-Jun-2019**	**----**	----	----	**12-Jun-2019**	13-Jun-2019	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Natural (EG020A-F)							
S1, S2	**06-Jun-2019**	**----**	----	----	**13-Jun-2019**	03-Dec-2019	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Natural (EG035F)							
S1, S2	**06-Jun-2019**	**----**	----	----	**14-Jun-2019**	04-Jul-2019	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066)							
S1, S2	**06-Jun-2019**	**12-Jun-2019**	13-Jun-2019	✓	**13-Jun-2019**	22-Jul-2019	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved (EP068)							
S1, S2	**06-Jun-2019**	**12-Jun-2019**	13-Jun-2019	✓	**13-Jun-2019**	22-Jul-2019	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068)							
S1, S2	**06-Jun-2019**	**12-Jun-2019**	13-Jun-2019	✓	**13-Jun-2019**	22-Jul-2019	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S1, S2	**06-Jun-2019**	**16-Jun-2019**	20-Jun-2019	✓	**16-Jun-2019**	20-Jun-2019	✓
EP074B: Oxygenated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S1, S2	**06-Jun-2019**	**16-Jun-2019**	20-Jun-2019	✓	**16-Jun-2019**	20-Jun-2019	✓
EP074C: Sulfonated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S1, S2	**06-Jun-2019**	**16-Jun-2019**	20-Jun-2019	✓	**16-Jun-2019**	20-Jun-2019	✓
EP074D: Fumigants							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S1, S2	**06-Jun-2019**	**16-Jun-2019**	20-Jun-2019	✓	**16-Jun-2019**	20-Jun-2019	✓
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S1, S2	**06-Jun-2019**	**16-Jun-2019**	20-Jun-2019	✓	**16-Jun-2019**	20-Jun-2019	✓
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S1, S2	**06-Jun-2019**	**16-Jun-2019**	20-Jun-2019	✓	**16-Jun-2019**	20-Jun-2019	✓
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S1, S2	**06-Jun-2019**	**16-Jun-2019**	20-Jun-2019	✓	**16-Jun-2019**	20-Jun-2019	✓
EP074H: Naphthalene							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S1, S2	**06-Jun-2019**	**16-Jun-2019**	20-Jun-2019	✓	**16-Jun-2019**	20-Jun-2019	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
S1, S2	**06-Jun-2019**	**12-Jun-2019**	13-Jun-2019	✓	**13-Jun-2019**	22-Jul-2019	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
S1, S2	**06-Jun-2019**	**12-Jun-2019**	13-Jun-2019	✓	**13-Jun-2019**	22-Jul-2019	✓
EP075A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075)							
S1, S2	**06-Jun-2019**	**12-Jun-2019**	13-Jun-2019	✓	**13-Jun-2019**	22-Jul-2019	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075)							
S1, S2	**06-Jun-2019**	**12-Jun-2019**	13-Jun-2019	✓	**13-Jun-2019**	22-Jul-2019	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075C: Phthalate Esters							
Amber Glass Bottle - Unpreserved (EP075)							
S1, S2	**06-Jun-2019**	**12-Jun-2019**	13-Jun-2019	✓	**13-Jun-2019**	22-Jul-2019	✓
EP075D: Nitrosamines							
Amber Glass Bottle - Unpreserved (EP075)							
S1, S2	**06-Jun-2019**	**12-Jun-2019**	13-Jun-2019	✓	**13-Jun-2019**	22-Jul-2019	✓
EP075E: Nitroaromatics and Ketones							
Amber Glass Bottle - Unpreserved (EP075)							
S1, S2	**06-Jun-2019**	**12-Jun-2019**	13-Jun-2019	✓	**13-Jun-2019**	22-Jul-2019	✓
EP075F: Haloethers							
Amber Glass Bottle - Unpreserved (EP075)							
S1, S2	**06-Jun-2019**	**12-Jun-2019**	13-Jun-2019	✓	**13-Jun-2019**	22-Jul-2019	✓
EP075G: Chlorinated Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075)							
S1, S2	**06-Jun-2019**	**12-Jun-2019**	13-Jun-2019	✓	**13-Jun-2019**	22-Jul-2019	✓
EP075H: Anilines and Benzidines							
Amber Glass Bottle - Unpreserved (EP075)							
S1, S2	**06-Jun-2019**	**12-Jun-2019**	13-Jun-2019	✓	**13-Jun-2019**	22-Jul-2019	✓
EP075I: Organochlorine Pesticides							
Amber Glass Bottle - Unpreserved (EP075)							
S1, S2	**06-Jun-2019**	**12-Jun-2019**	13-Jun-2019	✓	**13-Jun-2019**	22-Jul-2019	✓
EP075J: Organophosphorus Pesticides							
Amber Glass Bottle - Unpreserved (EP075)							
S1, S2	**06-Jun-2019**	**12-Jun-2019**	13-Jun-2019	✓	**13-Jun-2019**	22-Jul-2019	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
S1, S2	**06-Jun-2019**	**12-Jun-2019**	13-Jun-2019	✓	**13-Jun-2019**	22-Jul-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
S1, S2	**06-Jun-2019**	**16-Jun-2019**	20-Jun-2019	✓	**16-Jun-2019**	20-Jun-2019	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071)							
S1, S2	**06-Jun-2019**	**12-Jun-2019**	13-Jun-2019	✓	**13-Jun-2019**	22-Jul-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
S1, S2	**06-Jun-2019**	**16-Jun-2019**	20-Jun-2019	✓	**16-Jun-2019**	20-Jun-2019	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
S1, S2	**06-Jun-2019**	**16-Jun-2019**	20-Jun-2019	✓	**16-Jun-2019**	20-Jun-2019	✓
EP090: Organotin Compounds (Soluble)							
Amber Glass Bottle - Unpreserved (EP090S)							
S1, S2	**06-Jun-2019**	**12-Jun-2019**	13-Jun-2019	✓	**12-Jun-2019**	22-Jul-2019	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP202A: Phenoxyacetic Acid Herbicides by LCMS								
Amber Glass Bottle - Unpreserved (EP202-SL)								
S1,	S2	**06-Jun-2019**	**----**	----	----	**07-Jun-2019**	13-Jun-2019	✓
EP204: Glyphosate and AMPA								
Amber Glass Bottle - Unpreserved (EP204)								
S1,	S2	**06-Jun-2019**	**----**	----	----	**07-Jun-2019**	20-Jun-2019	✓
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
S1,	S2	**06-Jun-2019**	**12-Jun-2019**	03-Dec-2019	✓	**12-Jun-2019**	03-Dec-2019	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
S1,	S2	**06-Jun-2019**	**12-Jun-2019**	03-Dec-2019	✓	**12-Jun-2019**	03-Dec-2019	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
S1,	S2	**06-Jun-2019**	**12-Jun-2019**	03-Dec-2019	✓	**12-Jun-2019**	03-Dec-2019	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X)								
S1,	S2	**06-Jun-2019**	**12-Jun-2019**	03-Dec-2019	✓	**12-Jun-2019**	03-Dec-2019	✓
EP234: Multiresidue Pesticides (ESI Positive)								
Amber Glass Bottle - Unpreserved (EP234-1)								
S1,	S2	**06-Jun-2019**	**----**	----	----	**07-Jun-2019**	13-Jun-2019	✓
EP234I: Miscellaneous (ESI Positive Mode) Pesticides								
Amber Glass Bottle - Unpreserved (EP234-1)								
S1,	S2	**06-Jun-2019**	**----**	----	----	**07-Jun-2019**	13-Jun-2019	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Compounds (Soluble)	EP090S	0	2	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	17	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	10	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	3	**33.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	13	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	0	2	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	16	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	4	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Compounds (Soluble)	EP090S	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Glyphosate and AMPA	EP204	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Compounds (Soluble)	EP090S	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Compounds (Soluble)	EP090S	0	2	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	17	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	10	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	13	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	0	2	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	16	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds WF Detection Limits	EP074-WF	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds	EP075	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Organotin Compounds (Soluble)	EP090S	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by GC/MS coupled with high volume injection and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	WATER	In house: LCMS (Electrospray in negative mode). After adding surrogate and acetic acid, water samples are injected on a C18 column for LC/MS determination.
Glyphosate and AMPA	EP204	WATER	In house: Pre-column derivatisation LCMS (ES in negative mode). Water samples are derivatised with 9-fluorenyl methoxycarbonyl chloroformate (FMOC) in alkaline condition. The derivatives of glyphosate and AMPA are separated by a C8 column and determined by MS.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In house: Direct injection analysis of fresh waters after dilution (1:1) with methanol. Analysis by LC-Electrospray-MS-MS, 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
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.
Phenolic Endocrine Disrupting Compounds (EDC)	EP244	WATER	Specialist organic analysis subcontracted to ALS Scoresby (NATA Accredited Laboratory No. 992).

Preparation Methods	Method	Matrix	Method Descriptions
Preparation for PFAS in water.	EP231-PR	WATER	Method presumes direct injection without workup. Preparation includes addition of internal standard and surrogate, and filtration prior to anaylsis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.
Organotin Sample Preparation	ORG34	WATER	In house. A specified volume of sample is spiked with surrogate, acidified and vacuum filtered. Reagents and solvent are added and the mixture tumbled. The butyltin compounds is derivitisated, extracted and the subtitution reaction completed. The extract is transferred to a separatory funnel and further extracted two times with petroleum ether. The resultant extracts are combined and concentrated for analysis.

QUALITY CONTROL REPORT

Client	**INNERWEST COUNCIL**	**Laboratory :**	Environmental Division Sydney		
Contact	AMOS BRANCH	**Contact**	CUSTOMER.SERVICES.ES	**Work Order:**	**ES1990025**
Address:	SYDNEY SYDNEY	**Address:**	Smithfield NSW 2164 Australia		

Project	Parramatta Rive Risk Assesement	**Quote #**	----	**Received:**	4 Jun 2019
Order #	- Not provided -			**Issued**	17 Jun 2019
C-O-C #	- Not provided -				
Site	- Not provided -				
E-mail	amos.branch@unsw.edu.au	**E-mail**	ALSEnviro.Sydney@alsglobal.co	**Number of Samples**	
Phone	- Not provided -	**Phone**	+61-2-8784 8555	**Received:**	2
Fax	- Not provided -	**Fax**	+61-2-8784 8500	**Analysed:**	2

Work order specific comments

Samples S1, S2: Lower than the standard sample volume was available for these samples. The LOR is raised based on the volume available.

ALSE - Excellence in Analytical Testing

NATA Accredited Laboratory - 825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IED 17025

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)

Quality Control Report
Laboratory Duplicates (DUP)

	Original Result	**Duplicate Result**
Laboratory Sample Id :		
Client Sample Id :		
Sample Mass (g) :		
Qc Lot Number :		
Moisture Content (%) :		

Notes
LOR = Limit of reporting
T = tetra
Pe = penta
Hx = hexa
Hp = hepta
O = octa
CDD, dioxin = chlorinated debenzo-p-dioxin
CDF, furan = chlorinated debenzofuran
RPD = relative per cent difference
Permitted ranges for RPD are depencant upon the magnitude of the result in comparison to the LOR.
Result < 10x LOR, no limit, result between 10x and 20x LOR, 50%; result > 20x LOR, 20%
- = Where results are less than the LOR, no RPD is reported.

