# APA Technical Note - Western Outer Ring Main - Environment Effects Statement

**TECHNICAL NOTE NUMBER:** TN11

**DATE:** 23 September 2021

**SUBJECT:** Updates regarding groundwater

**SUMMARY** This Technical Note provides and update on the additional groundwater monitoring undertaken following exhibition of the Western Outer Ring Main (WORM) Environment Effects Statement (EES) Technical Report C *Groundwater*.

**ATTACHMENTS:** Western Outer Ring Main – Results of groundwater monitoring (dated 23 September 2021)

**NOTE:**

## Background

1 Groundwater investigations were completed to inform the preparation of EES Technical Report C *Groundwater*. This testing occurred between March and October 2020 and included monitoring bore installation, aquifer (slug) testing and groundwater level and quality monitoring.

2 Additional monitoring was recommended to confirm 'baseline' conditions prior to Project commencement, i.e., the pre-Project groundwater conditions that encompass seasonal fluctuations in groundwater levels and quality.

3 The report at Annexure 1 – Western Outer Ring Main – Results of groundwater monitoring provides a consolidated summary and interpretation of the groundwater level and quality results collected over the full monitoring program (including the monitoring undertaken following exhibition of the EES).

## ANNEXURE 1

## Western Outer Ring Main – Results of groundwater monitoring (dated 23 September 2021)

# Western Outer Ring Main

## Results of groundwater monitoring

APA Transmission Pty Ltd and APA VTS (Operations) Pty LTD (APA)

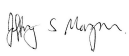
23 September 2021

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# 1. Introduction

## 1.1 Overview

GHD Pty Ltd (GHD) was engaged by APA Group (APA) to complete an Environment Effects Statement (EES) for the Western Outer Ring Main (WORM). The WORM project (Project) comprises a 51 kilometre high pressure gas transmission pipeline between APA's existing Plumpton Regulating Station and the Wollert Compressor Station providing a high pressure connection between the eastern and western pipeline networks of the Victorian Transmission System (VTS).

As part of the EES, GHD prepared a Groundwater Technical Report (GHD, 2021) that documented the existing groundwater conditions along the pipeline alignment (alignment), documented potential risks to the groundwater environment and recommended Environmental Management Measures (EMMs).

Groundwater investigations completed to inform the EES included monitoring bore installation, aquifer (slug) testing and groundwater level and quality monitoring. Groundwater levels and quality information between March and October 2020 was used to inform the EES however additional monitoring was recommended to confirm 'baseline' conditions prior to Project commencement, i.e., the pre-Project groundwater conditions that encompass seasonal fluctuations in groundwater levels and quality.

Characterisation of the baseline groundwater conditions also enables potential groundwater impacts from the Project (when it commences) to be identified and managed.

The objective of this report is to provide a consolidated summary, and interpretation of the groundwater level and quality results collected over the full monitoring program.

## 1.2 Scope of work

APA engaged GHD to prepare a concise interpretive groundwater monitoring report (this report) following the completion of groundwater monitoring for APA, and is to include:

– Rationale for the groundwater monitoring
– Tabulated bore construction information
– Bore logs including monitoring bore construction details
– Adopted monitoring program (timing, frequency, monitoring parameters)
– Tabulated groundwater monitoring results (groundwater levels and quality)
– Certified laboratory reports
– Groundwater monitoring bore hydrographs
– Seasonal and long term groundwater level behaviour
– Comparison of groundwater quality results to previous site monitoring
– High level interpretation of the results compared to the results assessed in the EES Groundwater Technical Report

## 1.3 Rationale for groundwater monitoring

The rationale of the groundwater monitoring program has been to:

– Collect and further establish 'baseline' conditions for the Project prior to site works commencing. This will enable potential groundwater impacts from Project activities to be identified and assessed and assist in planning for groundwater disposal during dewatering activities
– Identify if any there were any changes in groundwater levels or quality that may impact on the findings of the EES impact assessment

# 2. Groundwater monitoring network

## 2.1 Monitoring network evolution

In late 2019 and early 2020, Construction Sciences Pty Ltd (CS) undertook geotechnical drilling investigations along the alignment. Six of the geotechnical bores drilled during these investigations were converted to groundwater monitoring bores. The majority of the bores were located where the alignment crossed major waterways.

In July and August 2020, a further 12 monitoring bores were installed along the alignment to provide further information on groundwater levels, quality and estimated aquifer hydraulic conductivity. The network generally focused on the areas where groundwater depth was expected to be less than 5 metres and therefore where there may be interaction with the pipeline.

## 2.2 Monitoring bore locations and installation details

The monitoring bore network installed for the Project currently comprises 18 monitoring bores and the monitoring bore locations are shown in Figure 1. Monitoring bore construction details including location co-ordinates, completion dates, screen depths and lithology have been summarised in Table 1. Monitoring bore construction and lithology logs are attached in Appendix A.

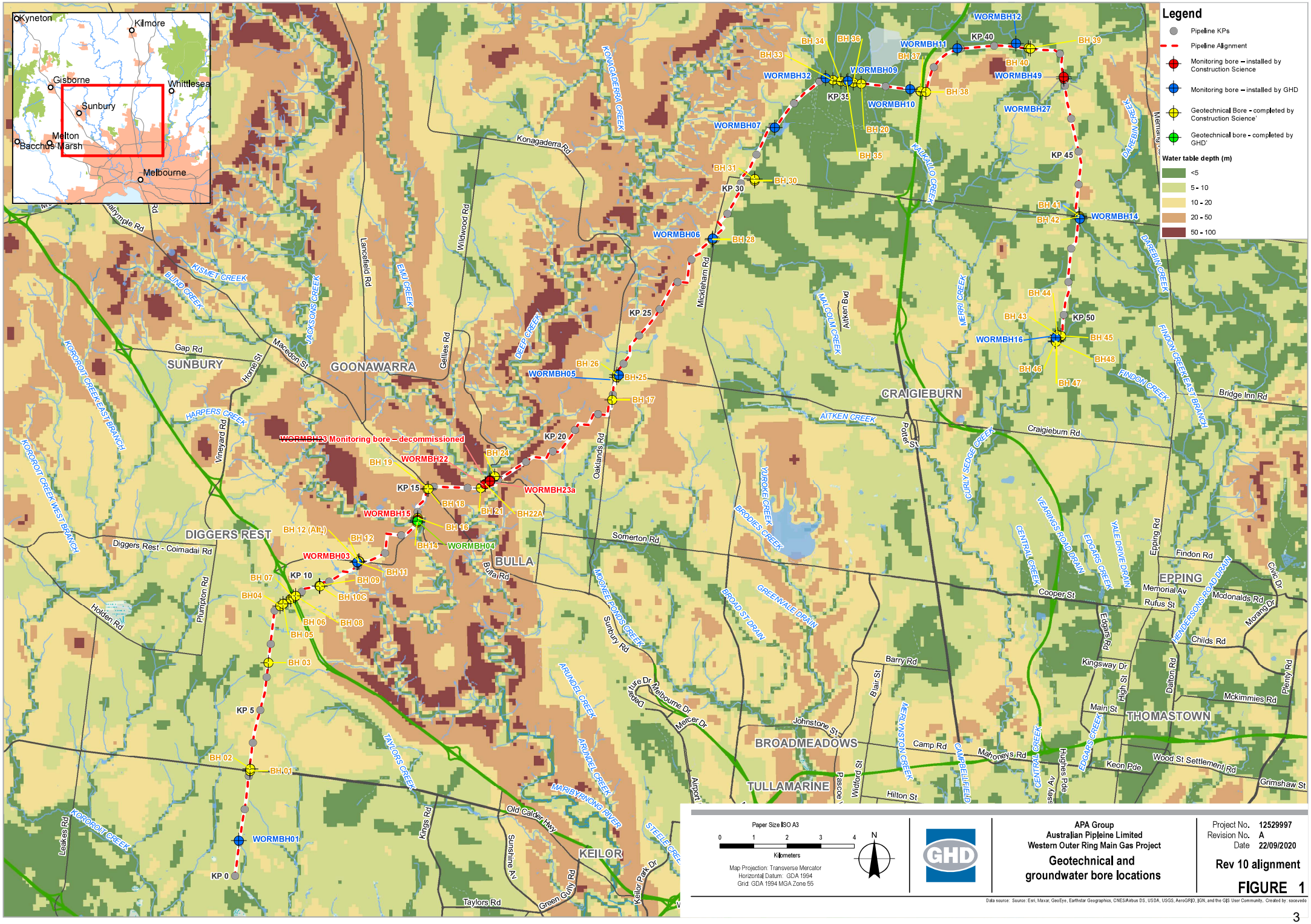

Kyneton
Kilmore
Gisborne
Whittlesea
Sunbury
Melton
Bacchus Marsh
Melbourne
Legend
Pipeline KPs
Pipeline Alignment
Monitoring bore – installed by Construction Science
Monitoring bore – installed by GHD
Geotechnical Bore - completed by Construction Science'
Geotechnical bore - completed by GHD'
Water table depth (m)
<5
5 - 10
10 - 20
20 - 50
50 - 100
WORMBH12
WORMBH11
WORMBH09
WORMBH32
WORMBH10
WORMBH07
WORMBH06
WORMBH49
WORMBH27
WORMBH14
WORMBH16
WORMBH05
WORMBH22
WORMBH23 Monitoring bore – decommissioned
WORMBH23a
WORMBH15
WORMBH04
WORMBH03
WORMBH01
KP 40
KP 35
KP 30
KP 25
KP 20
KP 15
KP 10
KP 5
KP 0
KP 45
KP 50
BH 34
BH 36
BH 33
BH 37
BH 39
BH 40
BH 38
BH 20
BH 35
BH 31
BH 30
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BH 43
BH 45
BH48
BH 46
BH 47
BH 26
BH 25
BH 17
BH 24
BH 19
BH 18
BH 21
BH22A
BH 16
BH 14
BH 12 (Alt)
BH 12
BH 11
BH 07
BH 09
BH04
BH 10C
BH 06
BH 08
BH 05
BH 03
BH 02
BH 01
SUNBURY
GOONAWARRA
DIGGERS REST
BULLA
CRAIGIEBURN
EPPING
THOMASTOWN
BROADMEADOWS
TULLAMARINE
KEILOR
Gap Rd
Macedon St
Horne St
Lancefield Rd
Wildwood Rd
Gellies Rd
Konagaderra Rd
Mickleham Rd
Oaklands Rd
Vineyard Rd
Diggers Rest - Coimadai Rd
Holden Rd
Plumpton Rd
Bulla Rd
Somerton Rd
Sunbury Rd
Barry Rd
Johnstone St
Camp Rd
Mahoneys Rd
Old Calder Hwy
Kings Rd
Sunshine Av
Keilor Park Dr
Taylors Rd
Green Gully Rd
Leakes Rd
Dalrymple Rd
Bridge Inn Rd
Craigieburn Rd
Cooper St
Epping Rd
Findon Rd
Mcdonalds Rd
Childs Rd
Mckimmies Rd
Plenty Rd
Grimshaw St
Wood St Settlement Rd
Keon Pde
Hilton St
Kingsway Dr
Main St
Rufus St
Memorial Av
Morang Dr
Civic Dr
Dalton Rd
High St
Edgars Rd
Melbourne Dr
Mercer Dr
Hughes Pde
Widford St
Pascoe Vale Dr
Airport Dr
Blair St
Portet St
Arthurs Rd
KONAGADERRA CREEK
KISMET CREEK
BLIND CREEK
JACKSONS CREEK
EMU CREEK
DEEP CREEK
KORROROIT CREEK EAST BRANCH
KORROROIT CREEK WEST BRANCH
KORROROIT CREEK
HARPERS CREEK
KAUKAUNA CREEK
MALCOLM CREEK
MERRI CREEK
DAREBIN CREEK
FINDON CREEK
FINDON CREEK EAST BRANCH
AITKEN CREEK
CURLY SEDGE CREEK
YUROKE CREEK
BRODIES CREEK
CENTRAL CREEK
VEARINGS ROAD DRAIN
EDGARS CREEK
YALE DRIVE DRAIN
HENDERSONS ROAD DRAIN
MOONEE PONDS CREEK
BROAD ST DRAIN
GREENVALE DRAIN
ARUNDEL CREEK
TAYLORS CREEK
MARIBYRNONG RIVER
MERLYNSTON CREEK
CAMPBELLFIELD
STEELE CREEK
Paper Size ISO A3
0 1 2 3 4
Kilometers
Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55
N
GHD
APA Group
Australian Pipleine Limited
Western Outer Ring Main Gas Project
Geotechnical and groundwater bore locations
Project No. 12529997
Revision No. A
Date 22/09/2020
Rev 10 alignment
FIGURE 1
Data source: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Created by: sacevedo

*Table 1 Summary of APA monitoring bore installation*

| Bore ID | MGA coordinates | | Elevation (m AHD) | Location description | Bore depth (m) | Screen interval (m) | Screen geology |
|---|---|---|---|---|---|---|---|
| | Easting | Northing | | | | | |
| **Historic monitoring bores (installed 2019/2020)** | | | | | | | |
| WORMBH15 | 303,810.977 | 5,833,652.464 | 121.446 | Jacksons Creek | 20.3 | 17.3 – 20.3 | Siltstone |
| WORMBH22 | 305,819.460 | 5,834,711.840 | 102.588 | Deep Creek | 30.2 | 27.2 – 30.2 | Siltstone |
| WORMBH23 | 305,954.882 | 5,834,829.412 | 101.597 | Deep Creek | 30 | 27 – 30 | Mudstone |
| WORMBH27 | 323,052.000 | 5,846,786.180 | 257.600 | Merri Creek | 20.4 | 17.4 – 20.4 | Basalt |
| WORMBH32 | 315,954.007 | 5,846,801.058 | 231.550 | Gunns Gully Road | 20 | 17 – 20 | Siltstone/Sandstone |
| WORMBH49 | 323,040.750 | 5,846848.528 | 257.014 | Merri Creek | 20.5 | 17.52 – 20.5 | Basalt |
| **New monitoring bores (installed July – August 2020)** | | | | | | | |
| WORMBH01 | 298476.512 | 5824085.564 | 112.738 | Duha property | 10 | 7-10 | Basalt |
| WORMBH03 | 302006.761 | 5832383.239 | 165.207 | South of Bulla – Diggers Rest road (Prefferini). | 21 | 15-21 | Basalt |
| WORMBH05 | 309792.566 | 5837964.355 | 234.7 | Craigieburn Rd (Luppino) | 20 | 17-20 | Basalt |
| WORMBH06 | 312596.541 | 5842025.545 | 267.654 | Mickleham Rd (Hadshir) | 12 | 9-12 | Basalt |
| WORMBH07 | 314437.787 | 5845330.337 | 241.952 | Ascotown | 12 | 9-12 | Sandy clay |
| WORMBH09 | 316615.327 | 5846718.973 | 231.759 | Gunns Gully Road | 12 | 9-12 | Clay |
| WORMBH10 | 318474.624 | 5846478.275 | 242.787 | Gunns Gully Road | 12 | 9-12 | Clay |
| WORMBH11 | 319872.029 | 5847694.546 | 259.303 | South of Donavons Lane (Sirius) | 10.1 | 7.1 - 10.1 | Clay |
| WORMBH12 | 321626.74 | 5847842.97 | 255.071 | Donavons Lane | 6.1 | 3-6 | Basalt |
| WORMBH14 | 323525.919 | 5842612.49 | 233.772 | Donnybrook Rd (De Angelis) | 9 | 6-9 | Basalt |
| WORMBH16 | 322804.232 | 5839069.687 | 203.843 | Wollert Compressor Station | 10 | 7-10 | Basalt |
| WORMBH23a | 305955.503 | 5834800.475 | 101.242 | Deep Creek | 25 | 22-25 | Silty clay and mudstone |

**Notes to historic bores:**
Source – APA
Screen geology as logged by Construction Sciences (CS)
Bore WORMBH23 blocked and since decommissioned by CS
Monitoring bore coordinates supplied by APA. Elevation in m AHD understood to represent ground level
All bores comprise 50 mm diameter PVC casing
**Notes to new bores:**
Elevation in m AHD measured at top of PVC.
All bores comprise 50 mm diameter PVC casing
Bore WORMBH23a installed by CS

# 3. Groundwater monitoring approach

## 3.1 Groundwater monitoring program

GHD has completed monitoring from the monitoring bore network between March 2020 and August 2021. The initial monitoring in March 2020 was completed from six bores (refer Section 2.1). Subsequent regular monitoring was completed between August 2020 and August 2021 from the completed monitoring network. A summary of the monitoring completed is presented in Table 2. We note the following:

– For most bores, the monitoring has been completed over one year in order to aid in identifying any potential seasonal changes in groundwater levels and quality. Some of the initial monitoring bores (refer Table 1) have been monitored for more than one year
– The results of the aquifer (slug) testing have been reported in the EES Groundwater Technical Report and have not been discussed further
– Whilst APA has attempted to access the entire monitoring bore network over the monitoring period it is noted that access to some bores has been restricted, either due to ground conditions or COVID restrictions
– Bore WORMBH04, located adjacent Jacksons Creek was installed as a temporary monitoring bore immediately following geotechnical drilling investigations. This bore was monitored once (August 2020) before being decommissioned

*Table 2 Summary of groundwater monitoring*

| Date | Monitoring completed | Comment |
|---|---|---|
| March 2020 | Groundwater level and quality monitoring<br>Aquifer (slug) testing | Groundwater monitoring completed from initial six bores (refer Table 1) |
| August – September 2020 | Groundwater level and quality monitoring<br>Aquifer (slug) testing | Groundwater level and quality monitoring completed from new and existing bores – completed immediately following drilling and bore installation<br>Slug testing completed from new bores |
| October 2020 | Groundwater level and quality monitoring | Groundwater monitoring completed from new and existing bores |
| February 2021 | | |
| May 2021 | | |
| August 2021 | | |

## 3.2 Groundwater level monitoring

### 3.2.1 Groundwater level data

At every monitoring event, each bore was measured for depth to groundwater using an electronic water level meter. The depth to groundwater and groundwater levels for all bores are tabulated in Appendix B. The depths to groundwater were referenced to the top edge of the PVC standpipe. Monitoring bores were surveyed to a common datum (Australian Height Datum) to enable reduced water levels to be determined.

### 3.2.2 Automated dataloggers

Automated dataloggers (dataloggers) were installed in selected monitoring bores (WORMBH12, WORMBH14, WORMBH15, WORMBH32, WORMBH22, WORMBH23, WORMBH27 and WORMBH49) to capture more frequent groundwater level information, and to reduce the need to frequently access the bores to obtain such information.

A monitoring bore hydrograph has been prepared for each bore where dataloggers have been deployed and shown in Appendix C. In constructing the hydrographs, the following was undertaken:

– Reduced water level trends (to metres above Australian Height Datum) and depth to water shown
– Selected bores have been presented as nested sites:
  - Bores WORMBH22, WORMBH23, WORMBH23a (Deep Creek)
  - Bores WORMBH27, WORMBH49 (Merri Creek)
– As bore WORMBH23 was decommissioned, the logger in the bore was moved to replacement bore WORMBH23A at the same location

Table 3 summarises the groundwater level monitoring completed for the Project.

***Table 3 Summary of groundwater level monitoring***

| Bore ID | Location description | Screened geology | Monitoring period | Groundwater level monitoring method |
|---|---|---|---|---|
| **Historic monitoring bores (installed 2019/2020)** | | | | |
| WORMBH15 | Jacksons Creek | Siltstone | March 2020 – August 2021 | Manual gauging and datalogger |
| WORMBH22 | Deep Creek | Siltstone | | |
| WORMBH23 | Deep Creek | Mudstone | March 2020 to August 2020 | |
| WORMBH27 | Merri Creek | Basalt | March 2020 to August 2021 | |
| WORMBH32 | Gunns Gully Road | Siltstone/Sandstone | | |
| WORMBH49 | Merri Creek | Basalt | | |
| **New monitoring bores (installed July – August 2020)** | | | | |
| WORMBH01 | Duha property | Basalt | August 2020 – August 2021 | Manual gauging |
| WORMBH03 | South of Bulla – Diggers Rest road (Prefferini). | Basalt | July 2020 – August 2021 | |
| WORMBH05 | Craigieburn Rd (Luppino) | Basalt | August 2020 – August 2021 | |
| WORMBH06 | Mickleham Rd (Hadshir) | Basalt | | |
| WORMBH07 | Ascotown | Sandy clay | September 2020 – August 2021 | |
| WORMBH09 | Gunns Gully Road | Clay | August 2020 – August 2021 | |
| WORMBH10 | Gunns Gully Road | Clay | | |
| WORMBH11 | South of Donavons Lane (Sirius) | Clay | | |
| WORMBH12 | Donavons Lane | Basalt | | Manual gauging and datalogger |
| WORMBH14 | Donnybrook Rd (De Angelis) | Basalt | August 2020 to May 2021 | |
| WORMBH16 | Wollert Compressor Station | Basalt | August 2020 – August 2021 | Manual gauging |
| WORMBH23a | Deep Creek | Silty clay and mudstone | | Manual gauging and datalogger |
| Notes:<br>Bore WORMBH23 blocked and monitoring finished in August 2020 when the bore was decommissioned. Logger moved from bore WORMBH23 to bore WORMBH23A<br>Bore WORMBH14 not accessible for monitoring in August 2021 | | | | |

## 3.3 Groundwater quality monitoring

### 3.3.1 Sampling methodology

Groundwater sampling was undertaken using groundwater sampling methods consistent with EPA (2000). The groundwater monitoring bores were purged during which field water quality parameters and water level monitoring was undertaken. Sampling was completed following stabilisation of the field water quality parameters to limits as defined by EPA (2000).

#### Field parameters

The following field parameters were measured during groundwater purging and sampling:

– pH
– Oxidation – Reduction Potential (ORP)
– Dissolved Oxygen (DO)
– Electrical Conductivity (EC)
– Temperature
– Water level (under low flow sampling conditions)

These parameters have been recorded in the field purge sheets, attached as Appendix D. In additional to monitoring of the field parameters, field staff also documented comments about the olfactory and visual observation of the purged groundwater.

#### Laboratory parameters

Groundwater samples were submitted by GHD to ALS Environmental (ALS – primary laboratory) and Eurofins (secondary laboratory) for analysis. Both laboratories are registered with the National Association of Testing Authorities (NATA) for the nominated analyses. The laboratory analytical suite for the monitoring program included::

– Salinity (measured as mg/L TDS), pH, EC, major ions.
– Ammonia (as N), nitrate (as N), Nitrate (as N), nitrite (as N), total nitrogen, Total Kjeldahl Nitrogen
– Sulfate as SO4, total phosphorous
– Metals screen

The analysis listed above was completed for all bores in all monitoring events.

Additional laboratory analysis was also completed for selected bores where groundwater interaction with the pipeline was considered possible. In most cases, this additional laboratory analysis was completed twice over the monitoring period. The additional laboratory analysis included the following:

– E.Coli, Total Suspended Solids (TSS), Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD)
– Oil and grease, surfactants (methylene blue active substances - MBAS)
– IWRG621[1] (TPH, OCPs, PCBs, MAH, SVOCs and VOCs, cyanide, fluoride)
– PFAS

The laboratory results for the groundwater sampling are tabulated in Appendix E. Certified laboratory reports and Chain of Custody (COC) documentation for the groundwater sampling are provided in Appendix F.

Table 4 summarises the bores monitored and the adopted laboratory analytical suite.