Quality Control Results
Laboratory Control Samples(LCS)

Laboratory Sample Id : 5588110-002
QC Lot Number : 4537331
Sample Name : Ongoing Precision and Recovery (OPR) s

Compound	Conc pg/L	Lower pg/L	Upper pg/L	$^{13}C_{12}$ Rec(%)	Lower 2 (%)	Upper 2 (%)
2378-TCDD	756.0	536	1264	108.9	25	164
12378-PeCDD	3670.0	2800	5680	110.2	25	181
123478-HxCDD	3410.0	2800	6560	66.8	32	141
123678-HxCDD	3780.0	3040	5360	88.1	28	130
123789-HxCDD	4420.0	2560	6480	-	-	-
1234678-HpCDD	3520.0	2800	5600	88.0	23	140
OCDD	7910.0	6240	11520	87.7	17	157
2378-TCDF	712.0	600	1264	71.3	24	169
12378-PeCDF	3970.0	3200	5360	82.2	24	185
23478-PeCDF	3710.0	2720	6400	84.6	21	178
123478-HxCDF	3700.0	2880	5360	47.7	26	152
123678-HxCDF	3900.0	3360	5200	70.6	26	123
234678-HxCDF	3620.0	3120	5200	66.4	28	136
123789-HxCDF	3950.0	2800	6240	73.4	29	147
1234678-HpCDF	3390.0	3280	4880	45.1	28	143
1234789-HpCDF	3870.0	3120	5520	86.4	26	138
OCDF	6320.0	5040	13600			

Notes
1. Acceptable concentration limits are as quoted on the analytical certificate for the cerified reference material
2. Acceptable recovery limits are derived from EPA1613 Revision B
T = tetra
Pe = penta
Hx = hexa
Hp = hepta
O = octa

Quality Control Report
Method Blank (MB)

Laboratory Sample ID: 5588110-001
Qc Lot Number : 4537331

Sample Matrix: WATER
Date Extracted: 11-Jun-2019
Date Analysed: 11-Jun-2019

Compound	Conc pg/L	LOR pg/L	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<5.0	5.0	1	0.00	2.50	5.00	1	0.00	2.50	5.00	106.3
12378-PeCDD	<25.0	25.0	1	0.00	12.50	25.00	0.5	0.00	6.25	12.50	88.6
123478-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	55.9
123678-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	78.5
123789-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	-
1234678-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	76.0
OCDD	<100.0	100.0	0.0003	0.00	0.02	0.03	0.001	0.00	0.05	0.10	77.4
2378-TCDF	<5.0	5.0	0.1	0.00	0.25	0.50	0.1	0.00	0.25	0.50	67.8
12378-PeCDF	<25.0	25.0	0.03	0.00	0.38	0.75	0.05	0.00	0.63	1.25	73.4
23478-PeCDF	<25.0	25.0	0.3	0.00	3.75	7.50	0.5	0.00	6.25	12.50	73.9
123478-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	40.5
123678-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	62.6
234678-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	56.5
123789-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	63.1
1234678-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	36.9
1234789-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	74.2
OCDF	<50.0	50.0	0.0003	0.00	0.01	0.02	0.001	0.00	0.03	0.05	-
			S **TEQ(WHO)**	0.00	28.55	57.05	S **TEQ(I)**	0.00	25.10	50.15	

Group Totals	Conc pg/L	LOR$_4$ pg/L	No. of Peaks
Tetra-Dioxins	<5.0	5.0	1
Penta-Dioxins	<25.0	25.0	1
Hexa-Dioxins	<25.0	25.0	1
Hepta-Dioxins	<25.0	25.0	1
Octa-Dioxin	<100.0	100.0	1
Tetra-Furans	<5.0	5.0	1
Penta-Furans	<25.0	25.0	1
Hexa-Furans	<25.0	25.0	1
Hepta-Furans	<25.0	25.0	1
Octa-Furan	<50.0	50.0	1
S **PCDD/Fs**	0.00		

Notes
LOR = Limit of reporting
I-TEF = International toxic equivalency factor
I-TEQ = International toxic equivalence (pg/L)
WHO-TEF = World Health Organistaion toxic equivalency factor
WHO-TEQ = World Health Organisation toxic equivalence (pg/L)
T = tetra
Pe = penta
Hx = hexa
Hp =hepta
O = octa
CDD, dioxin = chlorinated dibenzo-p-dioxin
CDF, furan = chlorinated dibenzofuran
1 I -TEQ(zero) and WHO-TEQ(zero) calculated treating <LOR as zero concentration (pg/L)
2 I-TEQ(0.5 LOR) and WHO-TEQ(0.5 LOR) calculated treating <LOR as 50% LoR concentration (pg/L)
3 I-TEQ(LOR) and WHO-TEQ(LOR) calculated treating <LOR as LoR concentration (pg/L)
4 Totals LORs are calculated by mutiplying the number of peaks by the individual LOR per compound

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1918074**	Page	: 1 of 10
Client	: **INNER WEST COUNCIL**	Laboratory	: Environmental Division Sydney
Contact	: AMOS BRANCH	Telephone	: +61-2-8784 8555
Project	: Parramatta River Risk Assessment	Date Samples Received	: 12-Jun-2019
Site	: ----	Issue Date	: 30-Jul-2019
Sampler	: ----	No. of samples received	: 2
Order number	:	No. of samples analysed	: 2

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075D: Nitrosamines	QC-2402677-002	----	**N-Nitrosodiethylamine**	55-18-5	60.8 %	61-113%	**Recovery less than lower control limit**
EP075E: Nitroaromatics and Ketones	QC-2402677-002	----	**4-Nitroquinoline-N-oxide**	56-57-5	102 %	40-96%	**Recovery greater than upper control limit**
EP075J: Organophosphorus Pesticides	QC-2402677-002	----	**Dimethoate**	60-51-5	115 %	43-109%	**Recovery greater than upper control limit**
EP090: Organotin Compounds (Soluble)	QC-2408144-002	----	**Monobutyltin**	78763-54-9	143 %	31-134%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EP234A: OP Pesticides	ES1918061--001	Anonymous	**Pirimiphos-ethyl**	23505-41-1	62.0 %	70-130%	**Recovery less than lower data quality objective**
EP234B: Thiocarbamates and Carbamates	ES1918061--001	Anonymous	**Benomyl**	17804-35-2	46.0 %	62-136%	**Recovery less than lower data quality objective**
EP234B: Thiocarbamates and Carbamates	ES1918061--001	Anonymous	**Methomyl**	16752-77-5	40.0 %	70-130%	**Recovery less than lower data quality objective**
EP234B: Thiocarbamates and Carbamates	ES1918061--001	Anonymous	**Thiodicarb**	59669-26-0	1.00 %	70-130%	**Recovery less than lower data quality objective**
EP234H: Triazine Herbicides	ES1918061--001	Anonymous	**Terbutryn**	886-50-0	55.0 %	71-129%	**Recovery less than lower data quality objective**
EP234I: Miscellaneous (ESI Positive Mode) Pesticides	ES1918061--001	Anonymous	**Aminopyralid**	150114-71-9	17.0 %	70-130%	**Recovery less than lower data quality objective**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Organotin Compounds (Soluble)	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	9	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	9	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	8	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Organotin Compounds (Soluble)	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	9	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	9	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	8	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H)							
S3, S4	**12-Jun-2019**	**----**	----	----	**18-Jun-2019**	19-Jun-2019	✓
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T)							
S3, S4	**12-Jun-2019**	**14-Jun-2019**	09-Dec-2019	✓	**14-Jun-2019**	09-Dec-2019	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T)							
S3, S4	**12-Jun-2019**	**----**	----	----	**14-Jun-2019**	10-Jul-2019	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066)							
S3, S4	**12-Jun-2019**	**13-Jun-2019**	19-Jun-2019	✓	**17-Jun-2019**	23-Jul-2019	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved (EP068)							
S3, S4	**12-Jun-2019**	**13-Jun-2019**	19-Jun-2019	✓	**17-Jun-2019**	23-Jul-2019	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068)							
S3, S4	**12-Jun-2019**	**13-Jun-2019**	19-Jun-2019	✓	**17-Jun-2019**	23-Jul-2019	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S3, S4	**12-Jun-2019**	**16-Jun-2019**	26-Jun-2019	✓	**16-Jun-2019**	26-Jun-2019	✓
EP074B: Oxygenated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S3, S4	**12-Jun-2019**	**16-Jun-2019**	26-Jun-2019	✓	**16-Jun-2019**	26-Jun-2019	✓
EP074C: Sulfonated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S3, S4	**12-Jun-2019**	**16-Jun-2019**	26-Jun-2019	✓	**16-Jun-2019**	26-Jun-2019	✓
EP074D: Fumigants							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S3, S4	**12-Jun-2019**	**16-Jun-2019**	26-Jun-2019	✓	**16-Jun-2019**	26-Jun-2019	✓
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S3, S4	**12-Jun-2019**	**16-Jun-2019**	26-Jun-2019	✓	**16-Jun-2019**	26-Jun-2019	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S3, S4	**12-Jun-2019**	**16-Jun-2019**	26-Jun-2019	✓	**16-Jun-2019**	26-Jun-2019	✓
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S3, S4	**12-Jun-2019**	**16-Jun-2019**	26-Jun-2019	✓	**16-Jun-2019**	26-Jun-2019	✓
EP074H: Naphthalene							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S3, S4	**12-Jun-2019**	**16-Jun-2019**	26-Jun-2019	✓	**16-Jun-2019**	26-Jun-2019	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
S3, S4	**12-Jun-2019**	**13-Jun-2019**	19-Jun-2019	✓	**17-Jun-2019**	23-Jul-2019	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
S3, S4	**12-Jun-2019**	**13-Jun-2019**	19-Jun-2019	✓	**17-Jun-2019**	23-Jul-2019	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075)							
S3, S4	**12-Jun-2019**	**13-Jun-2019**	19-Jun-2019	✓	**17-Jun-2019**	23-Jul-2019	✓
EP075C: Phthalate Esters							
Amber Glass Bottle - Unpreserved (EP075)							
S3, S4	**12-Jun-2019**	**13-Jun-2019**	19-Jun-2019	✓	**17-Jun-2019**	23-Jul-2019	✓
EP075D: Nitrosamines							
Amber Glass Bottle - Unpreserved (EP075)							
S3, S4	**12-Jun-2019**	**13-Jun-2019**	19-Jun-2019	✓	**17-Jun-2019**	23-Jul-2019	✓
EP075E: Nitroaromatics and Ketones							
Amber Glass Bottle - Unpreserved (EP075)							
S3, S4	**12-Jun-2019**	**13-Jun-2019**	19-Jun-2019	✓	**17-Jun-2019**	23-Jul-2019	✓
EP075F: Haloethers							
Amber Glass Bottle - Unpreserved (EP075)							
S3, S4	**12-Jun-2019**	**13-Jun-2019**	19-Jun-2019	✓	**17-Jun-2019**	23-Jul-2019	✓
EP075G: Chlorinated Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075)							
S3, S4	**12-Jun-2019**	**13-Jun-2019**	19-Jun-2019	✓	**17-Jun-2019**	23-Jul-2019	✓
EP075H: Anilines and Benzidines							
Amber Glass Bottle - Unpreserved (EP075)							
S3, S4	**12-Jun-2019**	**13-Jun-2019**	19-Jun-2019	✓	**17-Jun-2019**	23-Jul-2019	✓
EP075I: Organochlorine Pesticides							
Amber Glass Bottle - Unpreserved (EP075)							
S3, S4	**12-Jun-2019**	**13-Jun-2019**	19-Jun-2019	✓	**17-Jun-2019**	23-Jul-2019	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075J: Organophosphorus Pesticides							
Amber Glass Bottle - Unpreserved (EP075)							
S3, S4	**12-Jun-2019**	**13-Jun-2019**	19-Jun-2019	✓	**17-Jun-2019**	23-Jul-2019	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
S3, S4	**12-Jun-2019**	**13-Jun-2019**	19-Jun-2019	✓	**17-Jun-2019**	23-Jul-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
S3, S4	**12-Jun-2019**	**16-Jun-2019**	26-Jun-2019	✓	**16-Jun-2019**	26-Jun-2019	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071)							
S3, S4	**12-Jun-2019**	**13-Jun-2019**	19-Jun-2019	✓	**17-Jun-2019**	23-Jul-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
S3, S4	**12-Jun-2019**	**16-Jun-2019**	26-Jun-2019	✓	**16-Jun-2019**	26-Jun-2019	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
S3, S4	**12-Jun-2019**	**16-Jun-2019**	26-Jun-2019	✓	**16-Jun-2019**	26-Jun-2019	✓
EP090: Organotin Compounds (Soluble)							
Amber Glass Bottle - Unpreserved (EP090S)							
S3, S4	**12-Jun-2019**	**18-Jun-2019**	19-Jun-2019	✓	**18-Jun-2019**	28-Jul-2019	✓
EP202A: Phenoxyacetic Acid Herbicides by LCMS							
Amber Glass Bottle - Unpreserved (EP202-SL)							
S3, S4	**12-Jun-2019**	**----**	----	----	**13-Jun-2019**	19-Jun-2019	✓
EP204: Glyphosate and AMPA							
Amber Glass Bottle - Unpreserved (EP204)							
S3, S4	**12-Jun-2019**	**----**	----	----	**13-Jun-2019**	26-Jun-2019	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
S3, S4	**12-Jun-2019**	**20-Jun-2019**	09-Dec-2019	✓	**20-Jun-2019**	09-Dec-2019	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
S3, S4	**12-Jun-2019**	**20-Jun-2019**	09-Dec-2019	✓	**20-Jun-2019**	09-Dec-2019	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
S3, S4	**12-Jun-2019**	**20-Jun-2019**	09-Dec-2019	✓	**20-Jun-2019**	09-Dec-2019	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
S3, S4	**12-Jun-2019**	**20-Jun-2019**	09-Dec-2019	✓	**20-Jun-2019**	09-Dec-2019	✓
EP234: Multiresidue Pesticides (ESI Positive)							
Amber Glass Bottle - Unpreserved (EP234-1)							
S3, S4	**12-Jun-2019**	**----**	----	----	**13-Jun-2019**	19-Jun-2019	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP234I: Miscellaneous (ESI Positive Mode) Pesticides							
Amber Glass Bottle - Unpreserved (EP234-1)							
S3, S4	**12-Jun-2019**	**----**	----	----	**13-Jun-2019**	19-Jun-2019	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Glyphosate and AMPA	EP204	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Compounds (Soluble)	EP090S	0	3	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	9	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	9	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	0	4	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	8	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	4	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Glyphosate and AMPA	EP204	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Compounds (Soluble)	EP090S	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Glyphosate and AMPA	EP204	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Compounds (Soluble)	EP090S	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Glyphosate and AMPA	EP204	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Compounds (Soluble)	EP090S	0	3	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	9	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	9	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	0	4	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	8	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM (2013) Schedule B(3)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds WF Detection Limits	EP074-WF	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds	EP075	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Organotin Compounds (Soluble)	EP090S	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by GC/MS coupled with high volume injection and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	WATER	In house: LCMS (Electrospray in negative mode). After adding surrogate and acetic acid, water samples are injected on a C18 column for LC/MS determination.
Glyphosate and AMPA	EP204	WATER	In house: Pre-column derivatisation LCMS (ES in negative mode). Water samples are derivatised with 9-fluorenyl methoxycarbonyl chloroformate (FMOC) in alkaline condition. The derivatives of glyphosate and AMPA are separated by a C8 column and determined by MS.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In house: Direct injection analysis of fresh waters after dilution (1:1) with methanol. Analysis by LC-Electrospray-MS-MS, 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
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Preparation for PFAS in water.	EP231-PR	WATER	Method presumes direct injection without workup. Preparation includes addition of internal standard and surrogate, and filtration prior to anaylsis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.
Organotin Sample Preparation	ORG34	WATER	In house. A specified volume of sample is spiked with surrogate, acidified and vacuum filtered. Reagents and solvent are added and the mixture tumbled. The butyltin compounds is derivitisated, extracted and the subtitution reaction completed. The extract is transferred to a separatory funnel and further extracted two times with petroleum ether. The resultant extracts are combined and concentrated for analysis.

QUALITY CONTROL REPORT

Client	**INNERWEST COUNCIL**	**Laboratory :**	Environmental Division Sydney		
Contact	AMOS BRANCH	**Contact**	CUSTOMER.SERVICES.ES	**Work Order:**	**ES1990028**
Address:	SYDNEY SYDNEY	**Address:**	Smithfield NSW 2164 Australia		

Project	Parramatta Rive Risk Assesement	**Quote #**	----	**Received:**	12 Jun 2019
Order #	- Not provided -			**Issued**	18 Jun 2019
C-O-C #	- Not provided -				
Site	- Not provided -				
E-mail	amos.branch@unsw.edu.au	**E-mail**	ALSEnviro.Sydney@alsglobal.co	**Number of Samples**	
Phone	- Not provided -	**Phone**	+61-2-8784 8555	**Received:**	2
Fax	- Not provided -	**Fax**	+61-2-8784 8500	**Analysed:**	2

Work order specific comments

Samples S3, S4: Lower than the standard sample volume was available for these samples. The LOR is raised based on the volume available.

ALSE - Excellence in Analytical Testing

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This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IED 17025

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)

Quality Control Report
Laboratory Duplicates (DUP)

	Original Result	**Duplicate Result**
Laboratory Sample Id :		
Client Sample Id :		
Sample Mass (g) :		
Qc Lot Number :		
Moisture Content (%) :		

Notes
LOR = Limit of reporting
T = tetra
Pe = penta
Hx = hexa
Hp = hepta
O = octa
CDD, dioxin = chlorinated debenzo-p-dioxin
CDF, furan = chlorinated debenzofuran
RPD = relative per cent difference
Permitted ranges for RPD are depencant upon the magnitude of the result in comparison to the LOR.
Result < 10x LOR, no limit, result between 10x and 20x LOR, 50%; result > 20x LOR, 20%
- = Where results are less than the LOR, no RPD is reported.

Quality Control Results
Laboratory Control Samples(LCS)

Laboratory Sample Id : 5588247-002
QC Lot Number : 4537386
Sample Name : Ongoing Precision and Recovery (OPR) s

Compound	Conc pg/L	Lower pg/L	Upper pg/L	$^{13}C_{12}$ Rec(%)	Lower 2 (%)	Upper 2 (%)
2378-TCDD	741.0	536	1264	111.0	25	164
12378-PeCDD	3620.0	2800	5680	105.7	25	181
123478-HxCDD	3370.0	2800	6560	62.2	32	141
123678-HxCDD	3740.0	3040	5360	81.0	28	130
123789-HxCDD	4420.0	2560	6480	-	-	-
1234678-HpCDD	3680.0	2800	5600	76.2	23	140
OCDD	7620.0	6240	11520	73.6	17	157
2378-TCDF	744.0	600	1264	79.2	24	169
12378-PeCDF	3870.0	3200	5360	92.1	24	185
23478-PeCDF	3710.0	2720	6400	89.2	21	178
123478-HxCDF	3630.0	2880	5360	46.2	26	152
123678-HxCDF	3790.0	3360	5200	67.8	26	123
234678-HxCDF	3480.0	3120	5200	63.3	28	136
123789-HxCDF	3830.0	2800	6240	70.9	29	147
1234678-HpCDF	3470.0	3280	4880	42.5	28	143
1234789-HpCDF	3640.0	3120	5520	89.7	26	138
OCDF	6560.0	5040	13600			

Notes
1. Acceptable concentration limits are as quoted on the analytical certificate for the cerified reference material
2. Acceptable recovery limits are derived from EPA1613 Revision B
T = tetra
Pe = penta
Hx = hexa
Hp = hepta
O = octa

Quality Control Report
Method Blank (MB)

Laboratory Sample ID: 5588247-001
Qc Lot Number : 4537386

Sample Matrix: WATER
Date Extracted: 16-Jun-2019
Date Analysed: 16-Jun-2019

Compound	Conc pg/L	LOR pg/L	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<5.0	5.0	1	0.00	2.50	5.00	1	0.00	2.50	5.00	98.5
12378-PeCDD	<25.0	25.0	1	0.00	12.50	25.00	0.5	0.00	6.25	12.50	99.7
123478-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	60.2
123678-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	74.3
123789-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	-
1234678-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	67.7
OCDD	<100.0	100.0	0.0003	0.00	0.02	0.03	0.001	0.00	0.05	0.10	65.1
2378-TCDF	<5.0	5.0	0.1	0.00	0.25	0.50	0.1	0.00	0.25	0.50	75.2
12378-PeCDF	<25.0	25.0	0.03	0.00	0.38	0.75	0.05	0.00	0.63	1.25	87.6
23478-PeCDF	<25.0	25.0	0.3	0.00	3.75	7.50	0.5	0.00	6.25	12.50	89.8
123478-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	48.3
123678-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	65.8
234678-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	61.6
123789-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	67.8
1234678-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	35.6
1234789-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	76.7
OCDF	<50.0	50.0	0.0003	0.00	0.01	0.02	0.001	0.00	0.03	0.05	-
			S **TEQ$_{(WHO)}$**	0.00	28.55	57.05	S **TEQ$_{(I)}$**	0.00	25.10	50.15	

Group Totals	Conc pg/L	LOR$_4$ pg/L	No. of Peaks
Tetra-Dioxins	<5.0	5.0	1
Penta-Dioxins	<25.0	25.0	1
Hexa-Dioxins	<25.0	25.0	1
Hepta-Dioxins	<25.0	25.0	1
Octa-Dioxin	<100.0	100.0	1
Tetra-Furans	<5.0	5.0	1
Penta-Furans	<25.0	25.0	1
Hexa-Furans	<25.0	25.0	1
Hepta-Furans	<25.0	25.0	1
Octa-Furan	<50.0	50.0	1
S **PCDD/Fs**	0.00		

Notes
LOR = Limit of reporting
I-TEF = International toxic equivalency factor
I-TEQ = International toxic equivalence (pg/L)
WHO-TEF = World Health Organistaion toxic equivalency factor
WHO-TEQ = World Health Organisation toxic equivalence (pg/L)
T = tetra
Pe = penta
Hx = hexa
Hp =hepta
O = octa
CDD, dioxin = chlorinated dibenzo-p-dioxin
CDF, furan = chlorinated dibenzofuran
1 I -TEQ$_{(zero)}$ and WHO-TEQ$_{(zero)}$ calculated treating <LOR as zero concentration (pg/L)
2 I-TEQ$_{(0.5\ LOR)}$ and WHO-TEQ$_{(0.5\ LOR)}$ calculated treating <LOR as 50% LoR concentration (pg/L)
3 I-TEQ$_{(LOR)}$ and WHO-TEQ$_{(LOR)}$ calculated treating <LOR as LoR concentration (pg/L)
4 Totals LORs are calculated by mutiplying the number of peaks by the individual LOR per compound

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1919027**	Page	: 1 of 10
Client	: **INNER WEST COUNCIL**	Laboratory	: Environmental Division Sydney
Contact	: AMOS BRANCH	Telephone	: +61-2-8784 8555
Project	: Parramatta River Risk Assessment	Date Samples Received	: 19-Jun-2019
Site	: ----	Issue Date	: 22-Jul-2019
Sampler	: ----	No. of samples received	: 2
Order number	: ----	No. of samples analysed	: 2