[1] IWRG – Industrial Waste Resource Guideline 621 adopted for water

*Table 4 Summary of groundwater sampling*

| Bore ID | Number of sampling events | Month/s sampled |
|---|---|---|
| WORMBH15 | Three | March and October 2020 and October 2021<br>Additional laboratory analysis completed in October 2020 and August 2021<br>October 2020 analysis also included PFAS |
| WORMBH22 | Five | March, September and October 2020. February and May 2021<br>Additional laboratory analysis completed in October 2020 and February and May 2021<br>October 2020 analysis also included PFAS |
| WORMBH23 | One | March a2020 |
| WORMBH23A | Three | October 2020 and February and May 2021<br>Additional laboratory analysis completed in August 2020 and February and May 2021<br>October 2020 analysis also included PFAS |
| WORMBH27 | Three | March and October 2020 and May 2021<br>Additional laboratory analysis completed in October 2020 and May 2021 |
| WORMBH32 | Three | March and August 2020, February 2021<br>Additional laboratory analysis completed in August 2020 and February 2021 |
| WORMBH49 | Three | March and October 2020, May 2021<br>Additional laboratory analysis completed in October 2020 and May 2021 |
| WORMBH01 | Not sampled – insufficient water | |
| WORMBH03 | Not sampled – insufficient water | |
| WORMBH04 | One (Temporary monitoring bore) | August 2020 |
| WORMBH05 | Not sampled – insufficient water | |
| WORMBH06 | | |
| WORMBH07 | | |
| WORMBH09 | Two | September 2020 and February 2021<br>Additional laboratory analysis completed in February 2021 |
| WORMBH10 | Not sampled – insufficient water | |
| WORMBH11 | Two | August 2020 and February 2021 |
| WORMBH12 | Three | August 2020 and February and August 2021<br>Additional laboratory analysis completed on all occasions |

| Bore ID | Number of sampling events | Month/s sampled |
|---|---|---|
| WORMBH14 | Two | August 2020 and February 2021<br>Additional laboratory analysis completed on both occasions |
| WORMBH16 | Three | August 2020 and February and August 2021<br>Additional laboratory analysis completed in February and August 2021 |

# 4. Discussion of results – groundwater levels

## 4.1 External influences on groundwater levels

### 4.1.1 Rainfall

It is noted the Project site covers a large area of outer western and northern Melbourne and thus rainfall data was obtained from Bureau of Meteorology (BOM) station 86282, located at Melbourne airport, to provide a broad overview on how rainfall may influence groundwater levels.

Monthly rainfall received from January 2020 and August 2021 has been summarised in Table 5 to provide a comparison to the long-term monthly averages. Monthly and average monthly rainfall is shown in Figure 2.

The data indicates that:

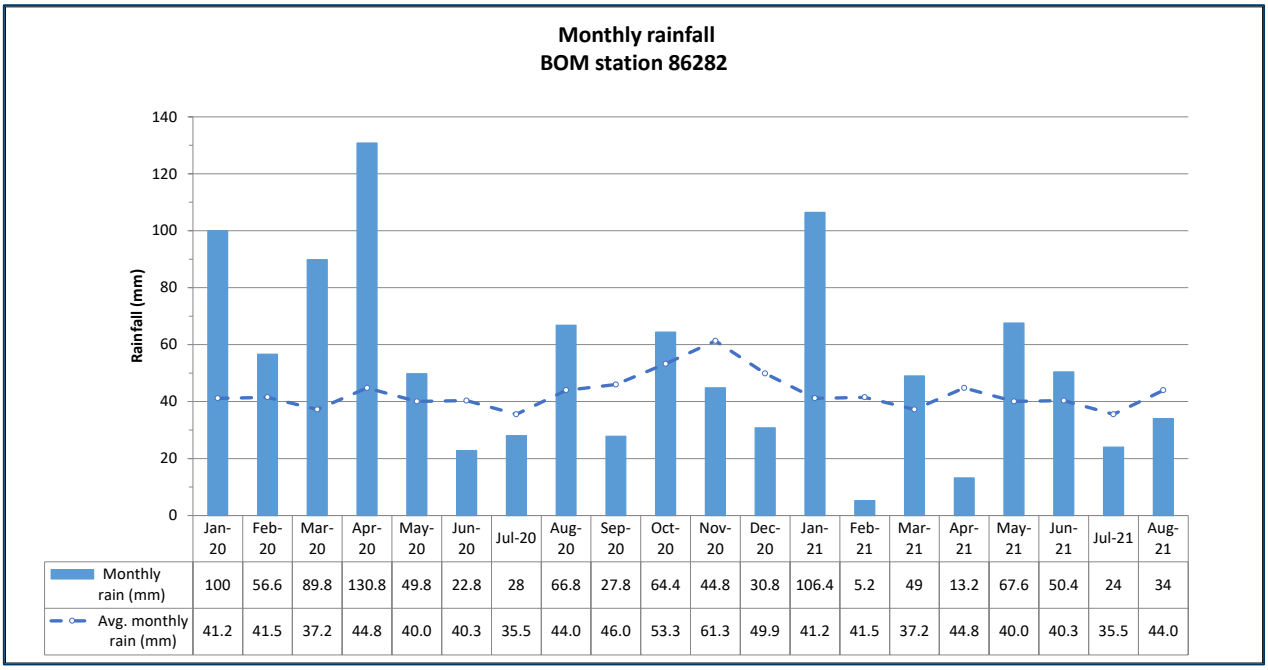
– Rainfall at Melbourne Airport during 2020 was almost 180 mm higher than the long term average
– Rainfall at Melbourne Airport between January and August 2021 was approximately 25 mm higher than the long term average

***Table 5 Monthly rainfall, Melbourne Airport climate station***

| Month | Rainfall (mm) as recorded at Melbourne Airport | Long Term Average Monthly Rainfall (mm) Melbourne Airport |
|---|---|---|
| *2020* | | |
| January | 100 | 41.2 |
| February | 56.6 | 41.5 |
| March | 89.8 | 37.2 |
| April | 130.8 | 44.8 |
| May | 49.8 | 40.0 |
| June | 22.8 | 40.3 |
| July | 28 | 35.5 |
| August | 66.8 | 44.0 |
| September | 27.8 | 46.0 |
| October | 64.4 | 53.3 |
| November | 44.8 | 61.3 |
| December | 30.8 | 49.9 |
| **Annual total** | **712.4** | **534.9** |
| *2021* | | |
| January | 106.4 | 41.2 |
| February | 5.2 | 41.5 |
| March | 49 | 37.2 |
| April | 13.2 | 44.8 |
| May | 67.6 | 40.0 |
| June | 50.4 | 40.3 |
| July | 24 | 35.5 |
| August | 34 | 44.0 |

| Month | Rainfall (mm) as recorded at Melbourne Airport | Long Term Average Monthly Rainfall (mm) Melbourne Airport |
|---|---|---|
| **Total (to August 2021)** | **349.8** | **324.5** |
| Note: Average monthly rainfall calculated using data from January 1971 to December 2020 (50 years) from data obtained from BOM station 86282 (Melbourne Airport). | | |

*Figure 2 Monthly rainfall – Melbourne Airport*




### 4.1.2 Other influences

Whilst recharge to the water table aquifers in the Project area from rainfall is expected to be the main driving force in groundwater level changes, recharge to the water table aquifers in the Project area may also occur with some leakage from adjacent or underlying aquifers (when multiple aquifers are present).

Adjacent to the water ways, recharge to the water table aquifer system may also occur during high river flow or flood periods (also driven by rainfall trends).

## 4.2 Regional long term and seasonal variations in water levels

The EES Groundwater Technical Report identified three State Groundwater Observation Network bores (SON) with publicly available long term time series water level monitoring data. These three SON bores were located in Rockbank and Diggers Rest, and were screened in basalt, i.e., the same geology that much of the pipeline alignment traverses.

The following comments are made regarding the available water level data from these bores:

– Seasonal water levels variations of between 0.5 m and 1 m occur
– Groundwater levels in the bores were observed to respond to longer term climatic conditions, e.g., falling during drought conditions and rising during wetter periods

## 4.3 Groundwater level monitoring results

### 4.3.1 Manual groundwater gauging

Groundwater level data has been obtained from six bores in March 2020, and from all monitoring bores between August 2020 and August 2021. The data collected between March and October 2020 was used to inform the EES Groundwater Technical Report, with the remaining water level data collected to aid in establishing baseline conditions.

The manual groundwater level data presented in Appendix B show that:

– Groundwater levels in bore WORMBH07 were reported at 7.5 m bgl[2] in early February 2021 after remaining dry since installation in September 2020, i.e., water level rise in the order of approximately 4.5 m. This rise in water levels follows above average rainfall (106.4 mm) in January 2021. Water levels have subsequently fallen to near the base of the bore (12 m bgl)

– Except for bore WORMBH07, groundwater levels in most bores shows changes of between approximately 0.1 m and 1.3 m

– The largest changes in groundwater levels, between approximately 0.8 m and 1.3 m, were observed in bores WORMBH12, WORMBH22 (Deep Creek) and WORMBH27/ WORMBH49 (Merri Creek)

– Water levels in bore WORMBH16, located at the Wollert Compressor Station have risen by approximately 0.5 m between August 2020 and August 2021. Water levels in August 2021 were recorded at approximately 7.2 m bgl

### 4.3.2 Automated dataloggers

Monitoring bore hydrographs have been included as Appendix C. The following comments are made regarding this water level data (refer Table 6):

*Table 6 Summary of hydrograph data*

| Bore ID | Location | Comment |
|---|---|---|
| WORMBH12 | Donovans Lane | Water levels display a strong seasonal response with the shallowest water levels in winter/ spring and the deepest water levels in autumn. Water levels range from approximately 0.2 m to 2 m bgl, i.e., seasonal response of almost 2 m. This bore is located adjacent a creek line. |
| WORMBH14 | Donnybrook Road | No seasonal response is evident however small (> approximately 0.3 m) regular changes in groundwater levels are observed.<br>Water levels range from approximately 1 m to 1.5 m bgl<br>Note that this bore could not be accessed in August 2021 and therefore a full year of logger data is not available. |
| WORMBH15 | Jacksons Creek | Water levels have remained relatively stable throughout the monitoring period between 1.5 m and 1.9 m bgl. (i.e. 0.4m fluctuation).<br>The deepest water levels (approximately 1.9 m bgl) were recorded in Mar 2021. The shallowest water levels (approximately 1.5 m bgl) were reported in June 2021. |
| WORMBH32 | Gunns Gully Road | Water levels in the bore were initially reported at approximately 7.2 m bgl and have risen slowly over the monitoring period to approximately 7 m bgl. No seasonal variations in water levels are evident. |

[2] bgl – below ground level

| Bore ID | Location | Comment |
|---|---|---|
| WORMBH22, WORM23, WORM23A | Deep Creek | Water levels in bore WORMBH22 display a seasonal response with the shallowest water levels in winter/ spring and the deepest water levels in autumn. Water levels range from approximately 5.9 m to 6.7 m bgl, i.e., seasonal response of around 0.8 m.<br>Water levels in bore WORMBH23A display a seasonal response with the shallowest water levels in winter/ spring and the deepest water levels in autumn. Water levels range from approximately 3.3 m to 3.7 m bgl, i.e., seasonal response of approximately 0.4 m<br>Whilst there is a head difference of approximately 1.5 m between bore WORMBH22 and WORMBH23A it is noted that the bores are located on opposite sides of Deep Creek, i.e. not a nested site<br>There is insufficient data from bore WORMBH23 to form conclusions about long term water level behaviour. |
| WORMBH27, WORM49 | Merri Creek | Water levels in both bores display a seasonal response with the shallowest water levels in winter/ spring and the deepest water levels in late autumn. Water levels range from approximately 2.2 m to 2.8 m bgl (bore WORMBH27) and approximately 1.7 m to 2.3 m bgl (bore WORMBH49), i.e., seasonal response of around 0.6 m.<br>Groundwater elevations in the bores on each side if the creek are similar, i.e., no head difference. |
| Note: m bgl – metres below ground level | | |

## 4.4 Summary

Overall, the groundwater levels observed in monitoring bores, during the monitoring period, reflect a response of the groundwater system to the prevailing climate. Over approximately the last year, observed changes in groundwater levels in most bores were less than 1 m, which is generally within the range observed regionally over longer periods (i.e. in state observation bores - refer Section 4.2). The exception is bore WORMBH12 along Donovans Lane, and adjacent a creek line, where a seasonal fluctuation of almost 2 m was recorded.

There are no obvious changes in groundwater levels that would impact on the findings of the EES impact assessment.

# 5. Discussion of results – groundwater quality

## 5.1 Environment Protection Act 2017

A review of the Environment Protection Act 1970 has resulted in the passage of the Environment Protection Act 2017 (EP Act 2017) which came into effect in July 2021.

The EP Act 2017 includes a new approach to environmental issues, focusing on preventing waste and pollution impacts rather than managing those impacts after they have occurred. The Act also includes the concept of general environmental duty (GED) which requires people to undertake reasonably practicable steps to eliminate, or otherwise reduce risks of harm to human health and the environment from pollution and waste. Unlike similar laws in other states and territories, a breach of the GED could lead to criminal or civil penalties, similar to those currently outlined in the Occupational Health and Safety Act 2004.

Under the new Act, the beneficial uses of water, as outlined in the SEPP (Waters), are known as environmental values. In addition, the SEPP (Waters) was replaced with the Environmental Reference Standard, specifically Part 5 - Water (referred to here as the ERS).

The purpose of the ERS is to support the protection of human health and the environment from pollution and waste by providing benchmarks to be used to assess and report on environmental conditions in the whole or any part of Victoria. The ERS seeks to achieve this purpose by:

– Identifying environmental values to be achieved or maintained in the whole or any part of Victoria
– Specifying indicators and objectives to be used to measure, determine or assess whether those environmental values are being achieved, maintained or threatened.

We note that the EES Groundwater Technical Report referred to the SEPP (Waters) as the primary guide to determining existing conditions and risk of impacts to groundwater quality. In line with Technical Note 5 however, the ERS has been adopted in this report as the mechanism for assessing results and determining such potential impacts. We note that the ERS has adopted similar indicators and objectives to the SEPP (Waters), i.e. no substantial change.

## 5.2 Groundwater

### 5.2.1 Groundwater segments

The ERS categorises groundwater into segments based on the groundwater salinity (measured as mg/L Total Dissolved Solids - TDS), with each segment having particular identified environmental value. The segments and their environmental values are summarised in Table 7. Water of higher quality (lower salinity) has more environmental values than low quality (more saline) groundwater.

*Table 7 Protected environmental values and groundwater segments*

| Environmental value | Segment (mg/L TDS) | | | | | | |
|---|---|---|---|---|---|---|---|
| | A1 | A2 | B | C | D | E | F |
| | 0 – 600 | 601 – 1,200 | 1,201 – 3,100 | 3,101 – 5,400 | 5,400 – 7,100 | 7,100 – 10,000 | >10,001 |
| Water dependent ecosystems and species | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Potable water supply (desirable) | ✓ | | | | | | |
| Potable water supply (acceptable) | | ✓ | | | | | |
| Potable mineral water supply | ✓ | ✓ | ✓ | ✓ | | | |

| Environmental value | Segment (mg/L TDS) | | | | | | |
|---|---|---|---|---|---|---|---|
| | A1 | A2 | B | C | D | E | F |
| | 0 – 600 | 601 – 1,200 | 1,201 – 3,100 | 3,101 – 5,400 | 5,400 – 7,100 | 7,100 – 10,000 | >10,001 |
| Agriculture and irrigation (irrigation) | ✓ | ✓ | ✓ | | | | |
| Agriculture and irrigation (stock watering) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Industrial and commercial | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Water-based recreation (primary contact recreation) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Traditional Owner cultural values | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Cultural and spiritual values | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Buildings and structures | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Geothermal properties | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Note: TDS – Total Dissolved Solids (mg/L). Source: ERS, dated May 2021 | | | | | | | |

EPA Victoria may determine an environmental value may not apply to groundwater if:

– There is insufficient aquifer yield to sustain the environmental value, having regard to variations within the aquifer and reasonable bore development techniques to improve yield
– The application of that groundwater, such as for irrigation, may be a risk to the environmental values of land or the broader environment due to the soil properties
– The background water quality level exceeds (or is less than, in the case of indicators such as pH, dissolved oxygen and many biological indicators) the relevant objective specified in Table 5.4 of the ERS and as a result the environmental value cannot be achieved

### 5.2.2 Groundwater indicators and objectives

The ERS also provides groundwater indictors and objectives for each environmental value. This table has been replicated in this report as Table 8.

*Table 8 Groundwater indicators and objectives*

| Environmental value | Indicators | Objectives |
|---|---|---|
| Water dependent ecosystems and species (in surface waters) | For groundwater that discharges to surface water, the indicators are the indicators applicable to the relevant surface water as specified in Division 3 of Part 5 of the ERS | The level that ensures the groundwater does not affect receiving waters to the extent that the level of any indicator in the receiving waters:<br>(a) exceeds the level of that indicator (if specified as an upper limit)<br>(b) is less than the level of that indicator (if specified as a lower limit),<br>Specified for surface water in Division 3 of Part 5 of the ERS. |
| Water dependent ecosystems and species (in subterranean waters with a hydrogeological setting conducive to the presence of troglofauna and stygofauna) | Indicators that are relevant to the subterranean species of troglofauna and stygofauna, which may include TSS, salinity, toxicants in water, toxicants in sediment and dissolved oxygen | The level that ensures the groundwater quality does not adversely affect the troglofauna and stygofauna that depend on the groundwater |
| Potable water supply | Indicators specified in the ADWG | Health-related guideline value for each indicator specified in the ADWG.<br>Aesthetic guideline value for each indicator specified in the ADWG. |
| Potable mineral water supply | Indicators specified in the ADWG | Health guideline values for each indicator specified in the ADWG.<br>Aesthetic guideline values for each indicator set out in the ADWG. |
| Agriculture and irrigation (irrigation) | Indicators specified for irrigation and water for general on-farm use in the ANZG | Level of that indicator specified in the ANZG (i.e., currently ANZECC (2000)) |
| Agriculture and irrigation (stock watering) | Indicators specified for livestock drinking water quality in the ANZG | Level of that indicator specified in the ANZG (i.e. currently ANZECC (2000)) |
| Industrial and commercial | Indicators specific to the particular industrial or commercial activity and their use of water | Groundwater quality that is suitable for its industrial or commercial use |
| Water-based recreation | E. coli<br>Chemical hazards, aesthetic effects | 10 E. coli/100mL (if no human faecal contamination sources identified)<br>0 E. coli/100mL (if human faecal contamination sources identified)<br>Level of indicators (where specified) and descriptions in applicable guidance, in the Recreational Water Guidelines which refer to ADWG |
| Buildings and structures | pH, sulphate, chloride, redox potential, salinity or any chemical substance or waste that may have a detrimental impact on the structural integrity of buildings or other structures | Groundwater that is not corrosive to or otherwise adversely affecting structures or building |
| Geothermal | Temperature between 30 and 70 degrees Celsius | Geothermal properties of groundwater to be maintained for current and future users of the resource |

Source: ERS, dated May 2021
ADWG – Australian Drinking Water Guidelines
ANZG –Australian and New Zealand Guidelines
ANZECC – Australian and New Zealand Environment and Conservation Council

### 5.2.3 Groundwater salinity

The groundwater salinity from the monitoring bores has been reported from 910 mg/L to 8,000 mg/L TDS, i.e., Segment A2 to Segment E of the ERS. This is consistent with the salinity segment range reported in the EES Groundwater Technical Report.

A summary of the groundwater salinity from the Project monitoring bores collected between March 2020 and August 2021 has been presented in Table 9. The monitoring bores in Table 9 have been listed geographically, i.e., from KP1 to KP50.

In most cases the groundwater salinity from the monitoring bores is consistent, or reasonably consistent, with the regional groundwater salinity interpretation. Notable exceptions include bores WORMBH09 and WORMBH32, located adjacent Gunns Gully Road. Salinity from these bores (between approximately 5,000 mg/L and 8,000 mg/L TDS) is higher than the regional groundwater salinity interpretation of 1,000 mg/L to 3,500 mg/L TDS.

Other key points include:

– Groundwater salinity in bore WORMBH15 (Jacksons Creek) was recorded at 5,560 mg/L TDS in October 2020. This is slightly higher than reported from two other sampling occasions where groundwater salinities of approximately 4,800 mg/L TDS have been reported.
– Groundwater salinity from bore WORMBH32 (Gunns Gully Road) has risen from 7,340 mg/L TDS in October 2020 to 8,000 mg/L TDS in February 2021. No groundwater interaction during Project activities, e.g., trenching, is expected at this location.
– Groundwater salinity from bore WORMBH11 (south of Donavons Lane) has risen from 1,920 mg/L TDS in August 2020 to 3,050 mg/L TDS in February 2021. No groundwater interaction during Project activities, e.g., trenching, is expected at this location.
– Groundwater salinity from bore WORMBH12 (Donovans Lane) has fallen from 3,790 mg/L TDS in August 2020 to 2,550 mg/L TDS in August 2021. Groundwater levels at this location are shallow (< 2 m bgl) and groundwater interaction during Project activities, e.g., trenching, could be expected.

The areas where groundwater interaction may be expected have been shaded blue in Table 9. This site specific salinity information indicates the groundwater falls within Segment A2, B and C. Salinity in bore WORMBH15 at Jacksons Creek was reported to be just within Segment D on one occasion. This additional groundwater sampling information does not change the assessment adopted in the EES Technical Report C *Groundwater* however further sampling of bore WORMBH15 is recommended to confirm salinity concentrations at this location prior to construction works occurring (EMM GW3 – Minimise impacts associated with contaminated groundwater and disposal).

As per the EES Technical Report – Groundwater, in comparing the groundwater quality against the water quality objectives in the ERS, the protection of water dependant ecosystems is considered the most sensitive beneficial use relevant to the Project and therefore the ANZG (2018) water quality guidelines and the values specified in the ERS appropriate.

*Table 9 Summary of monitoring bore groundwater salinity*

| Bore ID | Bore location | Bore depth (m) | Screen interval (m) | Screen geology | Groundwater salinity (mg/L TDS) | Groundwater segment | Regional groundwater salinity (mg/L TDS) | Comment |
|---|---|---|---|---|---|---|---|---|
| WORMBH01 | Duha | 10 | 7-10 | Basalt | | - | 13,000 - 35,000 | Not sampled - insufficient water |
| WORMBH03 | South of Bulla – Diggers Rest road. | 21 | 15-21 | Basalt | | - | 3,500 - 7,000 | Not sampled - insufficient water |
| WORMBH04 | Jacksons Creek | 21 | 17-20 | Mudstone | 3,150 | C | 3,500 - 7,000 | Salinity slightly lower than regional interpretation |
| WORMBH15 | Jacksons Creek | 20 | 17-20 | Siltstone | 4,820 – 5,560 | C and D | 3,500 - 7,000 | Salinity consistent with regional interpretation |
| WORMBH22 | Deep Creek | 30 | 27-30 | Siltstone | 3,710 – 4,780 | C | 1,000 - 3,500 | Salinity slightly higher than regional interpretation |
| WORMBH23 | Deep Creek | 30 | 27-30 | Mudstone | 4,200 | C | 1,000 - 3,500 | Salinity slightly higher than regional interpretation |
| WORMBH23a | Deep Creek | 25 | 22-25 | Silty clay and mudstone | 3,560 – 4,580 | C | 1,000 - 3,500 | Salinity slightly higher than regional interpretation |
| WORMBH05 | Craigieburn Rd | 20 | 17-20 | Basalt | - | - | 3,500 - 7,000 | Not sampled - insufficient water |
| WORMBH06 | Mickleham Rd | 12 | 9-12 | Basalt | - | - | 3,500 - 7,000 | Not sampled - insufficient water |
| WORMBH07 | Ascotown | 12 | 9-12 | Sandy clay | - | - | 3,500 - 7,000 | Not sampled - insufficient water |
| WORMBH32 | Gunns Gully Road | 20 | 17-20 | Siltstone/ sandstone | 5,060 – 8,000 | C and E | 1,000 - 3,500 | Salinity higher than regional interpretation |
| WORMBH09 | Gunns Gully Road | 12 | 9-12 | Clay | 5,300 – 5,750 | C and D | 1,000 - 3,500 | Salinity higher than regional interpretation |
| WORMBH10 | Gunns Gully Road | 12 | 9-12 | Clay | - | - | 1,000 - 3,500 | Not sampled - insufficient water |
| WORMBH11 | South of Donavons Lane | 10.1 | 7.1 - 10.1 | Clay | 1,920 – 3,050 | B | 1,000 - 3,500 | Salinity consistent with regional interpretation |
| WORMBH12 | Donavons Lane | 6.1 | 3-6 | Basalt | 2,530 – 3,790 | B and C | 1,000 - 3,500 | Salinity consistent with regional interpretation |
| WORMBH27 | Merri Creek | 20.4 | 17.4 - 20.4 | Basalt | 910 – 1,570 | A2 and B | 1,000 - 3,500 | Salinity consistent with regional interpretation |
| WORMBH49 | Merri Creek | 20.5 | 17.5 - 20.5 | Basalt | 1,550 to 1,600 | B | 1,000 - 3,500 | Salinity consistent with regional interpretation |
| WORMBH14 | Donnybrook Rd | 10 | 7-10 | Basalt | 1,300 – 1,320 | B | 1,000 - 3,500 | Salinity consistent with regional interpretation |

| Bore ID | Bore location | Bore depth (m) | Screen interval (m) | Screen geology | Groundwater salinity (mg/L TDS) | Groundwater segment | Regional groundwater salinity (mg/L TDS) | Comment |
|---|---|---|---|---|---|---|---|---|
| WORMBH16 | Wollert Compressor Station | 10 | 7-10 | Basalt | 1,140 – 1,190 | A2 | 1,000 - 3,500 | Salinity consistent with regional interpretation |

Notes:
Bore WORM04 was a temporary monitoring bore (sampled once)
Number of sampling events documented in Table 4

### 5.2.4 Other analytes

The tabulated laboratory results, compared against the adopted criteria, are included in Appendix E. A summary of the laboratory results for the remaining parameters has been included in Table 10. Table 10 includes the results of all sampling completed on the bores, i.e. including following the submission of the EES Groundwater Technical Report.

The following comments are made regarding the groundwater quality:

- The salinity from the majority of the bores exceeds the ANZECC (2000) irrigation requirements (long term for moderately tolerant crops). There is no guideline criteria for the ANZECC (2000) short term irrigation
- Elevated concentrations of ammonia (as N) have been reported from bores located near Deep and Jacksons Creeks. Concentrations from bore WORMBH15 (Jacksons Creek) have shown a steady increase in concentrations over the monitoring period, from 1.6 mg/L to 2.4 mg/L
- Elevated concentrations of total phosphorus have been reported for several bores along the alignment. The highest concentrations were recorded from bores located near Deep Creek, as well as adjacent Gunns Gully Road. Concentrations in bore WORMBH16 (Wollert Compressor Station) were reported at 25.4 mg/L in February 2021 before falling to 0.97 mg/L in August 2021
- Low concentrations of chromium, copper, nickel and zinc have been detected in all bores at concentrations slightly higher than the adopted ANZG (2018) guideline criteria for freshwater ecosystems
- Trace concentrations of arsenic have been reported from several bores during the monitoring period
- Low concentrations of E.Coli have been detected in three bores (WORMBH09, WORMBH14, WORMBH15) at concentrations slightly higher than the specified ERS guideline values for water based recreation. These concentrations may be a result of local land use activities (livestock grazing). Where E.Coli was sampled in other bores, it has not been reported above laboratory limits of reporting
- Trace concentrations of TRH were reported from bores WORMBH16, WORMBH22 and WORMBH23A in February 2021. When the bores were resampled TRH was not detected above laboratory limits of reporting. Where sampled from other bores, concentrations of TPH, OCPs, PCBs, MAH, SVOCs and VOCs were not reported above laboratory LOR
- Sampling for PFAS was completed from bores WORMBH15, WORMBH22 and WORMBH23A. Concentrations of PFAS in these bores were not detected above laboratory limits of reporting

*Table 10 Summary of laboratory analysis*

| Analyte | Concentrations | Exceedances | | |
|---|---|---|---|---|
| | | ANZG (2018) | ERS | Other |
| Electrical Conductivity (EC) | 1,400 µS/cm to 12,500 µS/cm | - | - | Groundwater salinity from the majority of the bores exceeds the ANZECC (2000) irrigation requirements (long term). Bores:<br>WORMBH04, WORMBH09, WORMBH11 WORMBH12, WORMBH15, WORMBH22, WORMBH23, WORMBH23a and WORMBH32 |
| Salinity (TDS) | 910 mg/L to 8,000 mg/L TDS | - | - | The groundwater salinity from the majority of the bores exceeds the Australian Drinking Water Guideline limit for potable water - acceptable (600 mg/L to 1,200 mg/L TDS).<br>Bores WORMBH09, WORMBH15 and WORMBH32 reported groundwater salinity in excess of the ANZECC (2000) stock watering requirements |
| Sulfate | 7 mg/L to 641 mg/L | - | - | Concentrations of sulfate in several bores exceeds the Australian Drinking Water Guideline limit for potable water - acceptable (250 mg/L).<br>WORMBH09 (305 mg/L - 312 mg/L)<br>WORMBH22 (446 mg/L – 563 mg/L)<br>WORMBH23 (286 mg/L)<br>WORMBH23a (386 mg/L to 401 mg/L)<br>WORMBH32 (453 mg/L to 641 mg/L) |
| Ammonia (as N) | Elevated concentration reported from bores:<br>WORMBH04 (1.4 mg/L)<br>WORMBH15 (1.6 mg/L - 2.4 mg/L)<br>WORMBH23 (0.9 mg/L) | Concentrations exceed the ANZG (2018) guideline limits for 95 % protection of aquatic (freshwater) ecosystems | No ERS guideline criteria | - |
| Arsenic | Arsenic was detected in all bores at low concentrations in throughout the monitoring period, from 0.001 mg/L to 0.018 mg/L. | The concentration of 0.018 mg/L (bore WORMBH15 – Jacksons Creek) exceeded the ANZG (2018) guideline limits for 95 % protection of aquatic (freshwater) ecosystems. | The concentration of 0.018 mg/L exceeds the 95 % ERS trigger for toxicants in water | - |

| Analyte | Concentrations | Exceedances | | |
|---|---|---|---|---|
| | | ANZG (2018) | ERS | Other |
| Other metals | Low concentrations of chromium, copper, nickel, selenium and zinc have been detected in all bores. | Concentrations generally slightly exceed the ANZG (2018) guideline limits for 95 % protection of aquatic (freshwater) ecosystems. | These concentrations exceed the 95 % ERS trigger for toxicants in water | - |
| Nitrogen – total | Elevated total nitrogen concentrations have been reported from selected bores:<br>WORMBH23 (14.1 mg/L)<br>WORMBH32 (15.1 mg/L)<br>WORMBH04 (1.6 mg/L)<br>WORMBH09 (1.1 mg/L - 2.4 mg/L)<br>WORMBH11 (1.1 mg/L - 1.8 mg/L)<br>WORMBH15 (1.9 mg/L - 2.8 mg/L) | There is no ANZG (2018) guideline value for total nitrogen | These concentrations exceed the guideline concentration of 1,100 µg/L (1.1 mg/L) | Total nitrogen concentrations from some of the bores exceeds the ANZECC (2000) irrigation requirements (long term) of 5 mg/L |
| Phosphorus – total | Elevated total phosphorus concentrations have been reported from selected bores:<br>WORMBH09 (0.39 mg/L – 5.02 mg/L)<br>WORMBH11 (0.44 mg/L)<br>WORMBH12 (0.007 mg/L - 0.14 mg/L)<br>WORMBH14 (0.17 mg/L - 0.23 mg/L)<br>WORMBH16 (0.97 mg/L to 25.4 mg/L)<br>WORMBH22 (0.05 mg/L – 0.07 mg/L)<br>WORMBH23 (20.6 mg/L)<br>WORMBH23a (0.05 mg/L – 0.29 mg/L)<br>WORMBH27 (0.29 mg/L – 0.31 mg/L)<br>WORMBH32 (6.07 mg/L) in March 2020.<br>WORMBH49 (0.19 mg/L - 0.25 mg/L) | There is no ANZG (2018) guideline value for total phosphorus | The ERS specifies a guideline concentration of 55 µg/L (0.055 mg/L).<br>These elevated concentrations exceed this guideline concentration | These concentrations exceed the ANZECC (2000) irrigation requirements (long term) of 0.05 mg/L. |
| Organics | Trace concentrations of TRH were reported from bores WORMBH22 and WORMBH23 in Feb 2021. When the bores were resampled in May 2021 TRH was not detected above laboratory LOR<br>Trace concentrations of TRH were reported from bore WORMBH16 in Feb 2021. When the bore was resampled in August 2021 TRH was not detected above laboratory LOR | - | - | - |

| Analyte | Concentrations | Exceedances | | |
|---|---|---|---|---|
| | | ANZG (2018) | ERS | Other |
| | Where sampled from other bores, concentrations of TPH, OCPs, PCBs, MAH, SVOCs and VOCs were not reported above laboratory LOR | | | |
| E. Coli | E.Coli has been detected as follows:<br>WORMBH09 (150 orgs/100 mL)<br>WORMBH14 (10 orgs/100 mL)<br>WORMBH15 (3 orgs/100 mL)<br>Where sampled in other bores concentrations were not reported above laboratory LOR | - | The ERS specifies objectives for water based recreation.<br>10 orgs/100mL (if no human faecal contamination sources identified)<br>0 orgs/100mL (if human faecal contamination sources identified).<br>No obvious human faecal contamination sources have been identified near these bores. | - |
| Note:<br>LOR – Limit of Reporting<br>ERS (Waters) segment: Cleared Hills and Coastal Plains | | | | |

## 5.3 Summary

Overall, the groundwater quality observed in monitoring bores over the monitoring period has remained relatively stable. Groundwater salinity in the monitoring network has remained relatively consistent. Elevated concentrations of nutrients continue to be reported from the monitoring network, and E.Coli has been identified in three bores at low concentrations. These parameters may be a result of local land use activities, e.g. livestock grazing.

There are no obvious changes in groundwater quality that would impact on the findings of the EES impact assessment.

## 5.4 Sampling program QA/QC

### 5.4.1 Quality control procedures

GHD implemented a rigorous quality assurance/quality control (QA/QC) program as part of our field procedure, based on relevant guidelines (e.g. NEMP – ASC, 2013) and industry common practice. The QA/QC program undertaken as part of the assessment by GHD included the following:

– Implementation of GHD field procedures including sampling equipment decontamination between sampling points
– Use of calibrated water quality and water level equipment
– Preservation of samples with ice during transport from the field to the laboratory
– Transportation of samples with accompanying COC documentation
– Collection of blind and split duplicate samples and calculated Relative Percentage Differences (RPD)
– Comparison of field and analytical data
– Compliance with sample holding times
– Review of internal analysis of QC and laboratory duplicates
– Review of groundwater sampling and purging records

Calibration certificates for the field equipment (water quality and water level meters) used during the sampling are included in Appendix G. Laboratory results for the field duplicates and blanks are included in Appendix H.

### 5.4.2 Discussion of QA/QC

The QA/C program included:

– Collection of field duplicate samples for analysis by a primary and secondary laboratories (ALS and Eurofins), and calculation and review of the RPD between the samples
– Collection of field blank samples and review of results
– Review of laboratory internal QC program including sample duplicates, spike recoveries, and method blanks in accordance with NATA certification requirements

All QA and QC results and compliance with guideline criteria for the sampling events are summarised in Table 11.

Table 11 Summary of sampling QA/QC results

| Item | Sample | Lab | Objective | Summary | Comments |
|---|---|---|---|---|---|
| Field duplicate | Four field duplicates – refer Appendix H | ALS | RPDs within 50% | All except total ionic balance - 100 % | Most criteria met |
| Field split | WORMBH23A and QC2 | Eurofins | | All except nitrate (as N) – 183 % | Nitrate (as N) considered acceptable as near LOR<br>Most criteria met |
| Field blanks | Multiple – refer Appendix H | ALS | No contamination | All <LOR except pH in three samples | Most criteria met |
| Lab Method Blanks | Internal | ALS | No contamination | All <LOR | Criteria met |
| Matrix Spike Recoveries | | | Recoveries 70-130% | 23 samples just outside limit | Most criteria met |
| Lab Duplicates | | | RPDs within 30 % | All RPDs <30% except for ammonia (as N) – 43 % | Most criteria met |
| Note: LOR – Limit of Reporting | | | | | |

### 5.4.3 Conclusion of QA/QC program

Based on the results of the QA/QC program as detailed above, the following is concluded:

– The field sampling procedure was carried out in accordance with the GHD QA/QC program except for minor holding time exceedances for laboratory pH. We note that field pH measurements, taken at the time of groundwater sampling, have been reported in the field purge sheets (refer Appendix D)
– The RPDs for field duplicate and field split groundwater samples were within mostly acceptable ranges
– Laboratories used were NATA accredited for the analyses performed and deemed acceptable

It is concluded that the sampling and analytical programs were acceptable and the QA/QC results obtained are of reliable quality to support the conclusions made in this report.

# 6. Conclusions

APA has undertaken groundwater monitoring from a network of 18 monitoring bores for its WORM project to aid in establishing a 'baseline' prior to Project activities commencing, and to identify if there were any changes in groundwater levels or quality that may impact on the findings of the EES impact assessment.

Groundwater monitoring commenced in March 2020 from an initial network of six bores and then continued between August 2020 and August 2021 from 18 monitoring bores. The monitoring has included groundwater gauging and groundwater sampling. In addition to the manual groundwater gauging, dataloggers were installed in selected bores to capture more frequent groundwater level information, and to reduce the need to frequently access the bores to obtain such information.

The following conclusions are made:

– The groundwater levels observed in monitoring bores reflect a response of the groundwater system to the prevailing climate with observed changes in groundwater levels generally less than 1 m over approximately 12 months, the exception being bore WORMBH12, located adjacent a waterway, which recorded approximately 2 m variation
– Groundwater salinity in the monitoring network has remained relatively consistent throughout the monitoring period
– Elevated concentrations of nutrients continue to be reported from the monitoring network, and E.Coli has been identified in three bores at low concentrations. These parameters may be a result of local land use activities, e.g. livestock grazing
– Low concentrations of chromium, copper, nickel and zinc have been detected in all bores at concentrations slightly higher than the adopted ANZG (2018) guideline criteria for freshwater ecosystems
– There are no obvious changes in groundwater levels or quality that would impact on the findings of the EES impact assessment

# 7. References

Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ), 2000. Guidelines for fresh and marine water quality. Available at ANZECC & ARMCANZ (2000) guidelines (waterquality.gov.au)

ANZG 2018. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines

Bureau of Meteorology, Climate data online. http://www.bom.gov.au/climate/data/. Accessed August 2021

EPA, 2000. Groundwater sampling guidelines. EPA publication 669, dated April 2000

Environment Protection Authority, 2021. Environmental Reference Standard. EPA publication S 245 dated May 2021

GHD, 2021. APA – Western Outer Ring Main. Western Outer Ring Main Environment Effects Statement. Groundwater report. Report 12529997-REP-WORM_EES Technical report Groundwater, dated May 2021

National Environment Protection Council. National Environment Protection Measure (NEPM) (Assessment of Site Contamination - ASC), as amended 2013.

# Appendices

# Appendix A

## Monitoring bore construction and geology logs

**BOREHOLE LOG SHEET WITH WELL PIEZOMETER**

GEO_BOREHOLE 31_12529997_APA_EES_WORM_LOGS.GPJ GHD_GEO_TEMPLATE 2.00.GDT 11/9/20

**Client :** Australian Pipeline Limited
**Project :** WORM - Environmental Effects Statement
**Location :** Beattys Road, Plumpton, Diggers Rest, Victoria

# HOLE No. WORM_BH01

**SHEET 1 OF 1**

**Position :** 298476.5 E 5824085.6 N MGA 2020 Z55 **Surface RL:** 112.70m AHD **Angle from Horiz. :** 90° **Processed :** CM
**Rig Type :** Geoprobe **Mounting:** Track **Contractor :** Star Drilling **Driller :** Jye **Checked :** ADW
**Date Started :** 10/8/2020 **Date Completed :** 10/8/2020 **Logged by :** MM **Date:**

Note: * indicates signatures on original issue of log or last revision of log

| DRILLING | | | | | MATERIAL | | | | | | | | WELL PIEZOMETER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SCALE (m) | Drilling Method | Hole Support \ Casing | Water | Samples & Tests | Depth / (RL) metres | Graphic Log | USC Symbol | Description<br>SOIL TYPE, colour, structure, minor components (origin), and<br>ROCK TYPE, colour, grain size, structure, weathering, strength | Moisture Condition | Consistency / Density Index | Comments/ Observations | WELL PIEZOMETER Log | Components | |
| 0 | SFA Hand Auger | | | BH01_0.1<br>BH01_0.5 | 0.20 (112.50) | | Cl | Sandy CLAY; (medium plasticity), brown, sand fine grained, some rootlets, inferred reworked natural | W<br>M | L<br>F | trace basalt gravels | | Gatic cover installed level with ground surface. | |
| 1 | | | | | 1.20 (111.50) | | | Some large basalt boulders up to 50 mm | D | | | | Cement-bentonite grout backfill to surface | |
| 2 | Air Hammer | | | | 1.60 (111.10) | | | BASALT; vesicular, dark grey, chips up to 3 mm, some calcite deposits | D | | | | | |
| 3 | | | | | | | | | | | | | Bentonite seal<br>Class 18 uPVC plain 50 mm diam. casing | |
| 4 | | | | | 4.00 (108.70) | | | Chips up to 9 mm diameter | | | | | | |
| 5 | | | | | | | | | | | | | | |
| 6 | | | | | 6.50 (106.20) | | | Orange brown, high clay content, trace dark grey basalt gravels | | | extremely weathered | | | |
| 7 | | | | | 7.50 (105.20) | | | Dark grey with trace orange brown, chips up to 2 mm | | | | | | |
| 8 | | | | | 8.00 (104.70) | | | Chips up to 4 mm | | | | | Gravel filter pack<br>Class 18 uPVC 0.4 mm aperture slotted 50 mm diam. casing | |
| 9 | | | | | 9.00 (103.70) | | | Some iron oxide staining and calcite deposits | | | | | | |
| 10 | | | ▼ | | 10.10 (102.60) | | | End of borehole at 10.1 metres. | | | groundwater encountered at ~9.90 m bgl | | | |
| 11 | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | |

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See standard sheets for details of abbreviations & basis of descriptions

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**Job No.**
**31-12529997**

**BOREHOLE LOG SHEET WITH WELL PIEZOMETER**

GEO_BOREHOLE 31_12529997_APA_EES_WORM_LOGS.GPJ GHD_GEO_TEMPLATE 2.00.GDT 11/9/20

**Client :** Australian Pipeline Limited
**Project :** WORM - Environmental Effects Statement
**Location :** South of Bulla - Diggers Rest Road, Diggers Rest, Victoria

# HOLE No. WORM_BH03

**SHEET 1 OF 2**

**Position :** 302006.8 E 5832383.2 N MGA 2020 Z55 **Surface RL:** 165.20m AHD **Angle from Horiz. :** 90° **Processed :** CM
**Rig Type :** Geoprobe **Mounting:** Track **Contractor :** Star Drilling **Driller :** Jye **Checked :** ADW
**Date Started :** 7/8/2020 **Date Completed :** 8/8/2020 **Logged by :** ADW **Date:**

| DRILLING | | | | | MATERIAL | | | | | | | WELL PIEZOMETER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SCALE (m) | Drilling Method | Hole Support \ Casing | Water | Samples & Tests | Depth / (RL) metres | Graphic Log | USC Symbol | Description: SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength | Moisture Condition | Consistency / Density Index | Comments/ Observations | WELL PIEZOMETER Log | Components |
| 0 | Hand Auger | | | BH03_0.1 | 0.00 (164.30) | | CH | CLAY; (high plasticity), dark grey and black, trace rootlets | M | VSt | Natural, no odours, etc | | Gatic cover installed level with ground surface. |
| | | | | BH03_0.5 | | | | | | | | | |
| 1 | | | | BH03_0.9 | 0.90 (163.40) | | | BASALT; dark blue - black, moderately weathered, trace vesicles | D | | Basalt rock chips. Hand auger refusal @ 0.9 m Solid auger refusal @ 1.1 m | | |
| 2 | | | | | | | | | | | | | |
| 3 | Air Hammer | | | | 3.00 (162.20) | | | Minor red-brown staining, small vesicles present (>5%) | | | Driller notes soft drilling to ~5.5 m | | |
| 4 | | | | | | | | | | | | | |
| 5 | | | | | 5.00 (160.20) | | | Trace calcite | | | | | |
| 6 | | | | | 6.00 (159.20) | | | Dark blue, black, no vesicles, slightly weathered | | | | | Cement-bentonite grout backfill to surface |
| 7 | | | | | | | | | | | | | Class 18 uPVC plain 50 mm diam. casing |
| 8 | | | | | 8.50 (156.70) | | | Trace vesicles, moderately weathered | | | softer drilling from ~8.5/9.0 m | | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | 10.00 (155.20) | | | BASALT; dark blue black and dark brown, moderately weathered, sigificant iron staining | M | | Becoming moist ~10 m | | |
| 11 | | | | | 11.00 (154.20) | | | Trace vesicles | | | | | |
| 12 | | | | | 12.00 | | | | | | | | |

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**BOREHOLE LOG SHEET WITH WELL PIEZOMETER**

GEO_BOREHOLE 31_12529997_APA_EES_WORM_LOGS.GPJ GHD_GEO_TEMPLATE 2.00.GDT 11/9/20

**Client :** Australian Pipeline Limited
**Project :** WORM - Environmental Effects Statement
**Location :** South of Bulla - Diggers Rest Road, Diggers Rest, Victoria

# HOLE No. WORM_BH03

**SHEET 2 OF 2**

**Position :** 302006.8 E 5832383.2 N MGA 2020 Z55 **Surface RL:** 165.20m AHD **Angle from Horiz. :** 90° **Processed :** CM
**Rig Type :** Geoprobe **Mounting:** Track **Contractor :** Star Drilling **Driller :** Jye **Checked :** ADW
**Date Started :** 7/8/2020 **Date Completed :** 8/8/2020 **Logged by :** ADW **Date:**