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075D: Nitrosamines	QC-2418881-002	----	**N-Nitrosodiethylamine**	55-18-5	55.1 %	61-113%	**Recovery less than lower control limit**
EP075D: Nitrosamines	QC-2418881-002	----	**N-Nitrosodi-n-propylamine**	621-64-7	62.2 %	64-108%	**Recovery less than lower control limit**
EP075D: Nitrosamines	QC-2418881-002	----	**N-Nitrosopiperidine**	100-75-4	60.4 %	62-107%	**Recovery less than lower control limit**
EP075E: Nitroaromatics and Ketones	QC-2418881-002	----	**2-Picoline**	109-06-8	34.8 %	41-109%	**Recovery less than lower control limit**
EP075E: Nitroaromatics and Ketones	QC-2418881-002	----	**Isophorone**	78-59-1	63.6 %	68-111%	**Recovery less than lower control limit**
EP075F: Haloethers	QC-2418881-002	----	**Bis(2-chloroethoxy) methane**	111-91-1	63.0 %	66-111%	**Recovery less than lower control limit**
Matrix Spike (MS) Recoveries							
EP202A: Phenoxyacetic Acid Herbicides by LCMS	ES1919027--001	S5	**Mecoprop**	93-65-2	33.8 %	75-143%	**Recovery less than lower data quality objective**
EP202A: Phenoxyacetic Acid Herbicides by LCMS	ES1919027--001	S5	**MCPA**	94-74-6	28.5 %	76-140%	**Recovery less than lower data quality objective**
EP202A: Phenoxyacetic Acid Herbicides by LCMS	ES1919027--001	S5	**2.4-D**	94-75-7	41.2 %	77-139%	**Recovery less than lower data quality objective**
EP202A: Phenoxyacetic Acid Herbicides by LCMS	ES1919027--001	S5	**Triclopyr**	55335-06-3	52.7 %	77-141%	**Recovery less than lower data quality objective**
EP202A: Phenoxyacetic Acid Herbicides by LCMS	ES1919027--001	S5	**2.4.5-T**	93-76-5	46.6 %	78-140%	**Recovery less than lower data quality objective**
EP202A: Phenoxyacetic Acid Herbicides by LCMS	ES1919027--001	S5	**Picloram**	1918-02-1	17.3 %	70-144%	**Recovery less than lower data quality objective**
EP202A: Phenoxyacetic Acid Herbicides by LCMS	ES1919027--001	S5	**Clopyralid**	1702-17-6	7.48 %	70-145%	**Recovery less than lower data quality objective**
EP234A: OP Pesticides	ES1919131--001	Anonymous	**Fosetyl Aluminium**	39148-24-8	0.00 %	70-130%	**Recovery less than lower data quality objective**
EP234A: OP Pesticides	ES1919131--001	Anonymous	**Pyrazophos**	13457-18-6	59.7 %	70-130%	**Recovery less than lower data quality objective**
EP234B: Thiocarbamates and Carbamates	ES1919131--001	Anonymous	**Thiodicarb**	59669-26-0	0.00 %	70-130%	**Recovery less than lower data quality objective**
EP234B: Thiocarbamates and Carbamates	ES1919131--001	Anonymous	**Pebulate**	1114-71-2	54.8 %	70-130%	**Recovery less than lower data quality objective**
EP234E: Conazole and Aminopyrimidine Fungicides	ES1919131--001	Anonymous	**Tetraconazole**	112281-77-3	54.4 %	70-130%	**Recovery less than lower data quality objective**
EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfony	ES1919131--001	Anonymous	**Trifloxysulfuron-sodium**	199119-58-9	60.3 %	70-130%	**Recovery less than lower data quality objective**
EP234G: Chloracetanilides	ES1919131--001	Anonymous	**Alachlor**	15972-60-8	55.0 %	70-130%	**Recovery less than lower data quality objective**
EP234G: Chloracetanilides	ES1919131--001	Anonymous	**Propachlor**	1918-16-7	47.5 %	70-130%	**Recovery less than lower data quality objective**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries - Continued							
EP234I: Miscellaneous (ESI Positive Mode) Pesticides	ES1919131--001	Anonymous	**Aminopyralid**	150114-71-9	21.0 %	70-130%	**Recovery less than lower data quality objective**
EP234I: Miscellaneous (ESI Positive Mode) Pesticides	ES1919131--001	Anonymous	**Amitraz**	33089-61-1	65.3 %	70-130%	**Recovery less than lower data quality objective**
EP234I: Miscellaneous (ESI Positive Mode) Pesticides	ES1919131--001	Anonymous	**Metalaxyl-M**	70630-17-0	62.2 %	70-130%	**Recovery less than lower data quality objective**
EP234I: Miscellaneous (ESI Positive Mode) Pesticides	ES1919131--001	Anonymous	**Pyraclostrobin**	175013-18-0	61.9 %	70-130%	**Recovery less than lower data quality objective**
EP234I: Miscellaneous (ESI Positive Mode) Pesticides	ES1919131--001	Anonymous	**Quinclorac**	84087-01-4	54.8 %	70-130%	**Recovery less than lower data quality objective**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
Organotin Compounds (Soluble)	0	5	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Organotin Compounds (Soluble)	0	5	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **WATER**

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

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

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H)							
S5, S6	**19-Jun-2019**	**----**	----	----	**25-Jun-2019**	26-Jun-2019	✓
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T)							
S5, S6	**19-Jun-2019**	**21-Jun-2019**	16-Dec-2019	✓	**21-Jun-2019**	16-Dec-2019	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T)							
S5, S6	**19-Jun-2019**	**----**	----	----	**21-Jun-2019**	17-Jul-2019	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066)							
S5, S6	**19-Jun-2019**	**25-Jun-2019**	26-Jun-2019	✓	**27-Jun-2019**	04-Aug-2019	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved (EP068)							
S5, S6	**19-Jun-2019**	**25-Jun-2019**	26-Jun-2019	✓	**27-Jun-2019**	04-Aug-2019	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068)							
S5, S6	**19-Jun-2019**	**25-Jun-2019**	26-Jun-2019	✓	**27-Jun-2019**	04-Aug-2019	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S5, S6	**19-Jun-2019**	**28-Jun-2019**	03-Jul-2019	✓	**28-Jun-2019**	03-Jul-2019	✓
EP074B: Oxygenated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S5, S6	**19-Jun-2019**	**28-Jun-2019**	03-Jul-2019	✓	**28-Jun-2019**	03-Jul-2019	✓
EP074C: Sulfonated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S5, S6	**19-Jun-2019**	**28-Jun-2019**	03-Jul-2019	✓	**28-Jun-2019**	03-Jul-2019	✓
EP074D: Fumigants							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S5, S6	**19-Jun-2019**	**28-Jun-2019**	03-Jul-2019	✓	**28-Jun-2019**	03-Jul-2019	✓
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S5, S6	**19-Jun-2019**	**28-Jun-2019**	03-Jul-2019	✓	**28-Jun-2019**	03-Jul-2019	✓
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S5, S6	**19-Jun-2019**	**28-Jun-2019**	03-Jul-2019	✓	**28-Jun-2019**	03-Jul-2019	✓
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S5, S6	**19-Jun-2019**	**28-Jun-2019**	03-Jul-2019	✓	**28-Jun-2019**	03-Jul-2019	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074H: Naphthalene							
Amber VOC Vial - Sulfuric Acid (EP074-WF)							
S5, S6	**19-Jun-2019**	**28-Jun-2019**	03-Jul-2019	✓	**28-Jun-2019**	03-Jul-2019	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
S5, S6	**19-Jun-2019**	**25-Jun-2019**	26-Jun-2019	✓	**27-Jun-2019**	04-Aug-2019	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
S5, S6	**19-Jun-2019**	**25-Jun-2019**	26-Jun-2019	✓	**27-Jun-2019**	04-Aug-2019	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075)							
S5, S6	**19-Jun-2019**	**25-Jun-2019**	26-Jun-2019	✓	**27-Jun-2019**	04-Aug-2019	✓
EP075C: Phthalate Esters							
Amber Glass Bottle - Unpreserved (EP075)							
S5, S6	**19-Jun-2019**	**25-Jun-2019**	26-Jun-2019	✓	**27-Jun-2019**	04-Aug-2019	✓
EP075D: Nitrosamines							
Amber Glass Bottle - Unpreserved (EP075)							
S5, S6	**19-Jun-2019**	**25-Jun-2019**	26-Jun-2019	✓	**27-Jun-2019**	04-Aug-2019	✓
EP075E: Nitroaromatics and Ketones							
Amber Glass Bottle - Unpreserved (EP075)							
S5, S6	**19-Jun-2019**	**25-Jun-2019**	26-Jun-2019	✓	**27-Jun-2019**	04-Aug-2019	✓
EP075F: Haloethers							
Amber Glass Bottle - Unpreserved (EP075)							
S5, S6	**19-Jun-2019**	**25-Jun-2019**	26-Jun-2019	✓	**27-Jun-2019**	04-Aug-2019	✓
EP075G: Chlorinated Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075)							
S5, S6	**19-Jun-2019**	**25-Jun-2019**	26-Jun-2019	✓	**27-Jun-2019**	04-Aug-2019	✓
EP075H: Anilines and Benzidines							
Amber Glass Bottle - Unpreserved (EP075)							
S5, S6	**19-Jun-2019**	**25-Jun-2019**	26-Jun-2019	✓	**27-Jun-2019**	04-Aug-2019	✓
EP075I: Organochlorine Pesticides							
Amber Glass Bottle - Unpreserved (EP075)							
S5, S6	**19-Jun-2019**	**25-Jun-2019**	26-Jun-2019	✓	**27-Jun-2019**	04-Aug-2019	✓
EP075J: Organophosphorus Pesticides							
Amber Glass Bottle - Unpreserved (EP075)							
S5, S6	**19-Jun-2019**	**25-Jun-2019**	26-Jun-2019	✓	**27-Jun-2019**	04-Aug-2019	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
S5, S6	**19-Jun-2019**	**25-Jun-2019**	26-Jun-2019	✓	**27-Jun-2019**	04-Aug-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
S5, S6	**19-Jun-2019**	**28-Jun-2019**	03-Jul-2019	✓	**28-Jun-2019**	03-Jul-2019	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
S5,	S6	**19-Jun-2019**	**25-Jun-2019**	26-Jun-2019	✓	**27-Jun-2019**	04-Aug-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
S5,	S6	**19-Jun-2019**	**28-Jun-2019**	03-Jul-2019	✓	**28-Jun-2019**	03-Jul-2019	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
S5,	S6	**19-Jun-2019**	**28-Jun-2019**	03-Jul-2019	✓	**28-Jun-2019**	03-Jul-2019	✓
EP090: Organotin Compounds (Soluble)								
Amber Glass Bottle - Unpreserved (EP090S)								
S5,	S6	**19-Jun-2019**	**26-Jun-2019**	26-Jun-2019	✓	**26-Jun-2019**	05-Aug-2019	✓
EP202A: Phenoxyacetic Acid Herbicides by LCMS								
Amber Glass Bottle - Unpreserved (EP202-SL)								
S5,	S6	**19-Jun-2019**	**----**	----	----	**21-Jun-2019**	26-Jun-2019	✓
EP204: Glyphosate and AMPA								
Amber Glass Bottle - Unpreserved (EP204)								
S5,	S6	**19-Jun-2019**	**----**	----	----	**24-Jun-2019**	03-Jul-2019	✓
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
S5,	S6	**19-Jun-2019**	**02-Jul-2019**	16-Dec-2019	✓	**02-Jul-2019**	16-Dec-2019	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
S5,	S6	**19-Jun-2019**	**02-Jul-2019**	16-Dec-2019	✓	**02-Jul-2019**	16-Dec-2019	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
S5,	S6	**19-Jun-2019**	**02-Jul-2019**	16-Dec-2019	✓	**02-Jul-2019**	16-Dec-2019	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X)								
S5,	S6	**19-Jun-2019**	**02-Jul-2019**	16-Dec-2019	✓	**02-Jul-2019**	16-Dec-2019	✓
EP234: Multiresidue Pesticides (ESI Positive)								
Amber Glass Bottle - Unpreserved (EP234-1)								
S5,	S6	**19-Jun-2019**	**----**	----	----	**21-Jun-2019**	26-Jun-2019	✓
EP234I: Miscellaneous (ESI Positive Mode) Pesticides								
Amber Glass Bottle - Unpreserved (EP234-1)								
S5,	S6	**19-Jun-2019**	**----**	----	----	**21-Jun-2019**	26-Jun-2019	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Glyphosate and AMPA	EP204	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Compounds (Soluble)	EP090S	0	5	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	2	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	3	**33.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	0	2	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Glyphosate and AMPA	EP204	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Compounds (Soluble)	EP090S	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Glyphosate and AMPA	EP204	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Compounds (Soluble)	EP090S	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Glyphosate and AMPA	EP204	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Compounds (Soluble)	EP090S	0	5	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	2	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	0	2	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM (2013) Schedule B(3)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds WF Detection Limits	EP074-WF	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds	EP075	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Organotin Compounds (Soluble)	EP090S	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by GC/MS coupled with high volume injection and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	WATER	In house: LCMS (Electrospray in negative mode). After adding surrogate and acetic acid, water samples are injected on a C18 column for LC/MS determination.
Glyphosate and AMPA	EP204	WATER	In house: Pre-column derivatisation LCMS (ES in negative mode). Water samples are derivatised with 9-fluorenyl methoxycarbonyl chloroformate (FMOC) in alkaline condition. The derivatives of glyphosate and AMPA are separated by a C8 column and determined by MS.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In house: Direct injection analysis of fresh waters after dilution (1:1) with methanol. Analysis by LC-Electrospray-MS-MS, 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
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.
Phenolic Endocrine Disrupting Compounds (EDC)	EP244	WATER	Specialist organic analysis subcontracted to ALS Scoresby (NATA Accredited Laboratory No. 992).