Note: * indicates signatures on original issue of log or last revision of log

| DRILLING | | | | | MATERIAL | | | | | | | WELL PIEZOMETER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SCALE (m) | Drilling Method | Hole Support \ Casing | Water | Samples & Tests | Depth / (RL) metres | Graphic Log | USC Symbol | Description<br>SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength | Moisture Condition | Consistency / Density Index | Comments/ Observations | WELL PIEZOMETER Log | Components |
| 13 | | | | | (153.20)<br>13.00<br>(152.20) | | | Blue-black, moderately weathered, trace vesicles<br>CLAY; moderate-dark brown and red with minor extremely weathered rock fragments | M | | Pause drilling at 12 m (15 mins) to see if water seeps into hole. No obvious water after 15 mins<br>Trace moisture | | Bentonite seal |
| 14 | | | | | 14.00<br>(151.20) | | | BASALT; black and dark brown, heavily weathered | D | | | | |
| 15 | | | | | | | | | | | | | |
| 16 | Air Hammer | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | Gravel filter pack |
| 18 | | | | | 18.00<br>(147.20) | | | Moderately weathered | | | | | Class 18 uPVC 0.4 mm aperture slotted 50 mm diam. casing |
| 19 | | | | | 19.00<br>(146.20) | | | Blue-black, slightly weathered, massive | | | | | |
| 20 | | | | | | | | | | | | | |
| 21 | | | ▼ | | 21.00<br>(144.20) | | | End of borehole at 21 metres. | | | Driller reports at 20.5 m rods 'fell' slightly => potential fracture. No water. | | |
| 22 | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | |

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**31-12529997**

**BOREHOLE LOG SHEET WITH WELL PIEZOMETER**

GEO_BOREHOLE 31_12529997_APA_EES_WORM_LOGS.GPJ GHD_GEO_TEMPLATE 2.00.GDT 11/9/20

**Client :** Australian Pipeline Limited
**Project :** WORM - Environmental Effects Statement
**Location :** Craigieburn Road (Luppino), Diggers Rest, Victoria

# HOLE No. WORM_BH05

**SHEET 1 OF 2**

**Position :** 309792.6 E 5837964.3 N MGA 2020 Z55 **Surface RL:** 234.70m AHD **Angle from Horiz. :** 90° **Processed :** CM
**Rig Type :** Geoprobe **Mounting:** Track **Contractor :** Star Drilling **Driller :** Jye **Checked :** ADW
**Date Started :** 4/8/2020 **Date Completed :** 4/8/2020 **Logged by :** MM **Date:**

| DRILLING | | | | | MATERIAL | | | | | | | | Note: * indicates signatures on original issue of log or last revision of log |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | WELL PIEZOMETER |
| SCALE (m) | Drilling Method | Hole Support \ Casing | Water | Samples & Tests | Depth / (RL) metres | Graphic Log | USC Symbol | Description<br>SOIL TYPE, colour, structure, minor components (origin), and<br>ROCK TYPE, colour, grain size, structure, weathering, strength | Moisture Condition | Consistency / Density Index | Comments/ Observations | WELL PIEZOMETER Log | Components |
| 0 | Hand Auger | | Groundwater Not Encountered During Drilling | BH05_0.1 | 0.10 (234.60) | | CL-CI | CLAY; (low to medium plasticity), dark brown, trace fine grained sand, some rootlets | M/D | F | | | Gatic cover installed level with ground surface. |
| | | | | BH05_0.5 | 0.50 (234.20) | | | Becoming brown | | St | | | |
| 1 | | | | BH05_1.0 | | | | | | | | | |
| 2 | | | | BH05_2.0 | 2.00 (232.70) | | CI | (Medium plasticity), grey with some orange brown banding | | | | | |
| 3 | Solid Flight Auger | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | |
| 5 | | | | | 5.40 (229.30) | | | BASALT; vesicular, dark grey, some pale grey clay, chips up to 2 mm | D | | | | |
| 6 | | | | | | | | | | | | | |
| 7 | | | | | 7.00 (227.70) | | | Chips up to 4 mm | | | | | Cement-bentonite grout backfill to surface |
| 8 | Air Hammer | | | | 7.60 (227.10) | | | Dark grey with orange brown, becoming more weathered | | | | | Class 18 uPVC plain 50 mm diam. casing |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | 10.00 (224.70) | | | Becoming dark grey | | | Stop drilling at 10 m to see if groundwater enters hole. Waited 15 mins, no water, continue drilling | | |
| 11 | | | | | 11.00 (223.70) | | | Becoming dark grey with orange brown | | | | | |
| 12 | | | | | | | | | | | | | |

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**Job No.** 31-12529997

**BOREHOLE LOG SHEET WITH WELL PIEZOMETER**

GEO_BOREHOLE 31 12529997 APA_EES WORM LOGS.GPJ GHD GEO TEMPLATE 2.00.GDT 11/9/20

**Client :** Australian Pipeline Limited
**Project :** WORM - Environmental Effects Statement
**Location :** Craigieburn Road (Luppino), Diggers Rest, Victoria

# HOLE No. WORM_BH05

**SHEET 2 OF 2**

**Position :** 309792.6 E 5837964.3 N MGA 2020 Z55 **Surface RL:** 234.70m AHD **Angle from Horiz. :** 90° **Processed :** CM
**Rig Type :** Geoprobe **Mounting:** Track **Contractor :** Star Drilling **Driller :** Jye **Checked :** ADW
**Date Started :** 4/8/2020 **Date Completed :** 4/8/2020 **Logged by :** MM **Date:**

Note: * indicates signatures on original issue of log or last revision of log

| DRILLING | | | | | MATERIAL | | | | | | | | WELL PIEZOMETER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SCALE (m) | Drilling Method | Hole Support \ Casing | Water | Samples & Tests | Depth / (RL) metres | Graphic Log | USC Symbol | Description<br>SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength | Moisture Condition | Consistency / Density Index | Comments/ Observations | WELL PIEZOMETER Log | Components |
| 13 | Air Hammer | | Groundwater Not Encountered During Drilling | | 13.00 (221.70) | | | Becoming orange brown, some clay, becoming more weathered | | | | | |
| 14 | | | | | 14.00 (220.70) | | | Becoming orange brown with dark grey | | | | | |
| 15 | | | | | 15.00 (219.70) | | | Becoming dark grey | | | | | Bentonite seal |
| 16 | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | |
| 18 | | | | | 18.00 (216.70) | | | Becoming dark grey with orange brown, some iron oxide staining | | | | | Gravel filter pack |
| 19 | | | | | 19.00 (215.70) | | | Trace calcite deposits on chips | | | | | Class 18 uPVC 0.4 mm aperture slotted 50 mm diam. casing |
| 20 | | | | | 20.10 (214.60) | | | End of borehole at 20.1 metres. | | | | | |
| 21 | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | |

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**31-12529997**

**BOREHOLE LOG SHEET WITH WELL PIEZOMETER**

GEO_BOREHOLE 31_12529997_APA_EES_WORM_LOGS.GPJ GHD_GEO_TEMPLATE 2.00.GDT 11/9/20

**Client :** Australian Pipeline Limited
**Project :** WORM - Environmental Effects Statement
**Location :** Mickelham Road (Hadshir), Diggers Rest, Victoria

# HOLE No. WORM_BH06

**SHEET 1 OF 1**

**Position :** 312596.5 E 5842025.5 N MGA 2020 Z55 **Surface RL:** 267.60m AHD **Angle from Horiz. :** 90° **Processed :** CM
**Rig Type :** Geoprobe **Mounting:** Track **Contractor :** Star Drilling **Driller :** Jye **Checked :** ADW
**Date Started :** 5/8/2020 **Date Completed :** 6/8/2020 **Logged by :** MM **Date:**

Note: * indicates signatures on original issue of log or last revision of log

| DRILLING | | | | | MATERIAL | | | | | | | | WELL PIEZOMETER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SCALE (m) | Drilling Method | Hole Support \ Casing | Water | Samples & Tests | Depth / (RL) metres | Graphic Log | USC Symbol | Description: SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength | Moisture Condition | Consistency / Density Index | Comments/ Observations | WELL PIEZOMETER Log | Components |
| 0 | Hand Auger | | | BH06_0.1 | 0.10 (267.50) | | CI | TOPSOIL; grass | M | L | | | Gatic cover installed level with ground surface. |
| | | | | BH06_0.5 | 0.50 (267.10) | | | CLAY; (medium plasticity), brown, some rootlets, trace sub \angular gravels, inferred natural | D-M | F | | | |
| 1 | Solid Flight Auger | | | BH06_1.0 | | | | Becoming orange brown | D | St | | | |
| 2 | | | | BH06_2.0 | 2.00 (265.60) | | | Becoming pale brown | | | | | |
| | | | | | 2.70 (264.90) | | | BASALT; vesicular, dark grey, trace iron oxide staining, chips up to 9 mm | D | | | | Cement-bentonite grout backfill to surface |
| 3 | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | Class 18 uPVC plain 50 mm diam. casing |
| 5 | | | | | 5.00 (262.60) | | | Dark grey, chips up to 3 mm, inferred slightly weathered | | | | | |
| | | | | | 5.50 (262.10) | | | Zone of reddish brown clay dust, | | | | | |
| | | | | | 5.80 (261.80) | | | inferred highly weathered zone | | | | | |
| 6 | | | | | | | | | | | | | |
| 7 | Air Hammer | | Groundwater Not Encountered | | 7.00 (260.60) | | | Trace calcite deposits on chips | | | | | Bentonite seal |
| 8 | | | | | 8.00 (259.60) | | | Trace iron oxide staining | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | 10.00 (257.60) | | | Becoming dark grey with reddish brown with some calcite deposits and iron oxide staining, inferred moderately weathered | | | | | Gravel filter pack |
| | | | | | | | | | | | | | Class 18 uPVC 0.4 mm aperture slotted 50 mm diam. casing |
| 11 | | | | | | | | | | | | | |
| 12 | | | | | 12.00 (255.60) | | | Becoming dark grey, inferred slightly to moderately fractured | | | | | |
| | | | | | | | | End of borehole at 12.1 metres. | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |

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See standard sheets for details of abbreviations & basis of descriptions

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**Job No.**
**31-12529997**

**BOREHOLE LOG SHEET WITH WELL PIEZOMETER**

GEO_BOREHOLE 31 12529997_APA_EES_WORM_LOGS.GPJ GHD_GEO_TEMPLATE 2.00.GDT 11/9/20

**Client :** Australian Pipeline Limited

**Project :** WORM - Environmental Effects Statement

**Location :** Ascotown, easement immed. south of trees, Diggers Rest, Victoria

# HOLE No. WORM_BH07

**SHEET 1 OF 1**

| | | | | |
|---|---|---|---|---|
| **Position :** 314438.2 E 5845331.8 N MGA 2020 Z55 | **Surface RL:** 242.10m AHD | **Angle from Horiz. :** 90° | **Processed :** CM |
| **Rig Type :** Geoprobe | **Mounting:** Track | **Contractor :** Star Drilling | **Driller :** Jye | **Checked :** ADW |
| **Date Started :** 3/9/2020 | **Date Completed :** 3/9/2020 | **Logged by :** MM | **Date:** |

Note: * indicates signatures on original issue of log or last revision of log

| DRILLING | | | | | MATERIAL | | | | | | | WELL PIEZOMETER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SCALE (m) | Drilling Method | Hole Support \ Casing | Water | Samples & Tests | Depth / (RL) metres | Graphic Log | USC Symbol | Description<br>SOIL TYPE, colour, structure, minor components (origin), and<br>ROCK TYPE, colour, grain size, structure, weathering, strength | Moisture Condition | Consistency / Density Index | Comments/ Observations | WELL PIEZOMETER Log | Components |
| 1 | Hand Auger | | | BH07_0.1 | 0.50 (241.60) | | CL | Sandy CLAY; (low plasticity), brown, sand, fine grained, some rootlets | D | S | | | Gatic cover installed level with ground surface. |
| | | | | BH07_0.5 | 1.00 (241.10) | | CL-CI | (Low to medium plasticity), some grey clay | | F-St | | | |
| | | | | BH07_1.0 | | | | Becoming brown with brown orange | | | | | |
| 2 | | | | BH07_2.0 | 2.00 (240.10) | | | Sand, fine to medium grained, sub angular | | | | | Cement-bentonite grout backfill to surface |
| 3 | | | | | 3.00 (239.10) | | | Orange brown | | | | | |
| 4 | | | | | | | | | | | | | |
| 5 | | | Groundwater Not Encountered | | 5.00 (237.10) | | | Light orange brown | | | | | Class 18 uPVC plain 50 mm diam. casing |
| 6 | Solid Flight Auger | | | | 6.00 (236.10) | | | Orange brown | | | | | Bentonite seal |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 9 | | | | | 9.00 (233.10) | | CL | (Low plasticity) | | St | | | |
| 10 | | | | | 10.00 (232.10) | | | Becoming dark brown orange | | | Removed augers after 10 m and waited to see if water came into hole, then continued down to 12 m. | | Gravel filter pack |
| 11 | | | | | 11.00 (231.10) | | | Orange brown with some pale grey clay | | | | | Class 18 uPVC 0.4 mm aperture slotted 50 mm diam. casing |
| 12 | | | | | 12.00 (230.10) | | | End of borehole at 12 metres. | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |

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**See standard sheets for details of abbreviations & basis of descriptions**

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CONSULTING GEOTECHNICAL ENGINEERS AND GEOLOGISTS

**Job No.**
**31-12529997**

**BOREHOLE LOG SHEET WITH WELL PIEZOMETER**

GEO_BOREHOLE 31_12529997_APA_EES_WORM_LOGS.GPJ GHD_GEO_TEMPLATE 2.00.GDT 11/9/20

**Client :** Australian Pipeline Limited
**Project :** WORM - Environmental Effects Statement
**Location :** Gunns Gully Road, Diggers Rest, Victoria

# HOLE No. WORM_BH09

**SHEET 1 OF 1**

**Position :** 316615.3 E 5846719.0 N MGA 2020 Z55 **Surface RL:** 231.80m AHD **Angle from Horiz. :** 90° **Processed :** CM
**Rig Type :** Geoprobe **Mounting:** Track **Contractor :** Star Drilling **Driller :** Jye **Checked :** ADW
**Date Started :** 14/8/2020 **Date Completed :** 14/8/2020 **Logged by :** ADW **Date:**

Note: * indicates signatures on original issue of log or last revision of log

| DRILLING | | | | | MATERIAL | | | | | | | WELL PIEZOMETER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SCALE (m) | Drilling Method | Hole Support \ Casing | Water | Samples & Tests | Depth / (RL) metres | Graphic Log | USC Symbol | Description: SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength | Moisture Condition | Consistency / Density Index | Comments/ Observations | WELL PIEZOMETER Log | Components |
| 0 | Hand Auger | | | BH09_0.1 | | | CH | CLAY; dark grey and black, (highly plastic), rootlets present | M | | No ordours/staining, etc. No obvious evidence of ASS | | Gatic cover installed level with ground surface. |
| 1 | | | | BH09_0.5 | | | | | | | | | |
| | | | | BH09_1.0 | | | | | | | | | |
| 2 | | | | BH09_2.0 | 2.00 (229.80) | | | Moderate grey and black | | | Augers wet on removal / obvious soil moisture | | |
| 3 | | | | | 3.00 (228.80) | | | Grey black with minor red-brown | | | Firm drilling | | Cement-bentonite grout backfill to surface |
| 4 | | | | BH09_4.0 (ASS only) | | | | | | | | | Class 18 uPVC plain 50 mm diam. casing |
| 5 | | | | | 5.00 (226.80) | | | Very firm clay, light-moderate brown with red-brown streaks | | F-St | | | |
| 6 | Solid Flight Auger | | | | 6.00 (225.80) | | | Moderate grey with minor black | | VSt | | | |
| 7 | | | | | | | | | | | | | Bentonite seal |
| 8 | | | ▼ | | 8.00 (223.80) | | | Light grey and brown sticky | | | | | |
| 9 | | | | | 9.00 (222.80) | | | Tan brown with minor grey, trace rock fragments | | | | | |
| 10 | | | | | | | | | | | | | Gravel filter pack |
| | | | | | | | | | | | | | Class 18 uPVC 0.4 mm aperture slotted 50 mm diam. casing |
| 11 | | | | | 11.00 (220.80) | | | Moderate-dark brown and black, (plastic) | | | | | |
| 12 | | | | | 12.00 (219.80) | | | End of borehole at 12 metres. | | | Auger refusal @ 12 m. | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |

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**Job No.** 31-12529997

**BOREHOLE LOG SHEET WITH WELL PIEZOMETER**

GEO_BOREHOLE 31_12529997_APA_EES_WORM_LOGS.GPJ GHD_GEO_TEMPLATE 2.00.GDT 11/9/20

**Client :** Australian Pipeline Limited
**Project :** WORM - Environmental Effects Statement
**Location :** Gunns Gully Road, Diggers Rest, Victoria

# HOLE No. WORM_BH10

**SHEET 1 OF 1**

**Position :** 318474.6 E 5846478.3 N MGA 2020 Z55 **Surface RL:** 242.80m AHD **Angle from Horiz. :** 90° **Processed :** CM
**Rig Type :** Geoprobe **Mounting:** Track **Contractor :** Star Drilling **Driller :** Jye **Checked :** ADW
**Date Started :** 14/8/2020 **Date Completed :** 14/8/2020 **Logged by :** ADW **Date:**

Note: * indicates signatures on original issue of log or last revision of log

| DRILLING | | | | | MATERIAL | | | | | | | WELL PIEZOMETER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SCALE (m) | Drilling Method | Hole Support \ Casing | Water | Samples & Tests | Depth / (RL) metres | Graphic Log | USC Symbol | Description: SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength | Moisture Condition | Consistency / Density Index | Comments/ Observations | WELL PIEZOMETER Log | Components |
| 0 | Hand Auger | | | BH10_0.1 | | | CI | CLAY; dark grey-black, (plastic), rootlets throughout | M | | No odours/smells | | Finished with a 300 mm cast iron gatic |
| 0.5 | | | | BH10_0.5 | | | | | | | | | |
| 1 | | | | BH10_1.0 + DUP01 | | | | | | | Duplicate soil sample taken @ 1 m | | |
| 1.5 | | | | | | | | | | | | | |
| 2 | | | | BH09_2.0 | | | | | | | | | |
| 2.5 | | | | | | | | | | | | | |
| 3 | | | | | 3.00 (239.80) | | | Becoming brown | | | 'crunchy' @ 3.5 m | | Cement-bentonite grout backfill to surface |
| 3.5 | | | | | | | | | | | | | |
| 4 | | | | | 4.00 (238.80) | | | Light-moderate brown with some grey, trace purple | D | | Firm drilling | | Class 18 uPVC plain 50 mm diam. casing |
| 4.5 | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 5.5 | | | | | | | | | | | | | |
| 6 | | | | | 6.00 (236.80) | | | Light brown - tan brown with some grey | | | No evidence of rock (basalt), auger still going down Firm drilling | | |
| 6.5 | | | | | | | | | | | | | |
| 7 | Solid Flight Auger | | | | 7.00 (235.80) | | | Predominately light grey with tan brown, trace purple | | St | | | Bentonite seal |
| 7.5 | | | | | | | | | | | | | |
| 8 | | | | | 8.00 (234.80) | | | Moderate-dark brown and purple | | | | | |
| 8.5 | | | | | | | | | | | | | |
| 9 | | | | | 9.00 (233.80) | | | Dark brown and red with purple tinge | | | | | |
| 9.5 | | | | | | | | | | | | | |
| 10 | | | | | 10.00 (232.80) | | | Deep red | | | Firm drilling | | Gravel filter pack |
| 10.5 | | | | | | | | | | | | | Class 18 uPVC 0.4 mm aperture slotted 50 mm diam. casing |
| 11 | | | | | 11.00 (231.80) | | | As above, minor grey present | | | | | |
| 11.5 | | | ▼ | | | | | | | | | | |
| 12 | | | | | 12.00 (230.80) | | | End of borehole at 12 metres. | | | | | |
| 12.5 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 13.5 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |

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**Job No.**
**31-12529997**

**BOREHOLE LOG SHEET WITH WELL PIEZOMETER**

GEO_BOREHOLE 31 12529997 APA_EES WORM LOGS.GPJ GHD GEO TEMPLATE 2.00.GDT 11/9/20

**Client :** Australian Pipeline Limited
**Project :** WORM - Environmental Effects Statement
**Location :** Donovans Lane (Sirius), Diggers Rest, Victoria

# HOLE No. WORM_BH11

**SHEET 1 OF 1**

**Position :** 319872.0 E 5847694.5 N MGA 2020 Z55 **Surface RL:** 259.30m AHD **Angle from Horiz. :** 90° **Processed :** CM
**Rig Type :** Geoprobe **Mounting:** Track **Contractor :** Star Drilling **Driller :** Jye **Checked :** ADW
**Date Started :** 13/8/2020 **Date Completed :** 13/8/2020 **Logged by :** MM **Date:**

Note: * indicates signatures on original issue of log or last revision of log

| DRILLING | | | | | MATERIAL | | | | | | | | WELL PIEZOMETER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SCALE (m) | Drilling Method | Hole Support \ Casing | Water | Samples & Tests | Depth / (RL) metres | Graphic Log | USC Symbol | Description: SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength | Moisture Condition | Consistency / Density Index | Comments/ Observations | WELL PIEZOMETER Log | Components | |
| 0 | Hand Auger | | | BH11_0.1 | 0.20 (259.10) | | | TOPSOIL; grass | W | S | | | | Gatic cover installed level with ground surface. |
| | | | | | | | CL-CI | Sandy CLAY; (low to medium plasticity), brown, sand fine grained, some rootlets, inferred natural | M | F | | | | |
| | | | | BH11_0.5 | 0.50 (258.80) | | CI | | D | | | | | |
| 1 | | | | BH11_1.0 | 1.00 (258.30) | | CL | (Medium plasticity), brown with grey | | St | | | | |
| | | | | | | | | (Low plasticity), pale brown with orange | | | | | | |
| 2 | | | | BH11_2.0 | 2.00 (257.30) | | | Trace gravels up to 3 mm | | | | | | Cement-bentonite grout backfill to surface |
| 3 | | | | | 3.00 (256.30) | | CL | Sandy gravelly CLAY; (low plasticity), pale brown, gravels sub angular and up to 4 mm, sand fine grained | D | St | | | | Class 18 uPVC plain 50 mm diam. casing |
| 4 | | | | | | | | | | | | | | |
| 5 | Solid Flight Auger | | Groundwater Not Encountered During Drilling | | 5.00 (254.30) | | | With grey and orange brown banding | | | | | | Bentonite seal |
| 6 | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | |
| 8 | | | | | 8.00 (251.30) | | CL-CI | (Low to medium plasticity), brown | | | | | | Gravel filter pack |
| 9 | | | | | 9.00 (250.30) | | | Red brown | | | | | | Class 18 uPVC 0.4mm aperture slotted 50 mm diam. casing |
| 10 | | | | | 10.10 (249.20) | | | End of borehole at 10.1 metres. | | | | | | |
| 11 | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | |

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**BOREHOLE LOG SHEET WITH WELL PIEZOMETER**

GEO_BOREHOLE 31_12529997_APA_EES_WORM_LOGS.GPJ GHD_GEO_TEMPLATE 2.00.GDT 11/9/20

**Client :** Australian Pipeline Limited
**Project :** WORM - Environmental Effects Statement
**Location :** Donovans Lane, Diggers Rest, Victoria