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Preparation for PFAS in water.	EP231-PR	WATER	Method presumes direct injection without workup. Preparation includes addition of internal standard and surrogate, and filtration prior to anaylsis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.
Organotin Sample Preparation	ORG34	WATER	In house. A specified volume of sample is spiked with surrogate, acidified and vacuum filtered. Reagents and solvent are added and the mixture tumbled. The butyltin compounds is derivitisated, extracted and the subtitution reaction completed. The extract is transferred to a separatory funnel and further extracted two times with petroleum ether. The resultant extracts are combined and concentrated for analysis.

QUALITY CONTROL REPORT

Client	**INNERWEST COUNCIL**	**Laboratory :**	Environmental Division Sydney		
Contact	AMOS BRANCH	**Contact**	CUSTOMER.SERVICES.ES	**Work Order:**	**ES1990030**
Address:	SYDNEY SYDNEY	**Address:**	Smithfield NSW 2164 Australia		

Project	Parramatta River Risk Assessment	**Quote #**	----	**Received:**	19 Jun 2019
Order #	- Not provided -			**Issued**	28 Jun 2019
C-O-C #	- Not provided -				
Site	- Not provided -				
E-mail	amos.branch@unsw.edu.au	**E-mail**	ALSEnviro.Sydney@alsglobal.co	**Number of Samples**	
Phone	- Not provided -	**Phone**	+61-2-8784 8555	**Received:**	2
Fax	- Not provided -	**Fax**	+61-2-8784 8500	**Analysed:**	2

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NATA Accredited Laboratory - 825

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Accredited for compliance with ISO/IED 17025

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)

Quality Control Report
Laboratory Duplicates (DUP)

	Original Result	**Duplicate Result**
Laboratory Sample Id :		
Client Sample Id :		
Sample Mass (g) :		
Qc Lot Number :		
Moisture Content (%) :		

Notes
LOR = Limit of reporting
T = tetra
Pe = penta
Hx = hexa
Hp = hepta
O = octa
CDD, dioxin = chlorinated debenzo-p-dioxin
CDF, furan = chlorinated debenzofuran
RPD = relative per cent difference
Permitted ranges for RPD are depencant upon the magnitude of the result in comparison to the LOR.
Result < 10x LOR, no limit, result between 10x and 20x LOR, 50%; result > 20x LOR, 20%
- = Where results are less than the LOR, no RPD is reported.

Quality Control Results
Laboratory Control Samples(LCS)

Laboratory Sample Id : 5588533-002
QC Lot Number : 4537517
Sample Name : Ongoing Precision and Recovery (OPR) s

Compound	Conc pg/L	Lower pg/L	Upper pg/L	$^{13}C_{12}$ Rec(%)	Lower 2 (%)	Upper 2 (%)
2378-TCDD	709.0	536	1264	97.1	25	164
12378-PeCDD	3710.0	2800	5680	94.1	25	181
123478-HxCDD	3530.0	2800	6560	60.2	32	141
123678-HxCDD	3860.0	3040	5360	83.1	28	130
123789-HxCDD	4340.0	2560	6480	-	-	-
1234678-HpCDD	3550.0	2800	5600	82.1	23	140
OCDD	8080.0	6240	11520	73.9	17	157
2378-TCDF	712.0	600	1264	68.1	24	169
12378-PeCDF	4120.0	3200	5360	75.4	24	185
23478-PeCDF	3680.0	2720	6400	77.4	21	178
123478-HxCDF	3870.0	2880	5360	39.6	26	152
123678-HxCDF	4050.0	3360	5200	60.0	26	123
234678-HxCDF	3650.0	3120	5200	64.8	28	136
123789-HxCDF	3820.0	2800	6240	67.5	29	147
1234678-HpCDF	4050.0	3280	4880	54.8	28	143
1234789-HpCDF	3510.0	3120	5520	70.0	26	138
OCDF	6370.0	5040	13600			

Notes
1. Acceptable concentration limits are as quoted on the analytical certificate for the cerified reference material
2. Acceptable recovery limits are derived from EPA1613 Revision B
T = tetra
Pe = penta
Hx = hexa
Hp = hepta
O = octa

Quality Control Report
Method Blank (MB)

Laboratory Sample ID: 5588533-001
Qc Lot Number : 4537517

Sample Matrix: WATER
Date Extracted: 27-Jun-2019
Date Analysed: 27-Jun-2019

Compound	Conc pg/L	LOR pg/L	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<5.0	5.0	1	0.00	2.50	5.00	1	0.00	2.50	5.00	101.9
12378-PeCDD	<25.0	25.0	1	0.00	12.50	25.00	0.5	0.00	6.25	12.50	95.2
123478-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	66.1
123678-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	89.2
123789-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	-
1234678-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	76.9
OCDD	<100.0	100.0	0.0003	0.00	0.02	0.03	0.001	0.00	0.05	0.10	63.7
2378-TCDF	<5.0	5.0	0.1	0.00	0.25	0.50	0.1	0.00	0.25	0.50	70.2
12378-PeCDF	<25.0	25.0	0.03	0.00	0.38	0.75	0.05	0.00	0.63	1.25	75.5
23478-PeCDF	<25.0	25.0	0.3	0.00	3.75	7.50	0.5	0.00	6.25	12.50	73.3
123478-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	52.3
123678-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	74.8
234678-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	67.3
123789-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	65.7
1234678-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	54.8
1234789-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	57.6
OCDF	<50.0	50.0	0.0003	0.00	0.01	0.02	0.001	0.00	0.03	0.05	-
			S **TEQ(WHO)**	0.00	28.55	57.05	S **TEQ(I)**	0.00	25.10	50.15	

Group Totals	Conc pg/L	LOR$_4$ pg/L	No. of Peaks
Tetra-Dioxins	<5.0	5.0	1
Penta-Dioxins	<25.0	25.0	1
Hexa-Dioxins	<25.0	25.0	1
Hepta-Dioxins	<25.0	25.0	1
Octa-Dioxin	<100.0	100.0	1
Tetra-Furans	<5.0	5.0	1
Penta-Furans	<25.0	25.0	1
Hexa-Furans	<25.0	25.0	1
Hepta-Furans	<25.0	25.0	1
Octa-Furan	<50.0	50.0	1
S **PCDD/Fs**	0.00		

Notes
LOR = Limit of reporting
I-TEF = International toxic equivalency factor
I-TEQ = International toxic equivalence (pg/L)
WHO-TEF = World Health Organistaion toxic equivalency factor
WHO-TEQ = World Health Organisation toxic equivalence (pg/L)
T = tetra
Pe = penta
Hx = hexa
Hp =hepta
O = octa
CDD, dioxin = chlorinated dibenzo-p-dioxin
CDF, furan = chlorinated dibenzofuran
1 I -TEQ(zero) and WHO-TEQ(zero) calculated treating <LOR as zero concentration (pg/L)
2 I-TEQ(0.5 LOR) and WHO-TEQ(0.5 LOR) calculated treating <LOR as 50% LoR concentration (pg/L)
3 I-TEQ(LOR) and WHO-TEQ(LOR) calculated treating <LOR as LoR concentration (pg/L)
4 Totals LORs are calculated by mutiplying the number of peaks by the individual LOR per compound

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1920000**	Page	: 1 of 10
Client	: **INNER WEST COUNCIL**	Laboratory	: Environmental Division Sydney
Contact	: AMOS BRANCH	Telephone	: +61-2-8784 8555
Project	: Parramatta River Risk Assessment	Date Samples Received	: 26-Jun-2019
Site	: ----	Issue Date	: 22-Jul-2019
Sampler	: ----	No. of samples received	: 2
Order number	: ----	No. of samples analysed	: 2

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075C: Phthalate Esters	QC-2432249-002	----	**Diethyl phthalate**	84-66-2	63.8 %	67-111%	**Recovery less than lower control limit**
EP075E: Nitroaromatics and Ketones	QC-2432249-002	----	**2-Picoline**	109-06-8	35.6 %	41-109%	**Recovery less than lower control limit**
EP075E: Nitroaromatics and Ketones	QC-2432249-002	----	**4-Nitroquinoline-N-oxide**	56-57-5	109 %	40-96%	**Recovery greater than upper control limit**
EP075F: Haloethers	QC-2432249-002	----	**Bis(2-chloroethyl) ether**	111-44-4	61.1 %	69-112%	**Recovery less than lower control limit**
EP075J: Organophosphorus Pesticides	QC-2432249-002	----	**Dimethoate**	60-51-5	118 %	43-109%	**Recovery greater than upper control limit**
EP090: Organotin Compounds (Soluble)	QC-2443039-002	----	**Monobutyltin**	78763-54-9	140 %	31-134%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EP202A: Phenoxyacetic Acid Herbicides by LCMS	EM1910027--001	Anonymous	**Picloram**	1918-02-1	51.7 %	70-144%	**Recovery less than lower data quality objective**
EP202A: Phenoxyacetic Acid Herbicides by LCMS	EM1910027--001	Anonymous	**Clopyralid**	1702-17-6	16.8 %	70-145%	**Recovery less than lower data quality objective**
EP234A: OP Pesticides	ES1920000--002	S8	**Fosetyl Aluminium**	39148-24-8	1.60 %	70-130%	**Recovery less than lower data quality objective**
EP234B: Thiocarbamates and Carbamates	ES1920000--002	S8	**Thiodicarb**	59669-26-0	0.00 %	70-130%	**Recovery less than lower data quality objective**
EP234E: Conazole and Aminopyrimidine Fungicides	ES1920000--002	S8	**Tebuconazole**	107534-96-3	65.0 %	69-135%	**Recovery less than lower data quality objective**
EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfony	ES1920000--002	S8	**Novaluron**	116714-46-6	66.1 %	70-130%	**Recovery less than lower data quality objective**
EP234G: Chloracetanilides	ES1920000--002	S8	**Propachlor**	1918-16-7	56.7 %	70-130%	**Recovery less than lower data quality objective**
EP234I: Miscellaneous (ESI Positive Mode) Pesticides	ES1920000--002	S8	**Abamectin**	71751-41-2	64.8 %	70-130%	**Recovery less than lower data quality objective**
EP234I: Miscellaneous (ESI Positive Mode) Pesticides	ES1920000--002	S8	**Aminopyralid**	150114-71-9	4.56 %	70-130%	**Recovery less than lower data quality objective**
EP234I: Miscellaneous (ESI Positive Mode) Pesticides	ES1920000--002	S8	**Dichlobenil**	1194-65-6	55.8 %	70-130%	**Recovery less than lower data quality objective**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
Laboratory Duplicates (DUP) - Continued					
Semivolatile Organic Compounds	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **WATER**

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

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation* Date extracted	Due for extraction	Evaluation	*Analysis* Date analysed	Due for analysis	Evaluation
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H)							
S7, S8	**26-Jun-2019**	**----**	----	----	**02-Jul-2019**	03-Jul-2019	✓
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T)							
S7, S8	**26-Jun-2019**	**02-Jul-2019**	23-Dec-2019	✓	**02-Jul-2019**	23-Dec-2019	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T)							
S7, S8	**26-Jun-2019**	**----**	----	----	**02-Jul-2019**	24-Jul-2019	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066)							
S7, S8	**26-Jun-2019**	**29-Jun-2019**	03-Jul-2019	✓	**29-Jun-2019**	08-Aug-2019	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved (EP068)							
S7, S8	**26-Jun-2019**	**29-Jun-2019**	03-Jul-2019	✓	**29-Jun-2019**	08-Aug-2019	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068)							
S7, S8	**26-Jun-2019**	**29-Jun-2019**	03-Jul-2019	✓	**29-Jun-2019**	08-Aug-2019	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074-WF)								
S7,	S8	**26-Jun-2019**	**28-Jun-2019**	10-Jul-2019	✓	**28-Jun-2019**	10-Jul-2019	✓
EP074B: Oxygenated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074-WF)								
S7,	S8	**26-Jun-2019**	**28-Jun-2019**	10-Jul-2019	✓	**28-Jun-2019**	10-Jul-2019	✓
EP074C: Sulfonated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074-WF)								
S7,	S8	**26-Jun-2019**	**28-Jun-2019**	10-Jul-2019	✓	**28-Jun-2019**	10-Jul-2019	✓
EP074D: Fumigants								
Amber VOC Vial - Sulfuric Acid (EP074-WF)								
S7,	S8	**26-Jun-2019**	**28-Jun-2019**	10-Jul-2019	✓	**28-Jun-2019**	10-Jul-2019	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074-WF)								
S7,	S8	**26-Jun-2019**	**28-Jun-2019**	10-Jul-2019	✓	**28-Jun-2019**	10-Jul-2019	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074-WF)								
S7,	S8	**26-Jun-2019**	**28-Jun-2019**	10-Jul-2019	✓	**28-Jun-2019**	10-Jul-2019	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074-WF)								
S7,	S8	**26-Jun-2019**	**28-Jun-2019**	10-Jul-2019	✓	**28-Jun-2019**	10-Jul-2019	✓
EP074H: Naphthalene								
Amber VOC Vial - Sulfuric Acid (EP074-WF)								
S7,	S8	**26-Jun-2019**	**28-Jun-2019**	10-Jul-2019	✓	**28-Jun-2019**	10-Jul-2019	✓
EP075(SIM)A: Phenolic Compounds								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
S7,	S8	**26-Jun-2019**	**29-Jun-2019**	03-Jul-2019	✓	**29-Jun-2019**	08-Aug-2019	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
S7,	S8	**26-Jun-2019**	**29-Jun-2019**	03-Jul-2019	✓	**29-Jun-2019**	08-Aug-2019	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075)								
S7,	S8	**26-Jun-2019**	**29-Jun-2019**	03-Jul-2019	✓	**29-Jun-2019**	08-Aug-2019	✓
EP075C: Phthalate Esters								
Amber Glass Bottle - Unpreserved (EP075)								
S7,	S8	**26-Jun-2019**	**29-Jun-2019**	03-Jul-2019	✓	**29-Jun-2019**	08-Aug-2019	✓
EP075D: Nitrosamines								
Amber Glass Bottle - Unpreserved (EP075)								
S7,	S8	**26-Jun-2019**	**29-Jun-2019**	03-Jul-2019	✓	**29-Jun-2019**	08-Aug-2019	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075E: Nitroaromatics and Ketones							
Amber Glass Bottle - Unpreserved (EP075)							
S7, S8	**26-Jun-2019**	**29-Jun-2019**	03-Jul-2019	✓	**29-Jun-2019**	08-Aug-2019	✓
EP075F: Haloethers							
Amber Glass Bottle - Unpreserved (EP075)							
S7, S8	**26-Jun-2019**	**29-Jun-2019**	03-Jul-2019	✓	**29-Jun-2019**	08-Aug-2019	✓
EP075G: Chlorinated Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075)							
S7, S8	**26-Jun-2019**	**29-Jun-2019**	03-Jul-2019	✓	**29-Jun-2019**	08-Aug-2019	✓
EP075H: Anilines and Benzidines							
Amber Glass Bottle - Unpreserved (EP075)							
S7, S8	**26-Jun-2019**	**29-Jun-2019**	03-Jul-2019	✓	**29-Jun-2019**	08-Aug-2019	✓
EP075I: Organochlorine Pesticides							
Amber Glass Bottle - Unpreserved (EP075)							
S7, S8	**26-Jun-2019**	**29-Jun-2019**	03-Jul-2019	✓	**29-Jun-2019**	08-Aug-2019	✓
EP075J: Organophosphorus Pesticides							
Amber Glass Bottle - Unpreserved (EP075)							
S7, S8	**26-Jun-2019**	**29-Jun-2019**	03-Jul-2019	✓	**29-Jun-2019**	08-Aug-2019	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
S7, S8	**26-Jun-2019**	**29-Jun-2019**	03-Jul-2019	✓	**29-Jun-2019**	08-Aug-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
S7, S8	**26-Jun-2019**	**28-Jun-2019**	10-Jul-2019	✓	**28-Jun-2019**	10-Jul-2019	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071)							
S7, S8	**26-Jun-2019**	**29-Jun-2019**	03-Jul-2019	✓	**29-Jun-2019**	08-Aug-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
S7, S8	**26-Jun-2019**	**28-Jun-2019**	10-Jul-2019	✓	**28-Jun-2019**	10-Jul-2019	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
S7, S8	**26-Jun-2019**	**28-Jun-2019**	10-Jul-2019	✓	**28-Jun-2019**	10-Jul-2019	✓
EP090: Organotin Compounds (Soluble)							
Amber Glass Bottle - Unpreserved (EP090S)							
S7, S8	**26-Jun-2019**	**03-Jul-2019**	03-Jul-2019	✓	**03-Jul-2019**	12-Aug-2019	✓
EP202A: Phenoxyacetic Acid Herbicides by LCMS							
Amber Glass Bottle - Unpreserved (EP202-SL)							
S7, S8	**26-Jun-2019**	**----**	----	----	**28-Jun-2019**	03-Jul-2019	✓
EP204: Glyphosate and AMPA							
Amber Glass Bottle - Unpreserved (EP204)							
S7, S8	**26-Jun-2019**	**----**	----	----	**28-Jun-2019**	10-Jul-2019	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
S7,	S8	**26-Jun-2019**	**09-Jul-2019**	23-Dec-2019	✓	**09-Jul-2019**	23-Dec-2019	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
S7,	S8	**26-Jun-2019**	**09-Jul-2019**	23-Dec-2019	✓	**09-Jul-2019**	23-Dec-2019	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
S7,	S8	**26-Jun-2019**	**09-Jul-2019**	23-Dec-2019	✓	**09-Jul-2019**	23-Dec-2019	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X)								
S7,	S8	**26-Jun-2019**	**09-Jul-2019**	23-Dec-2019	✓	**09-Jul-2019**	23-Dec-2019	✓
EP234: Multiresidue Pesticides (ESI Positive)								
Amber Glass Bottle - Unpreserved (EP234-1)								
S7,	S8	**26-Jun-2019**	**----**	----	----	**28-Jun-2019**	03-Jul-2019	✓
EP234I: Miscellaneous (ESI Positive Mode) Pesticides								
Amber Glass Bottle - Unpreserved (EP234-1)								
S7,	S8	**26-Jun-2019**	**----**	----	----	**28-Jun-2019**	03-Jul-2019	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Glyphosate and AMPA	EP204	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Compounds (Soluble)	EP090S	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	3	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	3	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	0	2	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Glyphosate and AMPA	EP204	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Compounds (Soluble)	EP090S	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Glyphosate and AMPA	EP204	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Compounds (Soluble)	EP090S	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Glyphosate and AMPA	EP204	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Compounds (Soluble)	EP090S	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	3	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	3	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	0	2	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds WF Detection Limits	EP074-WF	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM (2013) Schedule B(3)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds WF Detection Limits	EP074-WF	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds	EP075	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Organotin Compounds (Soluble)	EP090S	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by GC/MS coupled with high volume injection and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	WATER	In house: LCMS (Electrospray in negative mode). After adding surrogate and acetic acid, water samples are injected on a C18 column for LC/MS determination.
Glyphosate and AMPA	EP204	WATER	In house: Pre-column derivatisation LCMS (ES in negative mode). Water samples are derivatised with 9-fluorenyl methoxycarbonyl chloroformate (FMOC) in alkaline condition. The derivatives of glyphosate and AMPA are separated by a C8 column and determined by MS.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In house: Direct injection analysis of fresh waters after dilution (1:1) with methanol. Analysis by LC-Electrospray-MS-MS, 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
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.
Phenolic Endocrine Disrupting Compounds (EDC)	EP244	WATER	Specialist organic analysis subcontracted to ALS Scoresby (NATA Accredited Laboratory No. 992).

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Preparation for PFAS in water.	EP231-PR	WATER	Method presumes direct injection without workup. Preparation includes addition of internal standard and surrogate, and filtration prior to anaylsis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.
Organotin Sample Preparation	ORG34	WATER	In house. A specified volume of sample is spiked with surrogate, acidified and vacuum filtered. Reagents and solvent are added and the mixture tumbled. The butyltin compounds is derivitisated, extracted and the subtitution reaction completed. The extract is transferred to a separatory funnel and further extracted two times with petroleum ether. The resultant extracts are combined and concentrated for analysis.

QUALITY CONTROL REPORT

Client	**INNERWEST COUNCIL**	**Laboratory :**	Environmental Division Sydney		
Contact	AMOS BRANCH	**Contact**	CUSTOMER.SERVICES.ES	**Work Order:**	**ES1990031**
Address:	SYDNEY SYDNEY	**Address:**	Smithfield NSW 2164 Australia		

Project	- Not provided -	**Quote #**	----	**Received:**	27 Jun 2019
Order #	- Not provided -			**Issued**	10 Jul 2019
C-O-C #	- Not provided -				
Site	- Not provided -				
E-mail	amos.branch@unsw.edu.au	**E-mail**	ALSEnviro.Sydney@alsglobal.co	**Number of Samples**	
Phone	- Not provided -	**Phone**	+61-2-8784 8555	**Received:**	2
Fax	- Not provided -	**Fax**	+61-2-8784 8500	**Analysed:**	2

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NATA Accredited Laboratory - 825

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Accredited for compliance with ISO/IED 17025

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)

Quality Control Report
Laboratory Duplicates (DUP)

	Original Result	**Duplicate Result**
Laboratory Sample Id :		
Client Sample Id :		
Sample Mass (g) :		
Qc Lot Number :		
Moisture Content (%) :		

Notes
LOR = Limit of reporting
T = tetra
Pe = penta
Hx = hexa
Hp = hepta
O = octa
CDD, dioxin = chlorinated debenzo-p-dioxin
CDF, furan = chlorinated debenzofuran
RPD = relative per cent difference
Permitted ranges for RPD are depencant upon the magnitude of the result in comparison to the LOR.
Result < 10x LOR, no limit, result between 10x and 20x LOR, 50%; result > 20x LOR, 20%
- = Where results are less than the LOR, no RPD is reported.