# HOLE No. WORM_BH12

**SHEET 1 OF 1**

**Position :** 321626.7 E 5847843.0 N MGA 2020 Z55 **Surface RL:** 255.10m AHD **Angle from Horiz. :** 90° **Processed :** CM
**Rig Type :** Geoprobe **Mounting:** Track **Contractor :** Star Drilling **Driller :** Jye **Checked :** ADW
**Date Started :** 3/8/2020 **Date Completed :** 3/8/2020 **Logged by :** MM **Date:**

Note: * indicates signatures on original issue of log or last revision of log

| DRILLING | | | | | MATERIAL | | | | | | | WELL PIEZOMETER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SCALE (m) | Drilling Method | Hole Support \ Casing | Water | Samples & Tests | Depth / (RL) metres | Graphic Log | USC Symbol | Description<br>SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength | Moisture Condition | Consistency / Density Index | Comments/ Observations | WELL PIEZOMETER Log | Components |
| 1 | Hand Auger | | ▼ BH12_0.1<br>▽ BH12_0.5 | BH12_1.0 | | | CI | Gravelly CLAY; grey to dark grey, (medium plastricity), gravels, sub angular and up to 8 mm, trace rootlets, inferred natural | D | F | | | Gatic cover installed level with ground surface. |
| | SFA | | | | 1.70 (253.40) | | | | M | F-St | | | Cement-bentonite grout backfill to surface |
| 2 | | | | | | | | BASALT; vesciular, dark grey, vesicles, up to 2 mm, trace iron oxide staining | M-W | | Groundwater at 1.4 m bgl following removal of rods, then stabilised at ~0.6 m bgl. | | Class 18 uPVC plain 50 mm diam. casing<br>Bentonite seal |
| 3 | Air Hammer | | | | 3.00 (252.10) | | | | W | | 3.0 m, no more dust from cyclone unit, some steam blowing out | | |
| 4 | | | | | 4.00 (251.10) | | | Becoming dark grey to reddish brown, iron oxide staining | | | | | Gravel filter pack<br>Class 18 uPVC 0.4 mm aperture slotted 50 mm diam. casing |
| 5 | | | | | | | | | | | | | |
| 6 | | | | | 6.10 (249.00) | | | End of borehole at 6.1 metres. | | | | | |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |

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**Job No.**
**31-12529997**

**BOREHOLE LOG SHEET WITH WELL PIEZOMETER**

GEO_BOREHOLE 31 12529997 APA_EES_WORM_LOGS.GPJ GHD_GEO_TEMPLATE 2.00.GDT 11/9/20

**Client :** Australian Pipeline Limited
**Project :** WORM - Environmental Effects Statement
**Location :** Donnybrook Road, Diggers Rest, Victoria

# HOLE No. WORM_BH14

**SHEET 1 OF 1**

**Position :** 323525.9 E 5842612.5 N MGA 2020 Z55 **Surface RL:** 233.90m AHD **Angle from Horiz. :** 90° **Processed :** CM
**Rig Type :** Geoprobe **Mounting:** Track **Contractor :** Star Drilling **Driller :** Jye **Checked :** ADW
**Date Started :** 6/8/2020 **Date Completed :** 7/8/2020 **Logged by :** ADW **Date:**

Note: * indicates signatures on original issue of log or last revision of log

| DRILLING | | | | | MATERIAL | | | | | | | WELL PIEZOMETER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SCALE (m) | Drilling Method | Hole Support \ Casing | Water | Samples & Tests | Depth / (RL) metres | Graphic Log | USC Symbol | Description: SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength | Moisture Condition | Consistency / Density Index | Comments/ Observations | WELL PIEZOMETER Log | Components |
| 0 | Hand Auger | | | BH14_0.1 | 0.10 (233.80) | | CI | TOPSOIL; brown, with grass | M | S | | | Gatic cover installed level with ground surface. |
| | | | | | | | | Silty CLAY; (medium plasticity), dark brown, some rootlets, trace gravels, inferred reworked natural | D-M | S | | | |
| | | | | BH14_0.5 | 0.50 (233.40) | | | Brown with grey | D | F | | | |
| 1 | SFA | | ▼ | BH14_1.0 | 1.00 (232.90) | | CH | CLAY; dark black-brown, stiff, (highly plastic) | M | | | | Cement-bentonite grout backfill to surface |
| | | | | BH14_1.5 | | | | | | | | | |
| 2 | | | | BH14_2.0 | 2.10 (231.80) | | | BASALT; dark blue-black, moderately weathered | D | | Auger refusal @ 2.1 m | | Class 18 uPVC plain casing |
| 3 | | | | | 3.50 (230.40) | | | Mod-slightly weathered trace vesicles | | | | | Bentonite seal |
| 4 | | | | | | | | | | | | | |
| 5 | Air Hammer | | | | 5.00 (228.90) | | | Red - brown iron staining present, moisture starts / noted @ 5 m | | | Moist from 5 m depth to ~7 m depth | | |
| 6 | | | | | 6.00 (227.90) | | | Minor iron staining still present | M | | | | |
| 7 | | | | | 7.00 (226.90) | | | Dark blue black, slightly weathered | W | | | | Gravel filter pack |
| 8 | | | | | | | | | | | Wet/sloppy @ 8 m | | Class 18 uPVC 0.4mm aperture slotted casing |
| 9 | | | | | 9.00 (224.90) | | | End of borehole at 9 metres. | | | Wet @ 9 m | | |
| 10 | | | | | | | | | | | | | |

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**Job No.** 31-12529997

**BOREHOLE LOG SHEET WITH WELL PIEZOMETER**

GEO_BOREHOLE 31 12529997 APA_EES WORM LOGS.GPJ GHD GEO TEMPLATE 2.00.GDT 11/9/20

**Client :** Australian Pipeline Limited
**Project :** WORM - Environmental Effects Statement
**Location :** Wollert Compressor Station, Diggers Rest, Victoria

# HOLE No. WORM_BH16

**SHEET 1 OF 1**

**Position :** 322804.2 E 5839069.7 N MGA 2020 Z55 **Surface RL:** 203.80m AHD **Angle from Horiz. :** 90° **Processed :** CM
**Rig Type :** Geoprobe **Mounting:** Track **Contractor :** Star Drilling **Driller :** Jye **Checked :** ADW
**Date Started :** 5/8/2020 **Date Completed :** 5/8/2020 **Logged by :** MM **Date:**

Note: * indicates signatures on original issue of log or last revision of log

| DRILLING | | | | | MATERIAL | | | | | | | | WELL PIEZOMETER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SCALE (m) | Drilling Method | Hole Support \ Casing | Water | Samples & Tests | Depth / (RL) metres | Graphic Log | USC Symbol | Description<br>SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength | Moisture Condition | Consistency / Density Index | Comments/ Observations | WELL PIEZOMETER Log | Components |
| 0 | HA | | | BH16_0.1<br>BH16_0.5 | | | Cl | CLAY; dark grey, (medium plasticity), some rootlets, trace sub angular gravels, inferred reworked natural | D | F-St<br>F | | | Gatic cover installed level with ground surface. |
| 1 | HA | | | | 1.10 (202.70) | | | BASALT; vesicular, dark grey, chips up to 14 mm, inferred moderately fractured, trace iron oxide | D | | Refusal with hand auger on basalt floater @ 0.9 m<br>Refusal with solid auger @ 1.1 m | | |
| 2 | AH | | | | | | | | | | | | Cement-bentonite grout backfill to surface |
| 3 | AH | | | | 3.00 (200.80) | | | Dark grey with some orange brown staining, trace brown clay | | | | | Class 18 uPVC plain 50 mm diam. casing |
| 4 | AH | | | | 4.00 (199.80)<br>4.20 (199.60) | | | Dark grey with orange brown increasing clay content | | | | | |
| 5 | AH | | Groundwater Not Encountered During Drilling | | 4.70 (199.10) | | | CLAY; zone of orange brown, inferred highly weathered<br>BASALT; some iron oxide staining on chips, chips up to 9 mm | | | | | Bentonite seal |
| 6 | AH | | | | | | | | | | Drilled to 6.0 m, then took break to monitor for water. Hole still dry after 20 minutes, so continued to 10.0 m. | | |
| 7 | AH | | | | 7.00 (196.80) | | | Chips up to 6 mm, increasing clay content | | | | | |
| 8 | AH | | | | 8.00 (195.80) | | | Becoming dark grey, chips up to 5 mm, inferred slightly to moderately weathered | | | | | Gravel filter pack<br>Class 18 uPVC 0.4 mm aperture slotted 50 mm diam. casing |
| 9 | AH | | | | | | | | | | | | |
| 10 | AH | | | | 10.10 (193.70) | | | End of borehole at 10.1 metres. | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | |

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**Job No.**
**31-12529997**

Construction Sciences

# BOREHOLE LOG SHEET

**Client:** APA Group
**Project:** 18035-PP-C-060 - WORM
**Location:** Deep Creek Crossing

# Hole No: BH23A

**Job No:** P/37 **Sheet:** 1 of 6

**Position:** E305956.128 N5834802.029 55 GDA2020 **Angle from Horizontal:** 90° **Surface Elevation:** 101.145 m AHD

**Rig Type:** DB520 E-Spec **Mounting:** Track **Driller:** JK

**Casing/Hole Diameter:** HWT / 114/150 **Contractor:** Numac

**Date Started:** 30/7/20 **Date Completed:** 31/7/20 **Logged By:** JSM **Checked By:** RK

| Drilling: Method | Drilling: Resistance | Drilling: Casing | Water | Sampling & Testing: Sample or Field Test | RL (m AHD) | Depth (m) | Material Description: Graphic Log | Classification | SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure | Moisture Condition | Consistency Relative Density | STRUCTURE & Other Observations | Monitoring Well Details |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AD/T | | HWT | 03/08/20 | | 101 | 0 | | CH | TOPSOIL: CLAY: high plasticity, dark brown, organic material present | | | TOPSOIL | |
| | | | | | | 0.30m | | | Gravelly Sandy CLAY: medium plasticity, brown, fine to coarse grained sand, fine to coarse grained gravel, with basalt sub-rounded cobbles | | | ALLUVIUM | |
| | | | | | 100 | 1 | | | | M (>PL) | | | |
| | | | | | 99 | 2 | | | | | | | |
| | | | | | 98 | 3 | | CI | | | | | |
| | | | | | 97 | 4 | | | | W | | | |
| | | | | | | | | | rock cobbles present, increased drilling instability | | | | |
| | | | | | 96 | 5 | | | | M (>PL) | | | |

**METHOD**
EX Excavator bucket
R Ripper
HA Hand auger
PT Push tube
SON Sonic drilling
AH Air hammer
PS Percussion sampler
AS Short spiral auger
AD/V Solid flight auger: V-Bit
AD/T Solid flight auger: TC-Bit
HFA Hollow flight auger
WB Washbore drilling
RR Rock roller

**PENETRATION**
VE Very Easy (No Resistance)
E Easy
F Firm
H Hard
VH Very Hard (Refusal)

**WATER**
Water Level on Date shown
water inflow
water outflow

**FIELD TESTS**
SPT - Standard Penetration Test
PP - Hand/Pocket Penetrometer
DCP - Dynamic Cone Penetrometer
PSP - Perth Sand Penetrometer
MC - Moisture Content
PBT - Plate Bearing Test
IMP - Borehole Impression Test
PID - Photoionisation Detector
VS - Vane Shear; P=Peak, R=Residual (uncorrected kPa)

**SAMPLES**
B - Bulk disturbed sample
D - Disturbed sample
ES - Environmental sample
U - Thin wall tube 'undisturbed'

**MOISTURE**
D - Dry
M - Moist
W - Wet
PL - Plastic limit
LL - Liquid limit
*w* - Moisture content

**SOIL CONSISTENCY**
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard

**RELATIVE DENSITY**
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Refer to explanatory notes for details of abbreviations and basis of descriptions

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Construction Sciences

# BOREHOLE LOG SHEET

**Client:** APA Group
**Project:** 18035-PP-C-060 - WORM
**Location:** Deep Creek Crossing

## Hole No: BH23A

**Job No:** P/37 **Sheet:** 2 of 6

**Position:** E305956.128 N5834802.029 55 GDA2020 **Angle from Horizontal:** 90° **Surface Elevation:** 101.145 m AHD

**Rig Type:** DB520 E-Spec **Mounting:** Track **Driller:** JK

**Casing/Hole Diameter:** HWT / 114/150 **Contractor:** Numac

**Date Started:** 30/7/20 **Date Completed:** 31/7/20 **Logged By:** JSM **Checked By:** RK

| Drilling: Method | Drilling: Resistance | Drilling: Casing | Water | Sampling & Testing: Sample or Field Test | RL (m AHD) | Depth (m) | Material Description: Graphic Log | Classification | SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure | Moisture Condition | Consistency Relative Density | STRUCTURE & Other Observations | Monitoring Well Details |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AD/T | | HWT | | | 95 | 7 | | CI | Gravelly Sandy CLAY: medium plasticity, brown, fine to coarse grained sand, fine to coarse grained gravel, with basalt sub-rounded cobbles *(continued)* | M (>PL) | | ALLUVIUM | |
| | | | | | 94 | 8 | | | | | | | |
| | | | | | 93 | 9 | | | 9.00m | | | | |
| | | | | | 92 | 10 | | | Silty CLAY: high plasticity, grey/pale grey, (Extremely Weathered siltstone) | | | WEATHERED ROCK | |
| WB | | | | | 91 | 11 | | CH | decreased drilling resistance | | | | |
| | | | | | 90 | | | | | | | | |

**METHOD**
EX Excavator bucket
R Ripper
HA Hand auger
PT Push tube
SON Sonic drilling
AH Air hammer
PS Percussion sampler
AS Short spiral auger
AD/V Solid flight auger: V-Bit
AD/T Solid flight auger: TC-Bit
HFA Hollow flight auger
WB Washbore drilling
RR Rock roller

**PENETRATION**
VE Very Easy (No Resistance)
E Easy
F Firm
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VH Very Hard (Refusal)

**WATER**
Water Level on Date shown
water inflow
water outflow

**FIELD TESTS**
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PBT - Plate Bearing Test
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PID - Photoionisation Detector
VS - Vane Shear; P=Peak, R=Residual (uncorrected kPa)

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Refer to explanatory notes for details of abbreviations and basis of descriptions

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Construction Sciences

# BOREHOLE LOG SHEET

**Client:** APA Group
**Project:** 18035-PP-C-060 - WORM
**Location:** Deep Creek Crossing

# Hole No: BH23A

**Job No:** P/37 **Sheet:** 3 of 6

**Position:** E305956.128 N5834802.029 55 GDA2020 **Angle from Horizontal:** 90° **Surface Elevation:** 101.145 m AHD

**Rig Type:** DB520 E-Spec **Mounting:** Track **Driller:** JK

**Casing/Hole Diameter:** HWT / 114/150 **Contractor:** Numac

**Date Started:** 30/7/20 **Date Completed:** 31/7/20 **Logged By:** JSM **Checked By:** RK

| Drilling | | | Water | Sampling & Testing | RL (m AHD) | Depth (m) | Material Description | | | | | | Monitoring Well Details |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Method | Resistance | Casing | | Sample or Field Test | | | Graphic Log | Classification | SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure | Moisture Condition | Consistency Relative Density | STRUCTURE & Other Observations | |
| WB | | HWT | | | 89<br>88<br>87<br>86<br>85<br>84 | 13<br>14<br>15<br>16<br>17 | | CH | Silty CLAY: high plasticity, grey/pale grey, (Extremely Weathered siltstone)<br>*(continued)* | | | WEATHERED ROCK | |

**METHOD**
EX Excavator bucket
R Ripper
HA Hand auger
PT Push tube
SON Sonic drilling
AH Air hammer
PS Percussion sampler
AS Short spiral auger
AD/V Solid flight auger: V-Bit
AD/T Solid flight auger: TC-Bit
HFA Hollow flight auger
WB Washbore drilling
RR Rock roller

**PENETRATION**
VE Very Easy (No Resistance)
E Easy
F Firm
H Hard
VH Very Hard (Refusal)

**WATER**
Water Level on Date shown
water inflow
water outflow

**FIELD TESTS**
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PP - Hand/Pocket Penetrometer
DCP - Dynamic Cone Penetrometer
PSP - Perth Sand Penetrometer
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PBT - Plate Bearing Test
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PID - Photoionisation Detector
VS - Vane Shear; P=Peak, R=Residual (uncorrected kPa)

**SAMPLES**
B - Bulk disturbed sample
D - Disturbed sample
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U - Thin wall tube 'undisturbed'

**MOISTURE**
D - Dry
M - Moist
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PL - Plastic limit
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VS - Very Soft
S - Soft
F - Firm
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Refer to explanatory notes for details of abbreviations and basis of descriptions

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# BOREHOLE LOG SHEET

**Client:** APA Group
**Project:** 18035-PP-C-060 - WORM
**Location:** Deep Creek Crossing

# Hole No: BH23A

**Job No:** P/37 **Sheet:** 4 of 6

**Position:** E305956.128 N5834802.029 55 GDA2020 **Angle from Horizontal:** 90° **Surface Elevation:** 101.145 m AHD

**Rig Type:** DB520 E-Spec **Mounting:** Track **Driller:** JK

**Casing/Hole Diameter:** HWT / 114/150 **Contractor:** Numac

**Date Started:** 30/7/20 **Date Completed:** 31/7/20 **Logged By:** JSM **Checked By:** RK

| Drilling | | | | Sampling & Testing | | | Material Description | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Method | Resistance | Casing | Water | Sample or Field Test | RL (m AHD) | Depth (m) | Graphic Log | Classification | SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure | Moisture Condition | Consistency Relative Density | STRUCTURE & Other Observations | Monitoring Well Details |
| WB | | HWT | | | 83<br>82<br>81<br>80<br>79<br>78 | 19<br>20<br>21<br>22<br>23 | | CH<br>CI-CH | Silty CLAY: high plasticity, grey/pale grey, (Extremely Weathered siltstone) *(continued)*<br>increased drilling resistance<br>22.80m<br>Silty CLAY: medium to high plasticity, grey mottled brown, (Extremely Weathered mudstone) | | | WEATHERED ROCK | |

**METHOD**
EX Excavator bucket
R Ripper
HA Hand auger
PT Push tube
SON Sonic drilling
AH Air hammer
PS Percussion sampler
AS Short spiral auger
AD/V Solid flight auger: V-Bit
AD/T Solid flight auger: TC-Bit
HFA Hollow flight auger
WB Washbore drilling
RR Rock roller

**PENETRATION**
VE Very Easy (No Resistance)
E Easy
F Firm
H Hard
VH Very Hard (Refusal)

**WATER**
Water Level on Date shown
water inflow
water outflow

**FIELD TESTS**
SPT - Standard Penetration Test
PP - Hand/Pocket Penetrometer
DCP - Dynamic Cone Penetrometer
PSP - Perth Sand Penetrometer
MC - Moisture Content
PBT - Plate Bearing Test
IMP - Borehole Impression Test
PID - Photoionisation Detector
VS - Vane Shear; P=Peak, R=Residual (uncorrected kPa)

**SAMPLES**
B - Bulk disturbed sample
D - Disturbed sample
ES - Environmental sample
U - Thin wall tube 'undisturbed'

**MOISTURE**
D - Dry
M - Moist
W - Wet
PL - Plastic limit
LL - Liquid limit
*w* - Moisture content

**SOIL CONSISTENCY**
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
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**RELATIVE DENSITY**
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Refer to explanatory notes for details of abbreviations and basis of descriptions

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# BOREHOLE LOG SHEET

**Client:** APA Group
**Project:** 18035-PP-C-060 - WORM
**Location:** Deep Creek Crossing

# Hole No: BH23A

**Job No:** P/37 **Sheet:** 5 of 6

**Position:** E305956.128 N5834802.029 55 GDA2020 **Angle from Horizontal:** 90° **Surface Elevation:** 101.145 m AHD

**Rig Type:** DB520 E-Spec **Mounting:** Track **Driller:** JK

**Casing/Hole Diameter:** HWT / 114/150 **Contractor:** Numac

**Date Started:** 30/7/20 **Date Completed:** 31/7/20 **Logged By:** JSM **Checked By:** RK

| Drilling: Method | Drilling: Resistance | Drilling: Casing | Water | Sampling & Testing: Sample or Field Test | RL (m AHD) | Depth (m) | Material Description: Graphic Log | Classification | SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure | Moisture Condition | Consistency Relative Density | STRUCTURE & Other Observations | Monitoring Well Details |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WB | | | | | 77 | | | CI-CH | Silty CLAY: medium to high plasticity, grey mottled brown, (Extremely Weathered mudstone) *(continued)* | | | WEATHERED ROCK | |
| | | | | | | | | | 24.35m increased drilling resistance | | | | |
| | | | | | | | | | Continued as Cored Drill Hole | | | | |
| | | | | | 76 | 25 | | | | | | | |
| | | | | | 75 | 26 | | | | | | | |
| | | | | | | 27 | | | | | | | |
| | | | | | 74 | | | | | | | | |
| | | | | | | 28 | | | | | | | |
| | | | | | 73 | | | | | | | | |
| | | | | | | 29 | | | | | | | |
| | | | | | 72 | | | | | | | | |

**METHOD**
EX Excavator bucket
R Ripper
HA Hand auger
PT Push tube
SON Sonic drilling
AH Air hammer
PS Percussion sampler
AS Short spiral auger
AD/V Solid flight auger: V-Bit
AD/T Solid flight auger: TC-Bit
HFA Hollow flight auger
WB Washbore drilling
RR Rock roller

**PENETRATION**
VE Very Easy (No Resistance)
E Easy
F Firm
H Hard
VH Very Hard (Refusal)

**WATER**
Water Level on Date shown
water inflow
water outflow

**FIELD TESTS**
SPT - Standard Penetration Test
PP - Hand/Pocket Penetrometer
DCP - Dynamic Cone Penetrometer
PSP - Perth Sand Penetrometer
MC - Moisture Content
PBT - Plate Bearing Test
IMP - Borehole Impression Test
PID - Photoionisation Detector
VS - Vane Shear; P=Peak, R=Residual (uncorrected kPa)

**SAMPLES**
B - Bulk disturbed sample
D - Disturbed sample
ES - Environmental sample
U - Thin wall tube 'undisturbed'

**MOISTURE**
D - Dry
M - Moist
W - Wet
PL - Plastic limit
LL - Liquid limit
*w* - Moisture content

**SOIL CONSISTENCY**
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard

**RELATIVE DENSITY**
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Refer to explanatory notes for details of abbreviations and basis of descriptions

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Construction Sciences

# CORE LOG SHEET

# Hole No: BH23A

**Client:** APA Group
**Project:** 18035-PP-C-060 - WORM
**Location:** Deep Creek Crossing
**Job No:** P/37
**Sheet:** 6 of 6