Quality Control Results
Laboratory Control Samples(LCS)

Laboratory Sample Id : 5588606-002
QC Lot Number : 4537547
Sample Name : Ongoing Precision and Recovery (OPR) s

Compound	Conc pg/L	Lower pg/L	Upper pg/L	$^{13}C_{12}$ Rec(%)	Lower 2 (%)	Upper 2 (%)
2378-TCDD	709.0	536	1264	97.1	25	164
12378-PeCDD	3710.0	2800	5680	94.1	25	181
123478-HxCDD	3530.0	2800	6560	60.2	32	141
123678-HxCDD	3860.0	3040	5360	83.1	28	130
123789-HxCDD	4340.0	2560	6480	-	-	-
1234678-HpCDD	3550.0	2800	5600	82.1	23	140
OCDD	8080.0	6240	11520	73.9	17	157
2378-TCDF	712.0	600	1264	68.1	24	169
12378-PeCDF	4120.0	3200	5360	75.4	24	185
23478-PeCDF	3680.0	2720	6400	77.4	21	178
123478-HxCDF	3870.0	2880	5360	39.6	26	152
123678-HxCDF	4050.0	3360	5200	60.0	26	123
234678-HxCDF	3650.0	3120	5200	64.8	28	136
123789-HxCDF	3820.0	2800	6240	67.5	29	147
1234678-HpCDF	4050.0	3280	4880	54.8	28	143
1234789-HpCDF	3510.0	3120	5520	70.0	26	138
OCDF	6370.0	5040	13600			

Notes
1. Acceptable concentration limits are as quoted on the analytical certificate for the cerified reference material
2. Acceptable recovery limits are derived from EPA1613 Revision B
T = tetra
Pe = penta
Hx = hexa
Hp = hepta
O = octa

Quality Control Report
Method Blank (MB)

Laboratory Sample ID: 5588606-001
Qc Lot Number : 4537547

Sample Matrix: WATER
Date Extracted: 01-Jul-2019
Date Analysed: 01-Jul-2019

Compound	Conc pg/L	LOR pg/L	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<5.0	5.0	1	0.00	2.50	5.00	1	0.00	2.50	5.00	101.9
12378-PeCDD	<25.0	25.0	1	0.00	12.50	25.00	0.5	0.00	6.25	12.50	95.2
123478-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	66.1
123678-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	89.2
123789-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	-
1234678-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	76.9
OCDD	<100.0	100.0	0.0003	0.00	0.02	0.03	0.001	0.00	0.05	0.10	63.7
2378-TCDF	<5.0	5.0	0.1	0.00	0.25	0.50	0.1	0.00	0.25	0.50	70.2
12378-PeCDF	<25.0	25.0	0.03	0.00	0.38	0.75	0.05	0.00	0.63	1.25	75.5
23478-PeCDF	<25.0	25.0	0.3	0.00	3.75	7.50	0.5	0.00	6.25	12.50	73.3
123478-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	52.3
123678-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	74.8
234678-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	67.3
123789-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	65.7
1234678-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	54.8
1234789-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	57.6
OCDF	<50.0	50.0	0.0003	0.00	0.01	0.02	0.001	0.00	0.03	0.05	-
			Σ **TEQ(WHO)**	0.00	28.55	57.05	Σ **TEQ(I)**	0.00	25.10	50.15	

Group Totals	Conc pg/L	LOR$_4$ pg/L	No. of Peaks
Tetra-Dioxins	<5.0	5.0	1
Penta-Dioxins	<25.0	25.0	1
Hexa-Dioxins	<25.0	25.0	1
Hepta-Dioxins	<25.0	25.0	1
Octa-Dioxin	<100.0	100.0	1
Tetra-Furans	<5.0	5.0	1
Penta-Furans	<25.0	25.0	1
Hexa-Furans	<25.0	25.0	1
Hepta-Furans	<25.0	25.0	1
Octa-Furan	<50.0	50.0	1
Σ **PCDD/Fs**	0.00		

Notes
LOR = Limit of reporting
I-TEF = International toxic equivalency factor
I-TEQ = International toxic equivalence (pg/L)
WHO-TEF = World Health Organistaion toxic equivalency factor
WHO-TEQ = World Health Organisation toxic equivalence (pg/L)
T = tetra
Pe = penta
Hx = hexa
Hp =hepta
O = octa
CDD, dioxin = chlorinated dibenzo-p-dioxin
CDF, furan = chlorinated dibenzofuran
1 I -TEQ(zero) and WHO-TEQ(zero) calculated treating <LOR as zero concentration (pg/L)
2 I-TEQ(0.5 LOR) and WHO-TEQ(0.5 LOR) calculated treating <LOR as 50% LoR concentration (pg/L)
3 I-TEQ(LOR) and WHO-TEQ(LOR) calculated treating <LOR as LoR concentration (pg/L)
4 Totals LORs are calculated by mutiplying the number of peaks by the individual LOR per compound

QUALITY CONTROL REPORT

Client	**INNERWEST COUNCIL**	**Laboratory :**	Environmental Division Sydney		
Contact	S KHAN	**Contact**	CUSTOMER.SERVICES.ES	**Work Order:**	**ES1990034**
Address:	SYDNEY SYDNEY	**Address:**	Smithfield NSW 2164 Australia		

Project	Parramatta River Risk Assessment	**Quote #**	----	**Received:**	1 Jul 2019
Order #	- Not provided -			**Issued**	10 Jul 2019
C-O-C #	- Not provided -				
Site	- Not provided -				
E-mail	S.khan@unsw.edu.au	**E-mail**	ALSEnviro.Sydney@alsglobal.co	**Number of Samples**	
Phone	- Not provided -	**Phone**	+61-2-8784 8555	**Received:**	2
Fax	- Not provided -	**Fax**	+61-2-8784 8500	**Analysed:**	2

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NATA Accredited Laboratory - 825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IED 17025

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)

Quality Control Report
Laboratory Duplicates (DUP)

	Original Result	**Duplicate Result**
Laboratory Sample Id :		
Client Sample Id :		
Sample Mass (g) :		
Qc Lot Number :		
Moisture Content (%) :		

Notes
LOR = Limit of reporting
T = tetra
Pe = penta
Hx = hexa
Hp = hepta
O = octa
CDD, dioxin = chlorinated debenzo-p-dioxin
CDF, furan = chlorinated debenzofuran
RPD = relative per cent difference
Permitted ranges for RPD are depencant upon the magnitude of the result in comparison to the LOR.
Result < 10x LOR, no limit, result between 10x and 20x LOR, 50%; result > 20x LOR, 20%
- = Where results are less than the LOR, no RPD is reported.

Quality Control Results
Laboratory Control Samples(LCS)

Laboratory Sample Id : 5588782-002
QC Lot Number : 4537616
Sample Name : Ongoing Precision and Recovery (OPR) s

Compound	Conc pg/L	Lower pg/L	Upper pg/L	$^{13}C_{12}$ Rec(%)	Lower 2 (%)	Upper 2 (%)
2378-TCDD	709.0	536	1264	97.1	25	164
12378-PeCDD	3710.0	2800	5680	94.1	25	181
123478-HxCDD	3530.0	2800	6560	60.2	32	141
123678-HxCDD	3860.0	3040	5360	83.1	28	130
123789-HxCDD	4340.0	2560	6480	-	-	-
1234678-HpCDD	3550.0	2800	5600	82.1	23	140
OCDD	8080.0	6240	11520	73.9	17	157
2378-TCDF	712.0	600	1264	68.1	24	169
12378-PeCDF	4120.0	3200	5360	75.4	24	185
23478-PeCDF	3680.0	2720	6400	77.4	21	178
123478-HxCDF	3870.0	2880	5360	39.6	26	152
123678-HxCDF	4050.0	3360	5200	60.0	26	123
234678-HxCDF	3650.0	3120	5200	64.8	28	136
123789-HxCDF	3820.0	2800	6240	67.5	29	147
1234678-HpCDF	4050.0	3280	4880	54.8	28	143
1234789-HpCDF	3510.0	3120	5520	70.0	26	138
OCDF	6370.0	5040	13600			

Notes
1. Acceptable concentration limits are as quoted on the analytical certificate for the cerified reference material
2. Acceptable recovery limits are derived from EPA1613 Revision B
T = tetra
Pe = penta
Hx = hexa
Hp = hepta
O = octa

Quality Control Report
Method Blank (MB)

Laboratory Sample ID: 5588782-001
Qc Lot Number : 4537616

Sample Matrix: WATER
Date Extracted: 04-Jul-2019
Date Analysed: 04-Jul-2019

Compound	Conc pg/L	LOR pg/L	WHO-TEF	WHO-TEQ1 (zero)	WHO-TEQ2 (0.5 LOR)	WHO-TEQ3 (LOR)	I-TEF	I-TEQ1 (zero)	I-TEQ2 (0.5 LOR)	I-TEQ3 (LOR)	13C12 Rec(%)
2378-TCDD	<5.0	5.0	1	0.00	2.50	5.00	1	0.00	2.50	5.00	101.9
12378-PeCDD	<25.0	25.0	1	0.00	12.50	25.00	0.5	0.00	6.25	12.50	95.2
123478-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	66.1
123678-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	89.2
123789-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	-
1234678-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	76.9
OCDD	<100.0	100.0	0.0003	0.00	0.02	0.03	0.001	0.00	0.05	0.10	63.7
2378-TCDF	<5.0	5.0	0.1	0.00	0.25	0.50	0.1	0.00	0.25	0.50	70.2
12378-PeCDF	<25.0	25.0	0.03	0.00	0.38	0.75	0.05	0.00	0.63	1.25	75.5
23478-PeCDF	<25.0	25.0	0.3	0.00	3.75	7.50	0.5	0.00	6.25	12.50	73.3
123478-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	52.3
123678-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	74.8
234678-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	67.3
123789-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	65.7
1234678-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	54.8
1234789-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	57.6
OCDF	<50.0	50.0	0.0003	0.00	0.01	0.02	0.001	0.00	0.03	0.05	-
			S **TEQ(WHO)**	0.00	28.55	57.05	S **TEQ(I)**	0.00	25.10	50.15	

Group Totals	Conc pg/L	LOR4 pg/L	No. of Peaks
Tetra-Dioxins	<5.0	5.0	1
Penta-Dioxins	<25.0	25.0	1
Hexa-Dioxins	<25.0	25.0	1
Hepta-Dioxins	<25.0	25.0	1
Octa-Dioxin	<100.0	100.0	1
Tetra-Furans	<5.0	5.0	1
Penta-Furans	<25.0	25.0	1
Hexa-Furans	<25.0	25.0	1
Hepta-Furans	<25.0	25.0	1
Octa-Furan	<50.0	50.0	1
S **PCDD/Fs**	0.00		

Notes
LOR = Limit of reporting
I-TEF = International toxic equivalency factor
I-TEQ = International toxic equivalence (pg/L)
WHO-TEF = World Health Organistaion toxic equivalency factor
WHO-TEQ = World Health Organisation toxic equivalence (pg/L)
T = tetra
Pe = penta
Hx = hexa
Hp =hepta
O = octa
CDD, dioxin = chlorinated dibenzo-p-dioxin
CDF, furan = chlorinated dibenzofuran
1 I -TEQ(zero) and WHO-TEQ(zero) calculated treating <LOR as zero concentration (pg/L)
2 I-TEQ(0.5 LOR) and WHO-TEQ(0.5 LOR) calculated treating <LOR as 50% LoR concentration (pg/L)
3 I-TEQ(LOR) and WHO-TEQ(LOR) calculated treating <LOR as LoR concentration (pg/L)
4 Totals LORs are calculated by mutiplying the number of peaks by the individual LOR per compound