**Position:** E305956.128 N5834802.029 55 GDA2020
**Angle from Horizontal:** 90°
**Surface Elevation:** 101.145 m AHD

**Rig Type:** DB520 E-Spec
**Mounting:** Track
**Driller:** JK

**Casing Diameter:** HWT
**Bit Type:** TC
**Bit Condition:**
**Contractor:** Numac

**Date Started:** 30/7/20
**Date Completed:** 31/7/20
**Logged By:** JSM
**Checked By:** RK

| Coring | | | | | | Material Description | | | Defect Description | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Method | Fluid | TCR (%) | RQD (%) | RL (m AHD) | Depth (m) | Graphic Log | SOIL TYPE, plasticity or particle characteristic, colour, secondary & minor components<br>ROCK NAME, grain size and type, colour, fabric and texture, inclusions & minor components | Weathering | Estimated Strength $Is_{(50)}$ MPa ● - Axial ○ - Diametral<br>VL 0.1 L 0.3 M 1 H 3 VH 10 EH | Average Natural Defect Spacing (mm)<br>20 60 200 600 2000 | Visual | Additional Data DEFECT TYPE, orientation, shape, roughness, infilling or coating, thickness, other | Monitoring Well Details |
| | | | | 77 | | | 24.35m START CORING AT 24.35m | | | | | | |
| HQ | | 100 | 15 | | 25 | | MUDSTONE: fine grained, grey mottled brown<br>25.15m | MW | | | | 24.42 m: JT, 30°, UN, C<br>24.44 m: JT, 50°, UN, C<br>24.56 m: JT, 15°, CU, S, CN<br>24.59 m: JT, 10°, CU, C<br>24.71 m: JT, 15°, CU, S, VNR<br>24.72 m: JT, 15°, CU, S, CN<br>24.79 m: JT, 50°, CU, S, VNR<br>24.82 m: JT, 25°, CU, S, VNR<br>24.83 - 24.93 m: JT, 75°, CU, S, VNR<br>24.85 - 24.92 m: JT, 60°, ST, S, VNR<br>24.89 m: JT, 5°, UN, S, VNR<br>24.90 m: JT, 5°, UN, S, VNR<br>24.93 m: JT, 10°, CU, S, VNR<br>24.96 m: JT, 15°, UN, S, VNR<br>24.99 m: JT, 20°, UN, S, VNR<br>25.06 - 25.10 m: JT, 20°, ST, S, VNR<br>25.15 m: DB | |
| | | | | 76 | | | TERMINATED AT 25.15 m<br>Target depth | | | | | | |
| | | | | 75 | 26 | | | | | | | | |
| | | | | 74 | 27 | | | | | | | | |
| | | | | 73 | 28 | | | | | | | | |
| | | | | 72 | 29 | | | | | | | | |

**DRILLING**
AD/V Solid flight auger: V-Bit
AD/T Solid flight auger: TC-Bit
HFA Hollow flight auger
WB Washbore drilling
RR Rock roller
PQ Rotary core (85mm)
HQ Rotary core (63.5mm)
NMLC Rotary core (51.94mm)
DT Diatube concrete coring
PT Push tube
PS Percussion sampling
SON Sonic drilling
AH Air hammer

**WATER**
Water Level on date shown
water inflow
water outflow

**ROCK QUALITY DESCRIPTIONS**
RQD Rock Quality Designation (%)
TCR Total Core Recovery (%)

**ROCK STRENGTH**
EH Extremely High
VH Very High
H High
M Medium
L Low
VL Very Low

**ROCK WEATHERING**
FR Fresh
SW Slightly Weathered
DW Distinctly Weathered
MW Moderately Weathered
HW Highly Weathered
XW Extremely Weathered

**DEFECT TYPE**
JT Joint
SZ Sheared zone
BP Bedding Parting
SM Seam
FL Foliation
VN Vein
CL Cleavage
CS Crushed Seam
FZ Fracture Zone
DL Drift Lift
HB Handing Break
DB Drilling Break

**PLANARITY**
CU Curved
DIS Discontinuous
IR Irregular
PR Planar
ST Stepped
UN Undulose

**ROUGHNESS**
VR Very Rough
RF Rough
S Smooth
SL Slockensided
POL Polished

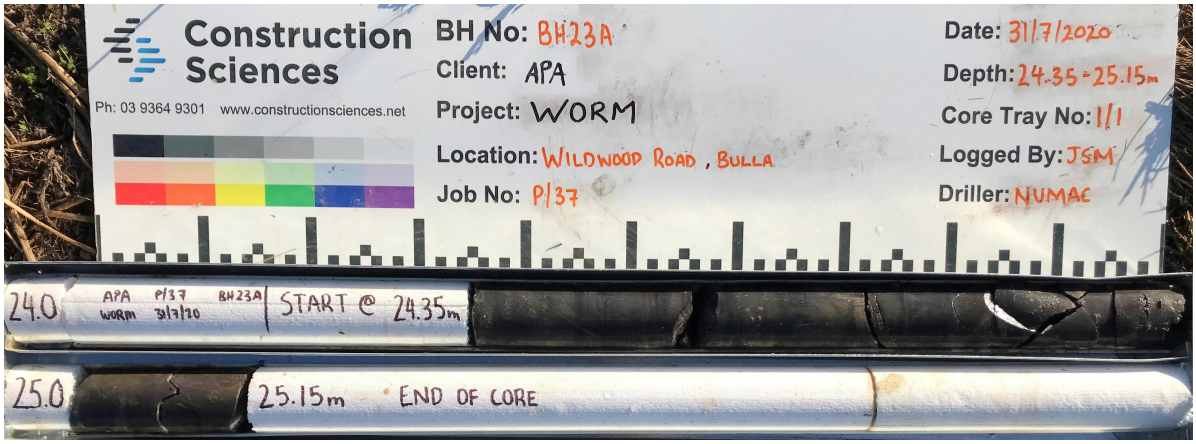
**COATING**
CN Clean
SN Stained
VNR Veneer (thin or patchy)
CT Coating (up to 1mm)

**INFILL MATERIALS**
X Carbonaceus
MU Unidentified minteral
MS Secondary mineral
KT Chlorite
CA Calcite
Fe Iron Oxide
Qz Quartz

Refer to explanatory notes for details of abbreviations and basis of descriptions

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| | | | |
|---|---|---|---|
| Construction Sciences | DRAWING TITLE: APA GROUP<br>WORM<br>WESTERN OUTER RING MAIN<br>BH23A - COREBOX PHOTOS | PROJECT No: P/37 | FIGURE No: 01/01 |
| | | DRAWN: M. Grech | DATE: 06/08/2020 |
| | | CHECKED: R. Leeson | DATE: 06/08/2020 |
| | | SCALE: Not To Scale | A4 |

# Construction Sciences

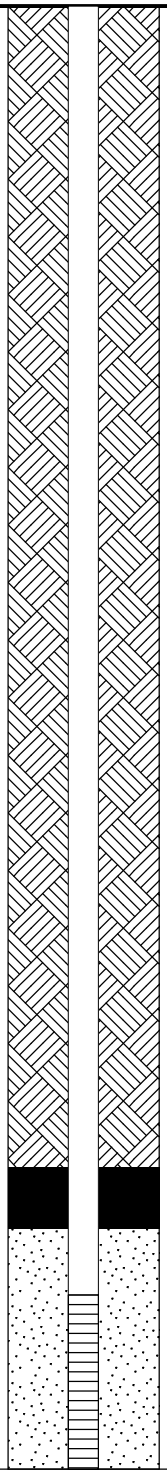
## PIEZOMETER INSTALLATION LOG

Hole ID: **BH23A**

| | | | | | |
|---|---|---|---|---|---|
| CLIENT | : APA Group | POSITION | : Deep Creek Crossing | SHEET | : 1 OF 1 |
| CONTRACTOR | : Numac | EASTING | : 305956.1 | STATUS | : 1 |
| PROJECT | : 18035-PP-C-060 - WORM | NORTHING | : 5834802.0 | LOGGED BY | : JSM |
| LOCATION | : | COORD. SYS. | : GDA2020 55 | DRILL DATE | : 30/07/2020 - 31/07/2020 |
| PROJECT No. | : P/37 | GROUND RL | : 101.15 m AHD | | |

| Method | Drilling Water | Depth (m) | Elevation (m AHD) | Graphic Log | Description<br>Soil / Rock Description |
|---|---|---|---|---|---|
| AD/T | | 0 | 100 | | TOPSOIL: CLAY: high plasticity, dark brown, organic material present TOPSOIL |
| | | | | | Gravelly Sandy CLAY: medium plasticity, brown, fine to coarse grained sand, fine to coarse grained gravel, with basalt sub-rounded cobbles ALLUVIUM |
| | | 5 | 95 | | rock cobbles present, increased drilling instability |
| WB | | 10 | 90 | | Silty CLAY: high plasticity, grey/pale grey, (Extremely Weathered siltstone) WEATHERED ROCK |
| | | | | | decreased drilling resistance |
| | | 15 | 85 | | |
| | | 20 | 80 | | |
| | | | | | increased drilling resistance |
| | | | | | Silty CLAY: medium to high plasticity, grey mottled brown, (Extremely Weathered mudstone) WEATHERED ROCK |
| | | | | | increased drilling resistance |
| HQ | | 25 | | | MUDSTONE: moderately weathered to moderately weathered, low strength, fine grained, grey mottled brown WEATHERED ROCK |
| | | | | | END OF BOREHOLE @ 25.15 m TARGET DEPTH |

| ID | Type | Tip Depth & RL | Installation Date | Static Water Level |
|---|---|---|---|---|
| SP-BH23A | Standpipe | 25.15 m 76.00 m AHD | 31/07/2020 | |




| | | | | |
|---|---|---|---|---|
| RIG | : DB520 E-Spec | CHECKED BY | : RK | REMARK |
| INCLINATION | : -90° | CHECKED DATE | : 18/08/2020 | |
| AZIMUTH | : | APPROVED BY | : | |
| HOLE DIA. | : 150/114 mm | APPROVED DATE | : | |

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Form Number: DGM03 RL0

# Appendix B

## Tabulated groundwater level data

| Bore ID | Investigation Type | Bore type | Easting (MGA Z55) | Northing (MGA Z55) | Elevation at TOC (m AHD) | SWL Reading Date | SWL (mbTOC) | SWL (mbGL) | RLWL (mAHD) | max SWL (m bgl) | min SWL (m bgl) | Difference between min and max SWL (m) | Regional depth to water (m) | Gauging event/ comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WORMBH01 | Trench | Monitoring bore | 298476.512 | 5824085.564 | 112.738 | 10/08/2020 | 9.900 | 10.027 | 102.838 | 10.027 | 9.887 | 0.140 | 5-10 | Bore installation |
| Bore depth (m) | 10 | | | | | 19/08/2020 | 9.779 | 9.906 | 102.959 | | | | | Monitoring bore survey |
| Screened interval (m) | 7-10 | | | | | 3/02/2021 | 9.760 | 9.887 | 102.978 | | | | | Routine monitoring |
| Screened geology | Basalt | | | | | 4/08/2021 | 9.837 | 9.964 | 102.901 | | | | | Routine monitoring |
| WORMBH03 | Road crossing | Monitoring bore | 302006.761 | 5832383.239 | 165.207 | 6/07/2010 | DRY | DRY | | 21.185 | 20.980 | 0.205 | 5-10 | Bore installation |
| Bore depth (m) | 21 | | | | | 19/08/2020 | 20.828 | 20.980 | 144.379 | | | | | Monitoring bore survey |
| Screened interval (m) | 15-21 | | | | | 3/02/2021 | DRY | - | - | | | | | Routine monitoring |
| Screened geology | Basalt | | | | | 3/08/2021 | 21.033 | 21.185 | 144.174 | | | | | Routine monitoring |
| WORMBH04 | Jacksons Creek | Geotechnical bore/ temporary monitoring bore | 303802.810 | 5833611.070 | 124.740 | 13/08/2020 | 5.570 | 5.570 | 119.170 | 5.570 | 5.570 | 0.000 | < 5 | Groundwater level collected during sampling from temporary PVC casing in geotechnical borehole |
| Bore depth (m) | 20 | | | | | | | | | | | | | |
| Screened interval (m) | 17-20 | | | | | | | | | | | | | |
| Screened geology | Mudstone | | | | | | | | | | | | | |
| WORMBH05 | Road crossing | Monitoring bore | 309792.566 | 5837964.355 | 234.700 | 4/08/2020 | 19.847 | 19.917 | 214.853 | 19.970 | 19.917 | 0.053 | 5-10 | Bore installation |
| Bore depth (m) | 20 | | | | | 12/08/2020 | 19.900 | 19.970 | 214.800 | | | | | Bore development |
| Screened interval (m) | 17-20 | | | | | 19/08/2020 | 19.899 | 19.969 | 214.801 | | | | | Monitoring bore survey |
| Screened geology | Basalt | | | | | 2/02/2021 | DRY | DRY | - | | | | | Routine monitoring |
| | | | | | | 8/04/2021 | DRY | DRY | - | | | | | Routine monitoring |
| WORMBH06 | Road crossing | Monitoring bore | 312596.541 | 5842025.545 | 267.654 | 6/08/2020 | DRY | >12 | | 11.632 | 11.632 | 0.000 | 5-10<br>10-20 | Bore installation |
| Bore depth (m) | 12 | | | | | 12/08/2020 | DRY | >12 | | | | | | Bore development |
| Screened interval (m) | 9-12 | | | | | 19/08/2020 | DRY | >12 | - | | | | | Monitoring bore survey |
| Screened geology | Basalt | | | | | 2/02/2021 | DRY | >12 | - | | | | | Routine monitoring |
| | | | | | | 4/08/2021 | 11.529 | 11.632 | 256.125 | | | | | Routine monitoring |
| WORMBH07 | Trench | Monitoring bore | 314437.787 | 5845330.337 | 241.952 | 3/09/2020 | DRY | >12 | - | 11.823 | 7.616 | 4.207 | < 5 | Bore installation |
| Bore depth (m) | 12 | | | | | 9/09/2020 | DRY | >12 | - | | | | | Monitoring bore survey |
| Screened interval (m) | 9-12 | | | | | 2/02/2021 | 7.500 | 7.616 | 234.452 | | | | | Routine monitoring |
| Screened geology | Sandy clay | | | | | 4/08/2021 | 11.707 | 11.823 | 241.952 | | | | | Routine monitoring |
| WORMBH09 | Trench | Monitoring bore | 316615.327 | 5846718.973 | 231.759 | 14/08/2020 | 8.000 | 8.106 | 223.759 | 8.246 | 7.831 | 0.415 | < 5 | Bore installation |
| Bore depth (m) | 12 | | | | | 18/08/2020 | 8.072 | 8.178 | 223.687 | | | | | Survey |
| Screened interval (m) | 9-12 | | | | | 9/08/2020 | 8.130 | 8.236 | 223.629 | | | | | Groundwater sampling |
| Screened geology | Clay | | | | | 9/09/2020 | 8.131 | 8.237 | 223.628 | | | | | Pre slug test |
| | | | | | | 9/09/2020 | 8.140 | 8.246 | 223.619 | | | | | Groundwater sampling |
| | | | | | | 30/10/2020 | 7.990 | 8.096 | 223.769 | | | | | Routine monitoring |
| | | | | | | 2/02/2021 | 7.940 | 8.046 | 223.819 | | | | | Groundwater sampling |
| | | | | | | 24/05/2021 | 7.833 | 7.939 | 223.926 | | | | | Routine monitoring |
| | | | | | | 4/08/2021 | 7.725 | 7.831 | 224.034 | | | | | Routine monitoring |
| WORMBH10 | Trench | Monitoring bore | 318474.624 | 5846478.275 | 242.787 | 14/08/2020 | 11.870 | 12.076 | 230.917 | 12.086 | 11.678 | 0.408 | < 5<br>5-10 | Bore installation |
| Bore depth (m) | 12 | | | | | 18/08/2020 | 11.848 | 12.054 | 230.939 | | | | | Survey |
| Screened interval (m) | 9-12 | | | | | 20/08/2020 | 11.849 | 12.055 | 230.938 | | | | | Bore inspection |
| Screened geology | Clay | | | | | 30/10/2020 | 11.880 | 12.086 | 230.907 | | | | | Routine monitoring |
| | | | | | | 2/02/2021 | 11.640 | 11.846 | 231.147 | | | | | Routine monitoring |
| | | | | | | 24/05/2021 | 11.656 | 11.862 | 231.131 | | | | | Routine monitoring |
| | | | | | | 4/08/2021 | 11.472 | 11.678 | 231.315 | | | | | Routine monitoring |

| Bore ID | Investigation Type | Bore type | Easting (MGA Z55) | Northing (MGA Z55) | Elevation at TOC (m AHD) | SWL Reading Date | SWL (mbTOC) | SWL (mbGL) | RLWL (mAHD) | max SWL (m bgl) | min SWL (m bgl) | Difference between min and max SWL (m) | Regional depth to water (m) | Gauging event/ comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WORMBH11 | Trench | Monitoring bore | 319872.029 | 5847694.546 | 259.303 | 13/08/2020 | DRY | | | 8.583 | 8.146 | 0.437 | < 5 | Bore installation |
| Bore depth (m) | 10.1 | | | | | 18/08/2020 | 8.519 | 8.583 | 250.784 | | | | | Survey |
| Screened interval (m) | 7.1 - 10.1 | | | | | 26/08/2020 | 8.469 | 8.533 | 250.834 | | | | | Groundwater sampling |
| Screened geology | Clay | | | | | 17/09/2020 | 8.082 | 8.146 | 251.221 | | | | | Routine monitoring |
| | | | | | | 1/02/2021 | 8.360 | 8.424 | 250.943 | | | | | Groundwater sampling |
| | | | | | | 4/08/2021 | 8.423 | 8.487 | 250.880 | | | | | Routine monitoring |
| WORMBH12 | Trench : Donovans | Monitoring bore | 321626.740 | 5847842.970 | 255.071 | 3/08/2020 | 0.600 | 0.667 | 254.471 | 1.367 | 0.325 | 1.042 | < 5 | Bore installation |
| Bore depth (m) | 6 | | | | | 13/08/2020 | 0.449 | 0.516 | 254.622 | | | | | Datalogger deployment |
| Screened interval (m) | 3-6 | | | | | 18/08/2020 | 0.281 | 0.348 | 254.790 | | | | | Pre slug test |
| Screened geology | Basalt | | | | | 18/08/2020 | 0.283 | 0.350 | 254.788 | | | | | Groundwater sampling |
| | | | | | | 20/08/2020 | 0.371 | 0.438 | 254.700 | | | | | Datalogger download |
| | | | | | | 9/09/2020 | 0.439 | 0.506 | 254.632 | | | | | Datalogger download |
| | | | | | | 17/09/2020 | 0.468 | 0.535 | 254.603 | | | | | |
| | | | | | | 2/02/2021 | 1.300 | 1.367 | 253.771 | | | | | Groundwater sampling |
| | | | | | | 4/08/2021 | 0.258 | 0.325 | 254.813 | | | | | Groundwater sampling |
| WORMBH14 | Road crossing | Monitoring bore | 323525.919 | 5842612.490 | 233.772 | 7/08/2020 | 1.660 | 1.775 | 232.112 | 1.775 | 1.235 | 0.540 | < 5 | Bore installation |
| Bore depth (m) | 9 | | | | | 18/08/2020 | 1.210 | 1.325 | 232.562 | | | | | Pre slug test |
| Screened interval (m) | 6-9 | | | | | 18/08/2020 | 1.480 | 1.595 | 232.292 | | | | | Groundwater sampling |
| Screened geology | Basalt | | | | | 2/09/2020 | 1.126 | 1.241 | 232.646 | | | | | Datalogger deployment |
| | | | | | | 17/09/2020 | 1.282 | 1.397 | 232.490 | | | | | Datalogger download |
| | | | | | | 30/10/2020 | 1.260 | 1.375 | 232.512 | | | | | Routine monitoring |
| | | | | | | 1/02/2021 | 1.120 | 1.235 | 232.652 | | | | | Groundwater sampling |
| | | | | | | 18/05/2021 | 1.212 | 1.327 | 232.560 | | | | | Datalogger download |
| WORMBH15 | Jacksons Creek | Monitoring bore | 303810.977 | 5833652.464 | 121.446 | 3/03/2020 | 2.179 | 2.189 | 119.267 | 2.189 | 1.663 | 0.526 | < 5 | Groundwater sampling |
| Bore depth (m) | 20 | | | | | 15/06/2020 | 1.670 | 1.680 | 119.776 | | | | | Datalogger deployment |
| Screened interval (m) | 17-20 | | | | | 29/10/2020 | 1.840 | 1.850 | 119.606 | | | | | Groundwater sampling |
| Screened geology | Siltstone | | | | | 3/02/2021 | 1.760 | 1.770 | 119.686 | | | | | Datalogger download |
| | | | | | | 3/08/2021 | 1.653 | 1.663 | 119.793 | | | | | Groundwater sampling |
| WORMBH16 | WCS | Monitoring bore | 322804.232 | 5839069.687 | 203.843 | 5/08/2020 | DRY | | | 7.734 | 7.232 | 0.502 | < 5<br>5-10 | Bore installation |
| Bore depth (m) | 10 | | | | | 18/08/2020 | 7.461 | 7.553 | 196.382 | | | | | Bore development |
| Screened interval (m) | 7-10 | | | | | 26/08/2020 | 7.636 | 7.728 | 196.207 | | | | | Pre slug test |
| Screened geology | Basalt | | | | | 26/08/2020 | 7.642 | 7.734 | 196.201 | | | | | Groundwater sampling |
| | | | | | | 30/10/2020 | 7.410 | 7.502 | 196.433 | | | | | Routine monitoring |
| | | | | | | 1/02/2021 | 7.140 | 7.232 | 196.703 | | | | | Groundwater sampling |
| | | | | | | 4/08/2021 | 7.153 | 7.245 | 196.690 | | | | | Groundwater sampling |
| WORMBH22 | Deep Creek | Monitoring bore | 305819.460 | 5834711.840 | 102.588 | 2/03/2020 | 6.951 | 7.051 | 95.637 | 7.051 | 5.762 | 1.289 | < 5 | Groundwater sampling |
| Bore depth (m) | 30 | | | | | 16/06/2020 | 5.991 | 6.091 | 96.597 | | | | | Datalogger deployment |
| Screened interval (m) | 27-30 | | | | | 10/09/2020 | 5.662 | 5.762 | 96.926 | | | | | Pre slug test |
| Screened geology | Siltstone | | | | | 10/09/2020 | 5.808 | 5.908 | 96.780 | | | | | Groundwater sampling |
| | | | | | | 29/10/2020 | 5.700 | 5.800 | 96.888 | | | | | Groundwater sampling |
| | | | | | | 3/02/2021 | 6.140 | 6.240 | 96.448 | | | | | Groundwater sampling |
| | | | | | | 24/05/2021 | 6.225 | 6.325 | 96.363 | | | | | Groundwater sampling |
| | | | | | | 3/08/2021 | 5.681 | 5.781 | 96.907 | | | | | Routine monitoring |

| Bore ID | Investigation Type | Bore type | Easting (MGA Z55) | Northing (MGA Z55) | Elevation at TOC (m AHD) | SWL Reading Date | SWL (mbTOC) | SWL (mbGL) | RLWL (mAHD) | max SWL (m bgl) | min SWL (m bgl) | Difference between min and max SWL (m) | Regional depth to water (m) | Gauging event/ comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WORMBH23 | Deep Creek | Monitoring bore | 305954.882 | 5834829.412 | 101.597 | 2/03/2020 | 3.514 | 3.614 | 98.083 | 3.614 | 2.965 | 0.649 | < 5 | Groundwater sampling |
| Bore depth (m) | 30 | | | | | 15/06/2020 | 2.865 | 2.965 | 98.732 | | | | | Datalogger deployment |
| Screened interval (m) | 27-30 | | | | | 16/07/2020 | 2.942 | 3.042 | 98.655 | | | | | Drilling inspection for BH23A |
| Screened geology | Mudstone | | | | | 19/08/2020 | 3.360 | 3.460 | 98.237 | | | | | |
| WORMBH23a | Deep Creek | Monitoring bore | 305955.503 | 5834800.475 | 101.242 | 3/08/2020 | 3.300 | 3.390 | 97.942 | 3.660 | 3.284 | 0.376 | < 5 | Bore installation |
| Bore depth (m) | 25 | | | | | 19/08/2020 | 3.212 | 3.302 | 98.030 | | | | | Pre slug test |
| Screened interval (m) | 22-25 | | | | | 19/08/2020 | 3.360 | 3.450 | 97.882 | | | | | Groundwater sampling |
| Screened geology | Silty clay and mudstone | | | | | 2/09/2020 | 3.194 | 3.284 | 98.048 | | | | | Datalogger deployment |
| | | | | | | 10/09/2020 | 3.228 | 3.318 | 98.014 | | | | | Datalogger download |
| | | | | | | 29/10/2020 | 3.390 | 3.480 | 97.852 | | | | | Groundwater sampling |
| | | | | | | 3/02/2021 | 3.570 | 3.660 | 97.672 | | | | | Groundwater sampling |
| | | | | | | 24/05/2021 | 3.460 | 3.550 | 97.782 | | | | | Groundwater sampling |
| | | | | | | 3/08/2021 | 3.325 | 3.415 | 97.917 | | | | | Routine monitoring |
| WORMBH32 | Trench | Monitoring bore | 315953.743 | 5846801.058 | 231.609 | 2/03/2020 | 7.248 | 7.326 | 224.361 | 7.369 | 7.089 | 0.280 | < 5 | Groundwater sampling |
| Bore depth (m) | 20 | | | | | 15/06/2020 | 7.172 | 7.250 | 224.437 | | | | | Datalogger deployment |
| Screened interval (m) | 17-20 | | | | | 13/08/2020 | 7.192 | 7.270 | 224.417 | | | | | Datalogger download |
| Screened geology | Siltstone/sandstone | | | | | 20/08/2020 | 7.211 | 7.289 | 224.398 | | | | | Pre slug test |
| | | | | | | 20/08/2020 | 7.291 | 7.369 | 224.318 | | | | | Groundwater sampling |
| | | | | | | 9/09/2020 | 7.175 | 7.253 | 224.434 | | | | | Routine monitoring |
| | | | | | | 17/09/2020 | 7.159 | 7.237 | 224.450 | | | | | Datalogger download |
| | | | | | | 30/10/2020 | 7.160 | 7.238 | 224.449 | | | | | Routine monitoring |
| | | | | | | 2/02/2021 | 7.140 | 7.218 | 224.469 | | | | | Groundwater sampling/ logger download |
| | | | | | | 24/05/2021 | 7.067 | 7.145 | 224.542 | | | | | Routine monitoring |
| | | | | | | 4/08/2021 | 7.011 | 7.089 | 224.598 | | | | | Logger download |
| WORMBH27 | Merri Creek | Monitoring bore | 323052.000 | 5846786.180 | 257.600 | 3/03/2020 | 3.139 | 3.239 | 254.461 | 3.239 | 2.282 | 0.957 | < 5 | Groundwater sampling |
| Bore depth (m) | 20.4 | | | | | 16/06/2020 | 2.391 | 2.491 | 255.209 | | | | | Datalogger deployment |
| Screened interval (m) | 17.4 - 20.4 | | | | | 26/08/2020 | 2.182 | 2.282 | 255.418 | | | | | Datalogger download |
| Screened geology | Basalt | | | | | 28/10/2020 | 2.430 | 2.530 | 255.170 | | | | | Groundwater sampling |
| | | | | | | 1/02/2021 | 2.480 | 2.580 | 255.120 | | | | | Datalogger download |
| | | | | | | 18/05/2021 | 2.673 | 2.773 | 254.927 | | | | | Datalogger download |
| | | | | | | 4/08/2021 | 2.473 | 2.573 | 255.127 | | | | | Datalogger download |
| WORMBH49 | Merri Creek | Monitoring bore | 323040.750 | 5846848.528 | 257.014 | 3/03/2020 | 2.543 | 2.643 | 254.471 | 2.643 | 1.870 | 0.773 | < 5 | Groundwater sampling |
| Bore depth (m) | 20.5 | | | | | 16/06/2020 | 1.900 | 2.000 | 255.114 | | | | | Datalogger deployment |
| Screened interval (m) | 17.5-20.5 | | | | | 17/09/2020 | 1.779 | 1.879 | 255.235 | | | | | Datalogger download |
| Screened geology | Basalt | | | | | 27/10/2020 | 2.170 | 2.270 | 254.844 | | | | | Groundwater sampling |
| | | | | | | 1/02/2021 | 1.770 | 1.870 | 255.244 | | | | | Datalogger download |
| | | | | | | 18/05/2021 | 1.866 | 1.966 | 255.148 | | | | | Datalogger download |
| | | | | | | 4/08/2021 | 1.987 | 2.087 | 255.027 | | | | | Datalogger download |

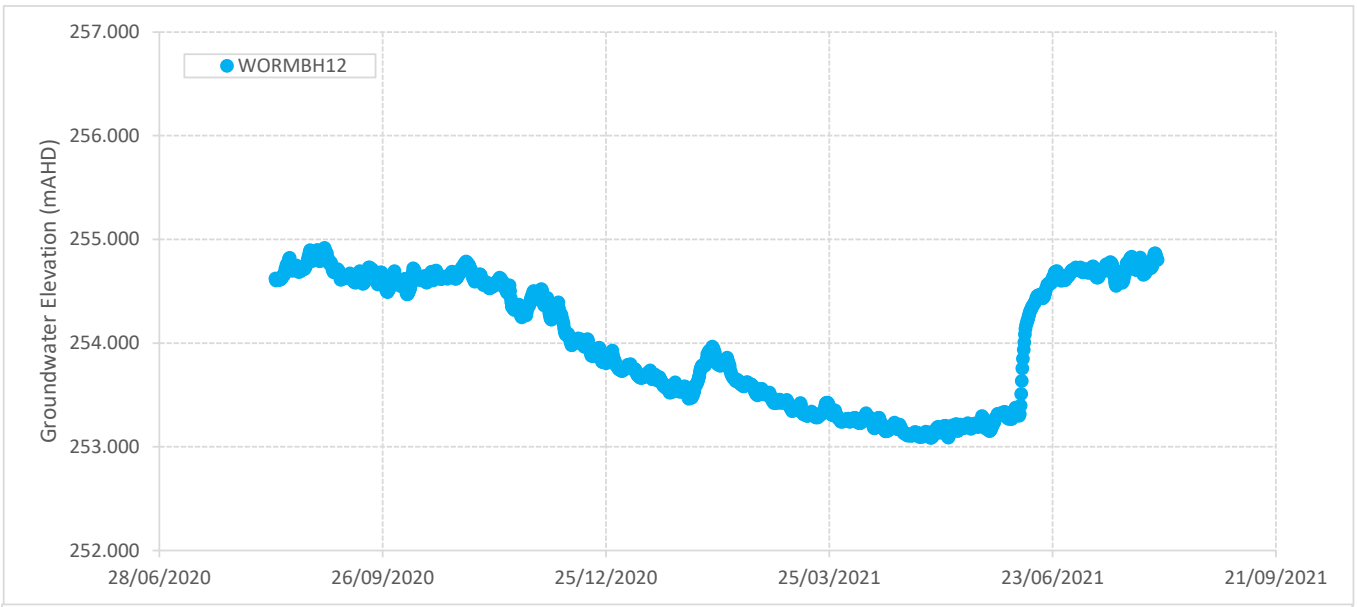
| Bore ID | Investigation Type | Bore type | Easting (MGA Z55) | Northing (MGA Z55) | Elevation at TOC (m AHD) | SWL Reading Date | SWL (mbTOC) | SWL (mbGL) | RLWL (mAHD) | max SWL (m bgl) | min SWL (m bgl) | Difference between min and max SWL (m) | Regional depth to water (m) | Gauging event/ comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BH 01 | Melton Highway Crossing | Geotechnical | 298813.290 | 5826160.140 | | | | >3 | | | | | 5-10 | No groundwater observed during auger drilling |
| BH 02 | Melton Highway Crossing | Geotechnical | 298817.100 | 5826225.810 | | | | >2.8 | | | | | 5-10 | No groundwater observed during auger drilling |
| BH 03 | MLV 1_ Holden Road | Geotechnical | 299354.230 | 5829391.130 | | | | >3 | | | | | 5-10 | No groundwater observed during auger drilling |
| BH04 | Bendigo Rail Line Crossing | Geotechnical | 299706.910 | 5831080.690 | | | | >1.4 | | | | | 5-10 | No groundwater observed during auger drilling |
| BH 05 | Bendigo Rail Line Crossing | Geotechnical | 299801.460 | 5831146.100 | | | | >1.2 | | | | | < 5 | No groundwater observed during auger drilling |
| BH 06 | Calder Freeway Crossing | Geotechnical | 300028.110 | 5831292.130 | | | | >2,.2 | | | | | 10-20 | No groundwater observed during auger drilling |
| BH 07 | Calder Freeway Crossing | Geotechnical | 300102.510 | 5831340.040 | | | | >1.1 | | | | | 10-20 | No groundwater observed during auger drilling |
| BH 08 | Calder Freeway Crossing | Geotechnical | 300170.510 | 5831383.090 | | | | >1.3 | | | | | 10-20 | No groundwater observed during auger drilling |
| BH 09 | Duncans Lane | Geotechnical | 300872.230 | 5831684.480 | | | | >2 | | | | | 5-10 | No groundwater observed during auger drilling |
| BH 10C | Duncans Lane | Geotechnical | 300894.783 | 5831668.206 | | | | >3.5 | | | | | 5-10 | No groundwater observed during auger drilling |
| BH 11 | Bulla - Diggers Rest Road | Geotechnical | 302022.400 | 5832384.640 | | | | >2.3 | | | | | 10-20 | No groundwater observed during auger drilling |
| BH 12 | Bulla - Diggers Rest Road | Geotechnical | 302056.060 | 5832415.810 | | | | >3 | | | | | 20-50 | No groundwater observed during auger drilling |
| BH 12 (Alt.) | Bulla - Diggers Rest Road | Geotechnical | 302053.333 | 5832411.018 | | | | | | | | | | No groundwater observed during auger drilling |
| BH14 | Jacksons Creek Crossing | Geotechnical | 303791.109 | 5833565.330 | | | | >7.1 | | | | | 5-10 | No groundwater observed during auger drilling |
| BH 16 | Jacksons Creek Crossing | Geotechnical | 303809.653 | 5833702.122 | | | | >3.7 | | | | | < 5 | No Groundwater observed during auger drilling |
| BH 18 | Sunbury Road Crossing | Geotechnical | 304091.240 | 5834564.398 | | | | >2.6 | | | | | 20-50 | No Groundwater observed during auger drilling |
| BH 19 | Sunbury Road Crossing | Geotechnical | 304129.515 | 5834573.440 | | | | >2.3 | | | | | 20-50 | No Groundwater observed during auger drilling |
| BH 21 | Deep Creek Crossing | Geotechnical | 305685.670 | 5834596.670 | | | | >3 | | | | | < 5 | No Groundwater observed during auger drilling |
| BH22A | Deep Creek Crossing | Geotechnical | 305820.874 | 5834713.254 | | | | >5 | | | | | < 5 | No Groundwater observed during auger drilling however increasing moisture from 5 m depth |
| BH 24 | Deep Creek Crossing | Geotechnical | 306099.683 | 5834942.970 | | | | >3 | | | | | < 5 | Construction Science report groundwater from 3 m depth, borehole log indicates saturated soil conditions from 5 m depth |
| BH 17 | Proposed MLV 2 Location | Geotechnical | 309598.480 | 5837221.990 | | | | >2.4 | | | | | 20-50 | No Groundwater observed during auger drilling |
| BH 25 | Craigieburn Road Crossing | Geotechnical | 309737.000 | 5837897.920 | | | | >5.2 | | | | | 5-10 | No Groundwater observed during auger drilling |
| BH 26 | Craigieburn Road Crossing | Geotechnical | 309745.370 | 5837970.190 | | | | >4.4 | | | | | 5-10 | No Groundwater observed during auger drilling |
| BH 28 | Mickleham Road Crossing | Geotechnical | 312583.530 | 5841993.540 | | | | >2.5 | | | | | 5-10 | No Groundwater observed during auger drilling |
| BH 29 | Mickleham Road Crossing | Geotechnical | | | | | | >2.55 | | | | | 5-10 | No Groundwater observed during auger drilling |
| BH 30 | Donnybrook Road Crossing 1 | Geotechnical | 313837.860 | 5843752.430 | | | | >5.4 | | | | | < 5 | No Groundwater observed during auger drilling |
| BH 31 | Donnybrook Road Crossing 2 | Geotechnical | 313843.822 | 5843798.620 | | | | >3 | | | | | < 5 | No Groundwater observed during auger drilling |
| BH 33 | Melbourne Retention Basin | Geotechnical | 316178.904 | 5846745.584 | | | | 9.300 | | | | | < 5 | Groundwater observed at 9.3 m during auger drilling |
| BH 34 | Melbourne Retention Basin | Geotechnical | 316410.290 | 5846711.500 | | | | >7.8 | | | | | < 5 | No Groundwater observed during auger drilling |
| BH 35 | Melbourne Retention Basin | Geotechnical | 316579.510 | 5846693.730 | | | | 8.200 | | | | | < 5 | Groundwater observed at 8.2 m during auger drilling |
| BH 36 | Melbourne Retention Basin | Geotechnical | 316778.620 | 5846670.270 | | | | 8.300 | | | | | < 5 | Groundwater observed at 8.3 m during auger drilling |
| BH 20 | Melbourne Retention Basin | Geotechnical | 317016.000 | 5846644.290 | | | | >5.9 | | | | | < 5 | No Groundwater observed during auger drilling |
| BH 37 | Hume Freeway Crossing | Geotechnical | 318785.190 | 5846412.100 | | | | >0.8 | | | | | 10-20 | No Groundwater observed during auger drilling |
| BH 38 | Hume Freeway Crossing | Geotechnical | 318946.820 | 5846393.030 | | | | >0.9 | | | | | 10-20 | No Groundwater observed during auger drilling |
| BH 39 | North Eastern Rail Line | Geotechnical | 321998.440 | 5847705.330 | | | | >2 | | | | | < 5 | No Groundwater observed during auger drilling though increase in soil moisture noted from approx. 1 m depth |
| BH 40 | North Eastern Rail Line | Geotechnical | 322055.290 | 5847687.960 | | | | >0.8 | | | | | 5 - 10 | No Groundwater observed during auger drilling |
| BH 41 | Donnybrook Road Crossing 2 | Geotechnical | 323507.352 | 5842698.182 | | | | >1 | | | | | < 5 | No Groundwater observed during auger drilling |
| BH 42 | Donnybrook Road Crossing 3 | Geotechnical | 323501.910 | 5842660.410 | | | | >0.5 | | | | | < 5 | No Groundwater observed during auger drilling |
| BH 43 | Wollert Compressor Station | Geotechnical | 322868.905 | 5839155.255 | | | | >4 | | | | | < 5 | No Groundwater observed during auger drilling |
| BH 44 | Wollert Compressor Station | Geotechnical | 322860.790 | 5839143.546 | | | | >5 | | | | | < 5 | No Groundwater observed during auger drilling |
| BH 45 | Wollert Compressor Station | Geotechnical | 322967.266 | 5839129.143 | | | | >2 | | | | | < 5 | No Groundwater observed during auger drilling |
| BH 46 | Wollert Compressor Station | Geotechnical | 322796.892 | 5838977.810 | | | | >2.7 | | | | | 5-10 | No Groundwater observed during auger drilling |
| BH 47 | Wollert Compressor Station | Geotechnical | 322826.301 | 5838974.525 | | | | ≈ 0.75 | | | | | 5-10 | Groundwater observed at 0.75 m during auger drilling |
| BH48 | Wollert Compressor Station | Geotechnical | 322816.887 | 5838946.112 | | | | >2 | | | | | 5-10 | No Groundwater observed during auger drilling |

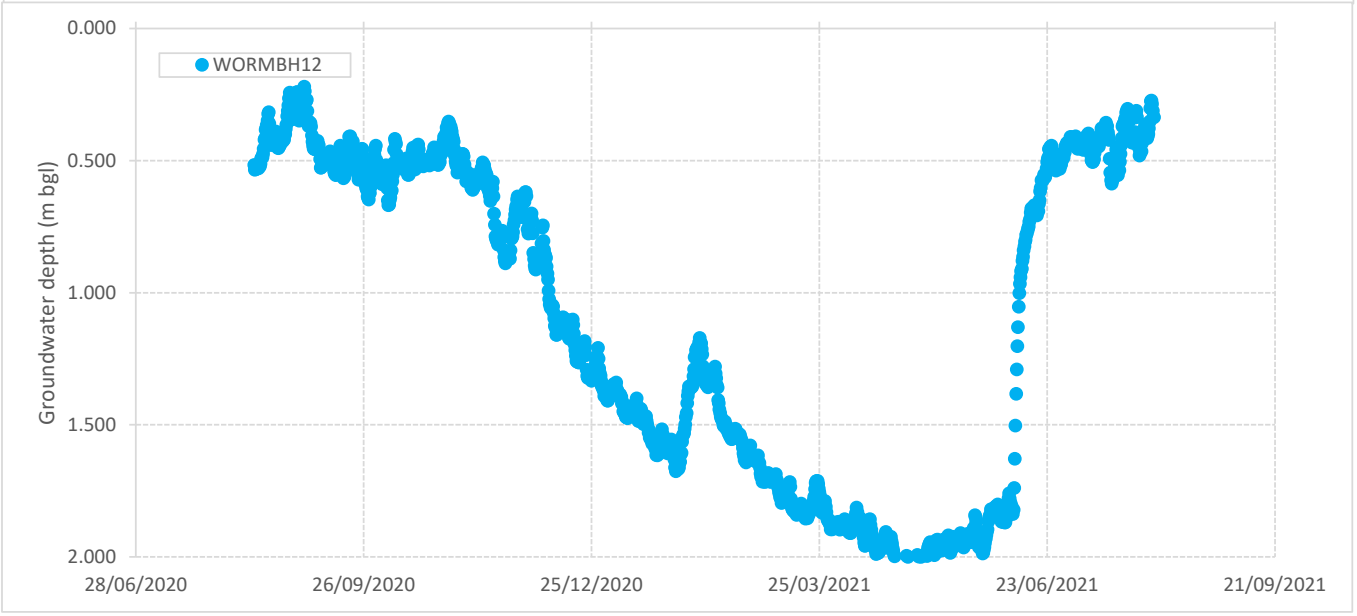
Notes:
MGA - Map Grid of Australia

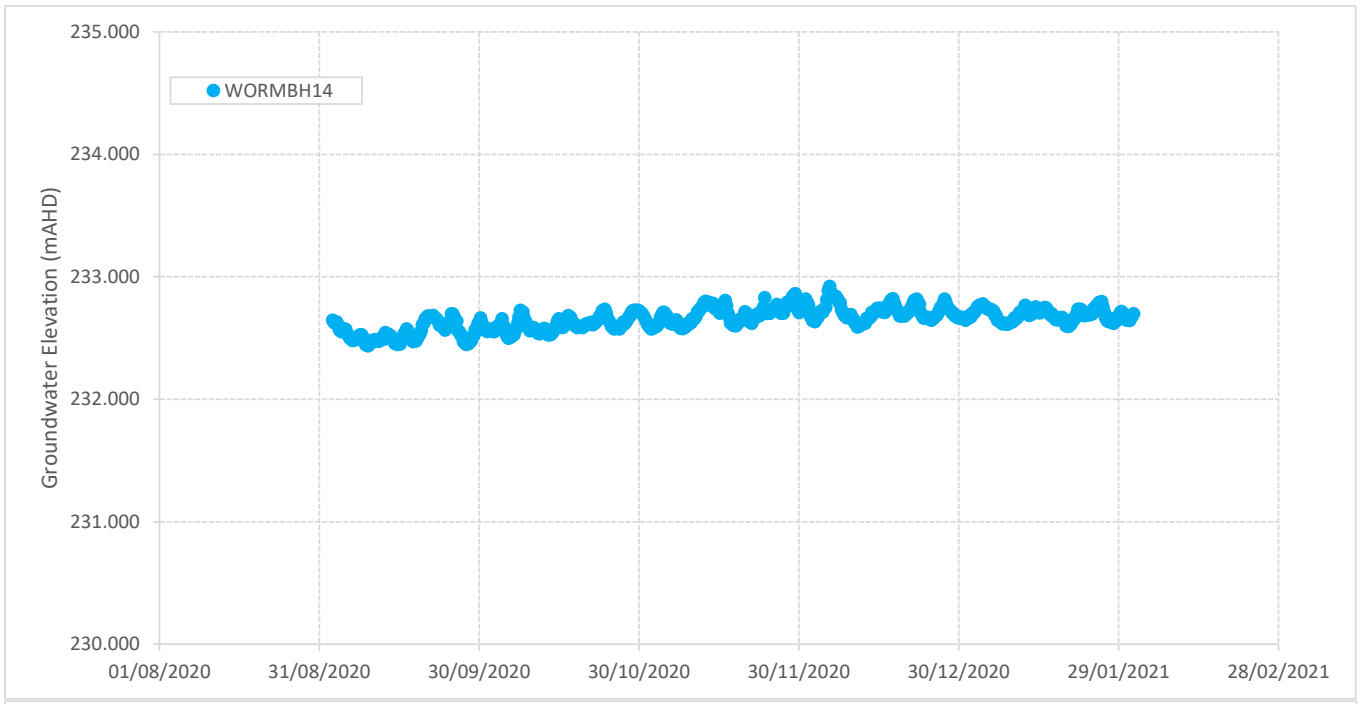
| Bore ID | Investigation Type | Bore type | Easting (MGA Z55) | Northing (MGA Z55) | Elevation at TOC (m AHD) | SWL Reading Date | SWL (mbTOC) | SWL (mbGL) | RLWL (mAHD) | max SWL (m bgl) | min SWL (m bgl) | Difference between min and max SWL (m) | Regional depth to water (m) | Gauging event/ comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SWL - Standing Water Level<br>m bTOC - metres below top of collar<br>m bGL - metres below ground level<br>RLWL - Relative water level in Australian Height Datum | | | | | | | | | | | | | | |