QUALITY CONTROL REPORT

Client	**INNERWEST COUNCIL**	**Laboratory :**	Environmental Division Sydney		
Contact	AMOS BRANCH	**Contact**	CUSTOMER.SERVICES.ES	**Work Order:**	**ES1990035**
Address:	PO Box 14 Petersham NSW 2019	**Address:**	Smithfield NSW 2164 Australia		

Project	Parramatta River Risk Assessment	**Quote #**	----	**Received:**	2 Jul 2019
Order #	- Not provided -			**Issued**	12 Jul 2019
C-O-C #	- Not provided -				
Site	- Not provided -				
E-mail	amos.branch@unsw.edu.au	**E-mail**	ALSEnviro.Sydney@alsglobal.co	**Number of Samples**	
Phone	- Not provided -	**Phone**	+61-2-8784 8555	**Received:**	2
Fax	- Not provided -	**Fax**	+61-2-8784 8500	**Analysed:**	2

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Accredited for compliance with ISO/IED 17025

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Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)

Quality Control Report
Laboratory Duplicates (DUP)

	Original Result	**Duplicate Result**
Laboratory Sample Id :		
Client Sample Id :		
Sample Mass (g) :		
Qc Lot Number :		
Moisture Content (%) :		

Notes
LOR = Limit of reporting
T = tetra
Pe = penta
Hx = hexa
Hp = hepta
O = octa
CDD, dioxin = chlorinated debenzo-p-dioxin
CDF, furan = chlorinated debenzofuran
RPD = relative per cent difference
Permitted ranges for RPD are depencant upon the magnitude of the result in comparison to the LOR.
Result < 10x LOR, no limit, result between 10x and 20x LOR, 50%; result > 20x LOR, 20%
- = Where results are less than the LOR, no RPD is reported.

Quality Control Results
Laboratory Control Samples(LCS)

Laboratory Sample Id : 5588997-002
QC Lot Number : 4537720
Sample Name : Ongoing Precision and Recovery (OPR) s

Compound	Conc pg/L	Lower pg/L	Upper pg/L	$^{13}C_{12}$ Rec(%)	Lower 2 (%)	Upper 2 (%)
2378-TCDD	850.0	536	1264	104.6	25	164
12378-PeCDD	3990.0	2800	5680	106.9	25	181
123478-HxCDD	3830.0	2800	6560	69.2	32	141
123678-HxCDD	4230.0	3040	5360	89.8	28	130
123789-HxCDD	4540.0	2560	6480	-	-	-
1234678-HpCDD	4150.0	2800	5600	64.4	23	140
OCDD	8310.0	6240	11520	40.8	17	157
2378-TCDF	839.0	600	1264	83.1	24	169
12378-PeCDF	4260.0	3200	5360	93.9	24	185
23478-PeCDF	4180.0	2720	6400	90.5	21	178
123478-HxCDF	4300.0	2880	5360	61.8	26	152
123678-HxCDF	4220.0	3360	5200	85.1	26	123
234678-HxCDF	3940.0	3120	5200	72.0	28	136
123789-HxCDF	3810.0	2800	6240	71.1	29	147
1234678-HpCDF	4200.0	3280	4880	51.9	28	143
1234789-HpCDF	3770.0	3120	5520	52.4	26	138
OCDF	6800.0	5040	13600			

Notes
1. Acceptable concentration limits are as quoted on the analytical certificate for the cerified reference material
2. Acceptable recovery limits are derived from EPA1613 Revision B
T = tetra
Pe = penta
Hx = hexa
Hp = hepta
O = octa

Quality Control Report
Method Blank (MB)

Laboratory Sample ID: 5588997-001
Qc Lot Number : 4537720

Sample Matrix: WATER
Date Extracted: 12-Jul-2019
Date Analysed: 12-Jul-2019

Compound	Conc pg/L	LOR pg/L	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<5.0	5.0	1	0.00	2.50	5.00	1	0.00	2.50	5.00	94.4
12378-PeCDD	<25.0	25.0	1	0.00	12.50	25.00	0.5	0.00	6.25	12.50	114.0
123478-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	65.7
123678-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	88.6
123789-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	-
1234678-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	63.9
OCDD	<100.0	100.0	0.0003	0.00	0.02	0.03	0.001	0.00	0.05	0.10	36.3
2378-TCDF	<5.0	5.0	0.1	0.00	0.25	0.50	0.1	0.00	0.25	0.50	94.9
12378-PeCDF	<25.0	25.0	0.03	0.00	0.38	0.75	0.05	0.00	0.63	1.25	98.6
23478-PeCDF	<25.0	25.0	0.3	0.00	3.75	7.50	0.5	0.00	6.25	12.50	98.6
123478-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	63.4
123678-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	91.7
234678-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	80.1
123789-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	67.9
1234678-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	53.7
1234789-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	47.3
OCDF	<50.0	50.0	0.0003	0.00	0.01	0.02	0.001	0.00	0.03	0.05	-
			Σ **TEQ$_{(WHO)}$**	0.00	28.55	57.05	Σ **TEQ$_{(I)}$**	0.00	25.10	50.15	

Group Totals	Conc pg/L	LOR$_4$ pg/L	No. of Peaks
Tetra-Dioxins	<5.0	5.0	1
Penta-Dioxins	<25.0	25.0	1
Hexa-Dioxins	<25.0	25.0	1
Hepta-Dioxins	<25.0	25.0	1
Octa-Dioxin	<100.0	100.0	1
Tetra-Furans	<5.0	5.0	1
Penta-Furans	<25.0	25.0	1
Hexa-Furans	<25.0	25.0	1
Hepta-Furans	<25.0	25.0	1
Octa-Furan	<50.0	50.0	1
Σ **PCDD/Fs**	0.00		

Notes
LOR = Limit of reporting
I-TEF = International toxic equivalency factor
I-TEQ = International toxic equivalence (pg/L)
WHO-TEF = World Health Organistaion toxic equivalency factor
WHO-TEQ = World Health Organisation toxic equivalence (pg/L)
T = tetra
Pe = penta
Hx = hexa
Hp =hepta
O = octa
CDD, dioxin = chlorinated dibenzo-p-dioxin
CDF, furan = chlorinated dibenzofuran
1 I -TEQ$_{(zero)}$ and WHO-TEQ$_{(zero)}$ calculated treating <LOR as zero concentration (pg/L)
2 I-TEQ$_{(0.5\ LOR)}$ and WHO-TEQ$_{(0.5\ LOR)}$ calculated treating <LOR as 50% LoR concentration (pg/L)
3 I-TEQ$_{(LOR)}$ and WHO-TEQ$_{(LOR)}$ calculated treating <LOR as LoR concentration (pg/L)
4 Totals LORs are calculated by mutiplying the number of peaks by the individual LOR per compound

Appendix C Derivation of recreational water guidelines

C1 Approach

To assist in the conduct of the screening level assessment, recreational water guidelines have been derived for chemicals that have no published drinking water guideline.

The recreational water guideline adopted for screening for each chemical is 10 times higher than the drinking water guideline, consistent with the approach outlined by NHMRC (NHMRC 2008).

For chemicals with no published drinking water guidelines, guidance provided by NHMRC (NHMRC 2011 updated 2025) on the derivation of drinking water guidelines in Australia has been adopted, along with the use of an appropriate toxicity reference value (TRV).

Following this guidance, a drinking water guideline has been derived, assuming that 10% of the acceptable/tolerable intake can come from drinking water sources (and 90% can come from other exposure pathways including dermal absorption and other background intakes such as those from food, air or soil), as follows:

$$\text{Guideline value} = \frac{\text{human weight x proportion of total chemical intake from water x TRV}}{\text{volume of water consumed}} \text{ (mg/L)}$$

Where:
Human weight = 70 kg for adults as per NHMRC (NHMRC 2011 updated 2025)
Volume of water consumed = 2 L/day for adults as per NHMRC (NHMRC 2011 updated 2025)
Proportion of total chemical intake from water = 10% (or 0.1) default from NHMRC (NHMRC 2011 updated 2025)
TRV = chemical specific toxicity reference value (mg/kg/day), discussed below

Based on the available data for the Callan Park site, the following chemicals have been detected but do not have available drinking water guidelines published in the sources listed in **Section 4.2** of this report. These require derivation of an appropriate screening criteria for recreational water exposures:

- Saccharin
- Benzotriazole.

C2 Chemical specific TRVs and drinking water criteria derived

C2.1 General

The TRV has been identified in accordance with enHealth (enHealth 2012a) and ASC NEPM (NEPC 1999 amended 2013b) guidance based on the currently available information and reviews. The following presents a short summary of the available information and most appropriate TRV that can be used in the derivation of a drinking water value.

C2.2 Saccharin

Saccharin and saccharin salts (sodium, ammonium, calcium) have been in use since the late nineteenth century as sweeteners, with the salt forms being more soluble but of the same sweetening power as the acid form.

When ingested saccharin is rapidly absorbed and distributed in the body.

During its long history of use, saccharin has been accused of being responsible for a number of adverse effects both in humans and laboratory animals. Saccharin has been implicated in the development of photosensitive skin eruptions in humans, and as a hypoglycaemic agent in animals.

Low dietary concentrations of saccharin have been shown to alter the concentration of serum lipid components in rats fed chemically-defined diets (WHO 1982).

Saccharin is classified as a Group 2B carcinogen by IARC. The evidence for cancer in humans is inconsistent, however, there is sufficient evidence in animal studies.

Review of saccharin toxicological data by the WHO initially established an ADI of 5 mg/kg/day in 1978. This was revised down to be a temporary acceptable daily intake of 2.5 mg/kg/day in 1982. Following review of additional studies (specifically epidemiological studies), the ADI was later revised back to 5 mg/kg/day in 1993. This ADI remains unchanged.

For this assessment, the ADI has been adopted as the TRV = 5 mg/kg/day.

Based on this TRV, and the approach outlined above, a drinking water guideline of 17.5 mg/L has been derived.

A recreational water guideline relevant for this assessment is, therefore, 175 mg/L.

C2.3 Benzotriazole

Benzotriazole and its derivatives comprise an important class of corrosion inhibitors, typically used as trace additives in industrial chemical mixtures such as coolants, de-icers, surface coatings, cutting fluids, and hydraulic fluids. Limited information is available about the toxicity of this compound, however, the following is available from ECHA[2]:

- The compound is not considered to be PBT (persistent, bioaccumulative and toxic)
- The compound is soluble in water (19,800 mg/L at 25 ^{o}C)
- The compound has low acute toxicity via ingestion
- There is no significant evidence of carcinogenicity or genotoxicity.

In relation to repeated or long-term exposures for the general population, ECHA has derived a no effect level of 0.12 mg/kg/day for oral (and dermal) exposures. This includes a 300 fold uncertainty factor.

The USEPA has undertaken a review of a wide range of chemicals that are currently unregulated in the US and may be present in public water systems (USEPA 2009). This review identifies screening criteria that can be used to evaluate health concerns. Benzotriazole is considered to be categorised as Toxicity Category 2 (noting that the USEPA has adopted categories 1 to 5 with 1 being the most toxic), with a screening health value of 0.6 mg/kg/day based on a Lowest Observed Effect Level (LOAEL). No information is provided on the study or the approach adopted for establishing the value.

For the purpose of this assessment the TRV for benzotriazole from ECHA of 0.12 mg/kg/day has been adopted. Based on this TRV, and the approach outlined above, a drinking water guideline of 0.42 mg/L has been derived.

A recreational water guideline relevant for this assessment is, therefore, 4.2 mg/L.

[2] https://echa.europa.eu/da/registration-dossier/-/registered-dossier/14234/1