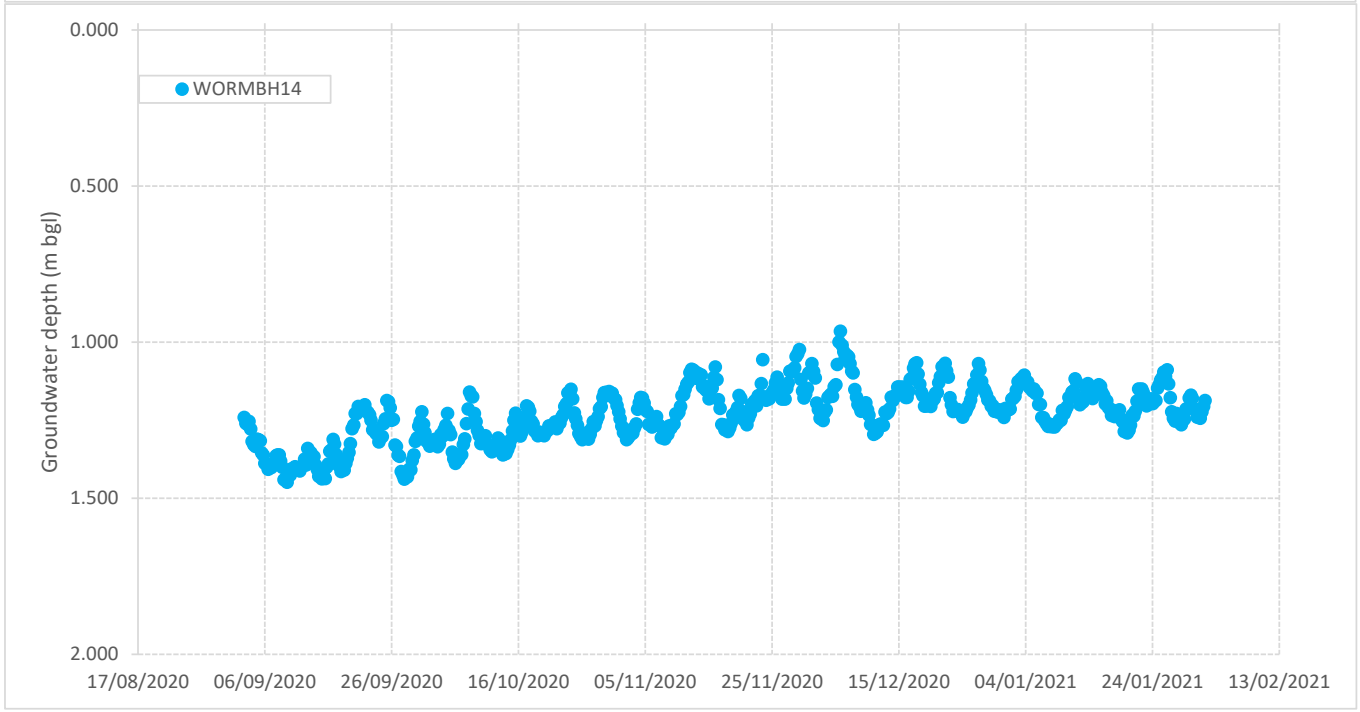
# Appendix C

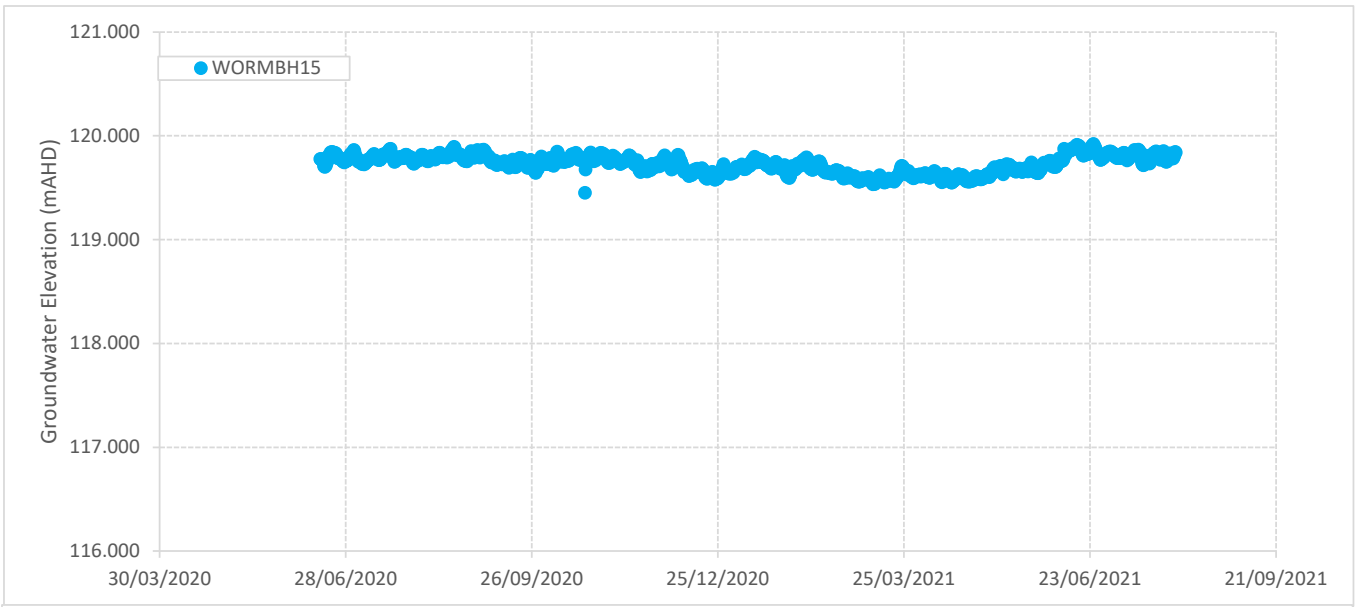
## Monitoring bore hydrographs

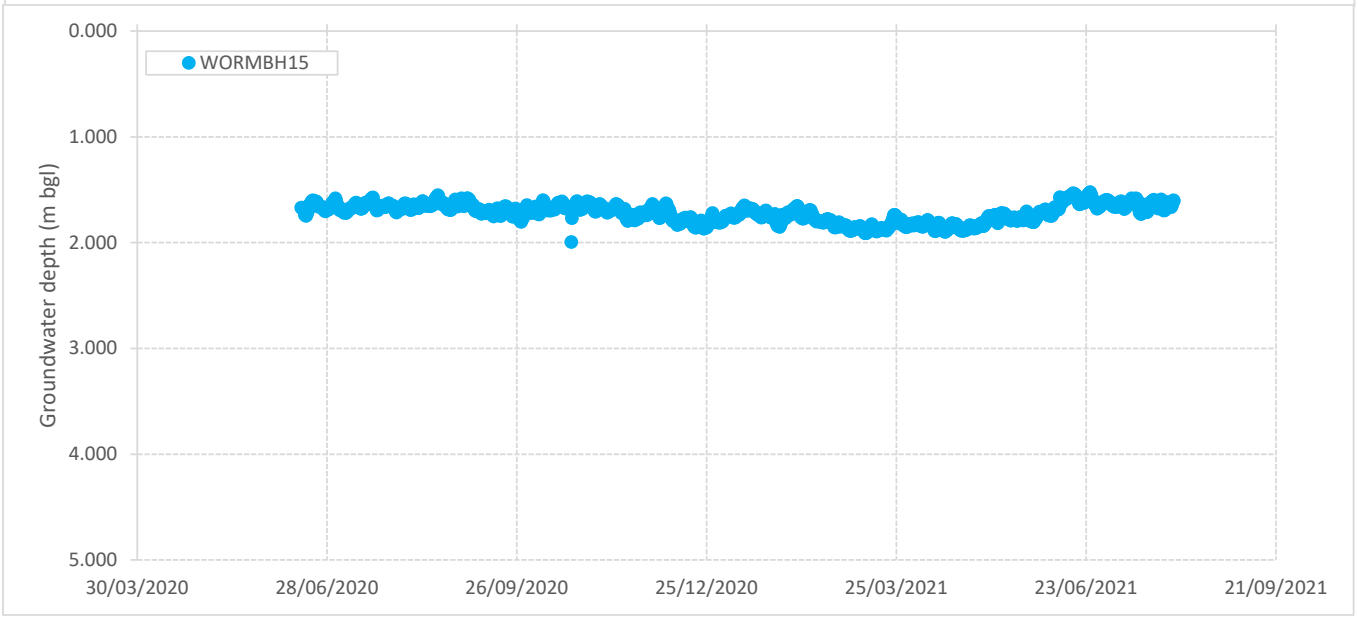

257.000
256.000
255.000
254.000
253.000
252.000
Groundwater Elevation (mAHD)
WORMBH12
28/06/2020
26/09/2020
25/12/2020
25/03/2021
23/06/2021
21/09/2021

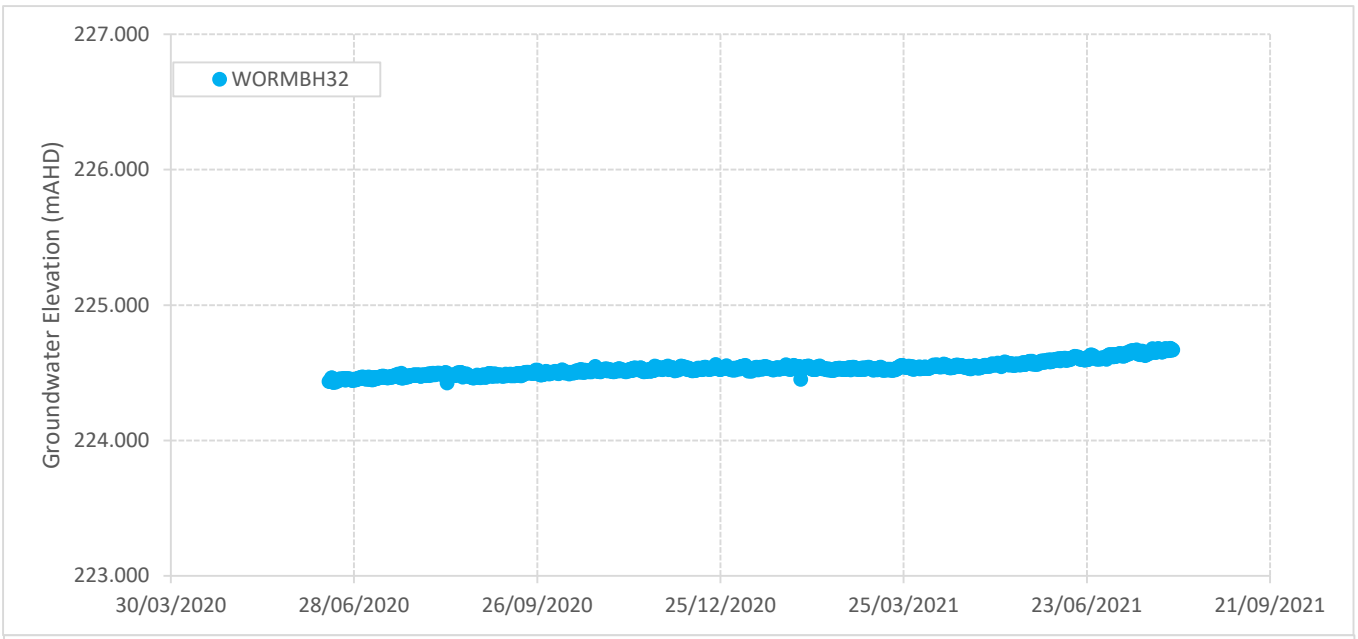

0.000
0.500
1.000
1.500
2.000
Groundwater depth (m bgl)
WORMBH12
28/06/2020
26/09/2020
25/12/2020
25/03/2021
23/06/2021
21/09/2021

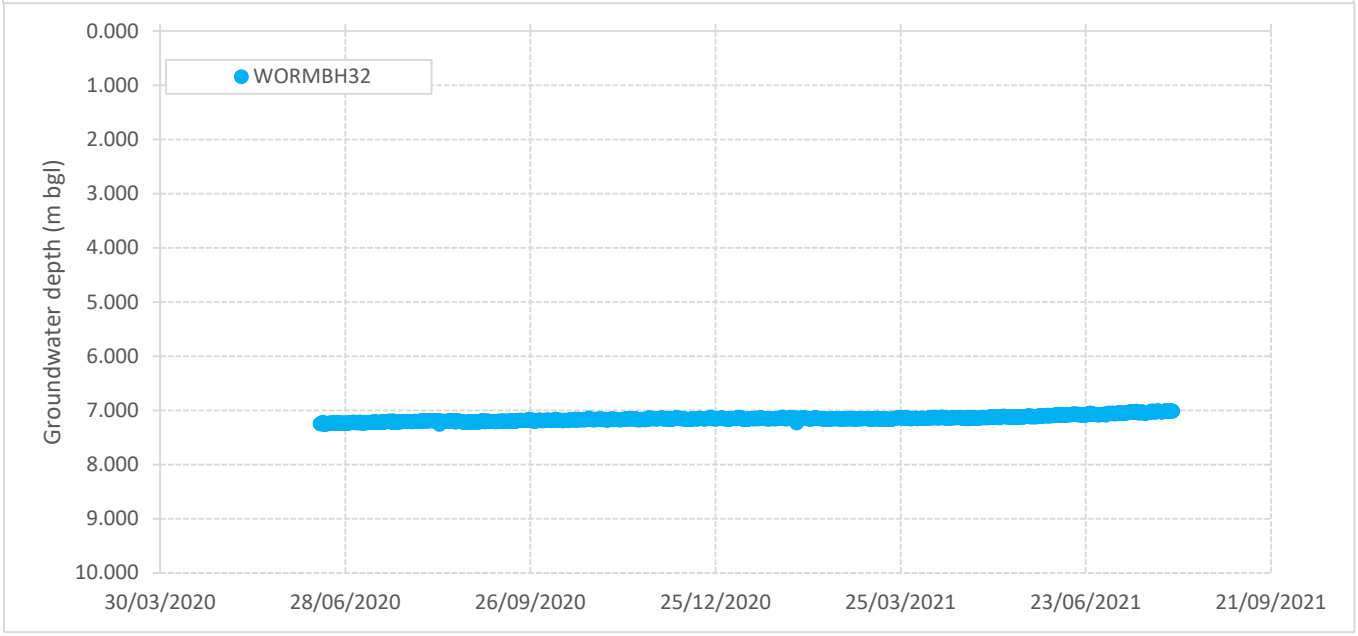

WORMBH14
Groundwater Elevation (mAHD)
235.000
234.000
233.000
232.000
231.000
230.000
01/08/2020
31/08/2020
30/09/2020
30/10/2020
30/11/2020
30/12/2020
29/01/2021
28/02/2021

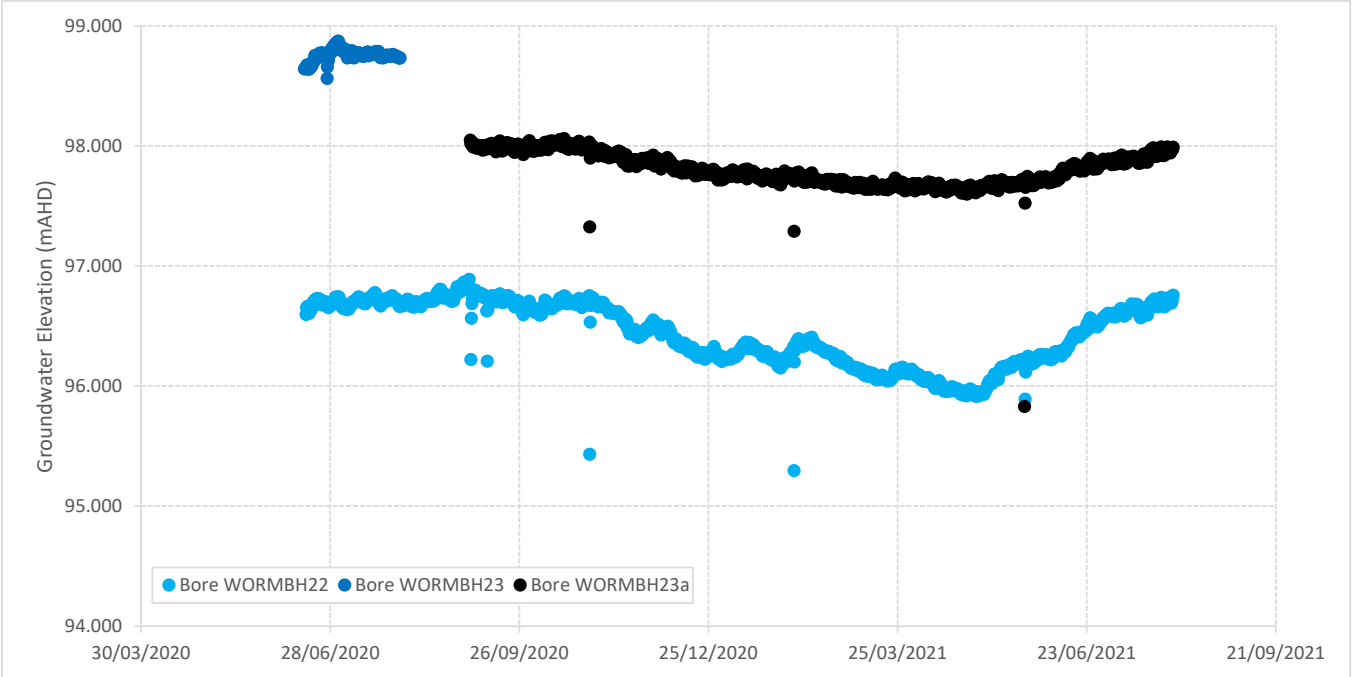

WORMBH14
Groundwater depth (m bgl)
0.000
0.500
1.000
1.500
2.000
17/08/2020
06/09/2020
26/09/2020
16/10/2020
05/11/2020
25/11/2020
15/12/2020
04/01/2021
24/01/2021
13/02/2021

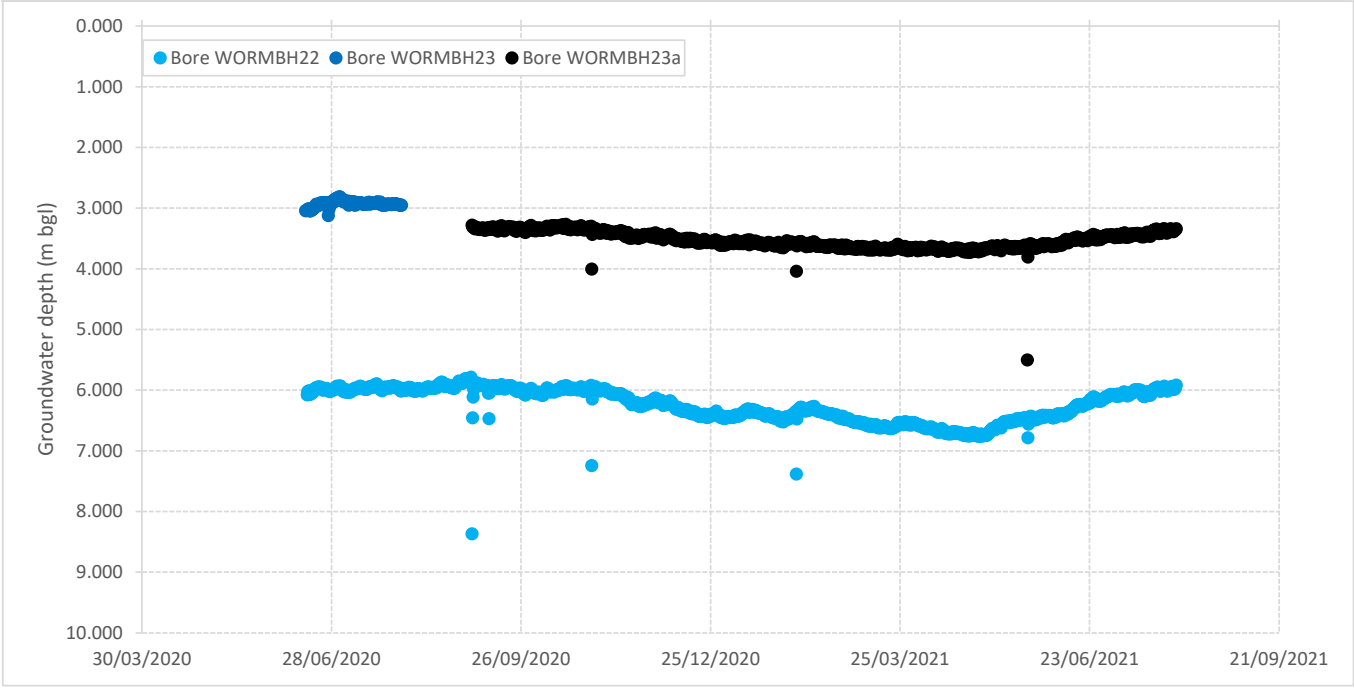

WORMBH15
Groundwater Elevation (mAHD)
121.000
120.000
119.000
118.000
117.000
116.000
30/03/2020
28/06/2020
26/09/2020
25/12/2020
25/03/2021
23/06/2021
21/09/2021

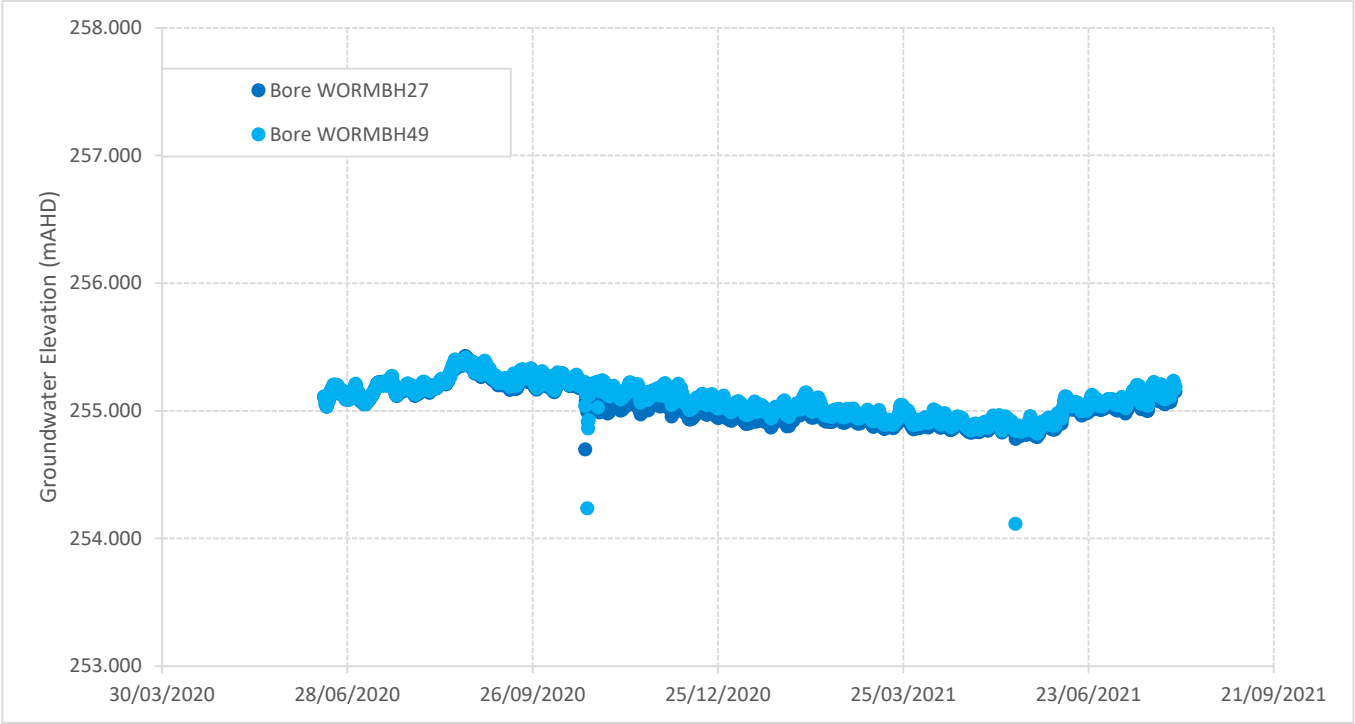

WORMBH15
Groundwater depth (m bgl)
0.000
1.000
2.000
3.000
4.000
5.000
30/03/2020
28/06/2020
26/09/2020
25/12/2020
25/03/2021
23/06/2021
21/09/2021

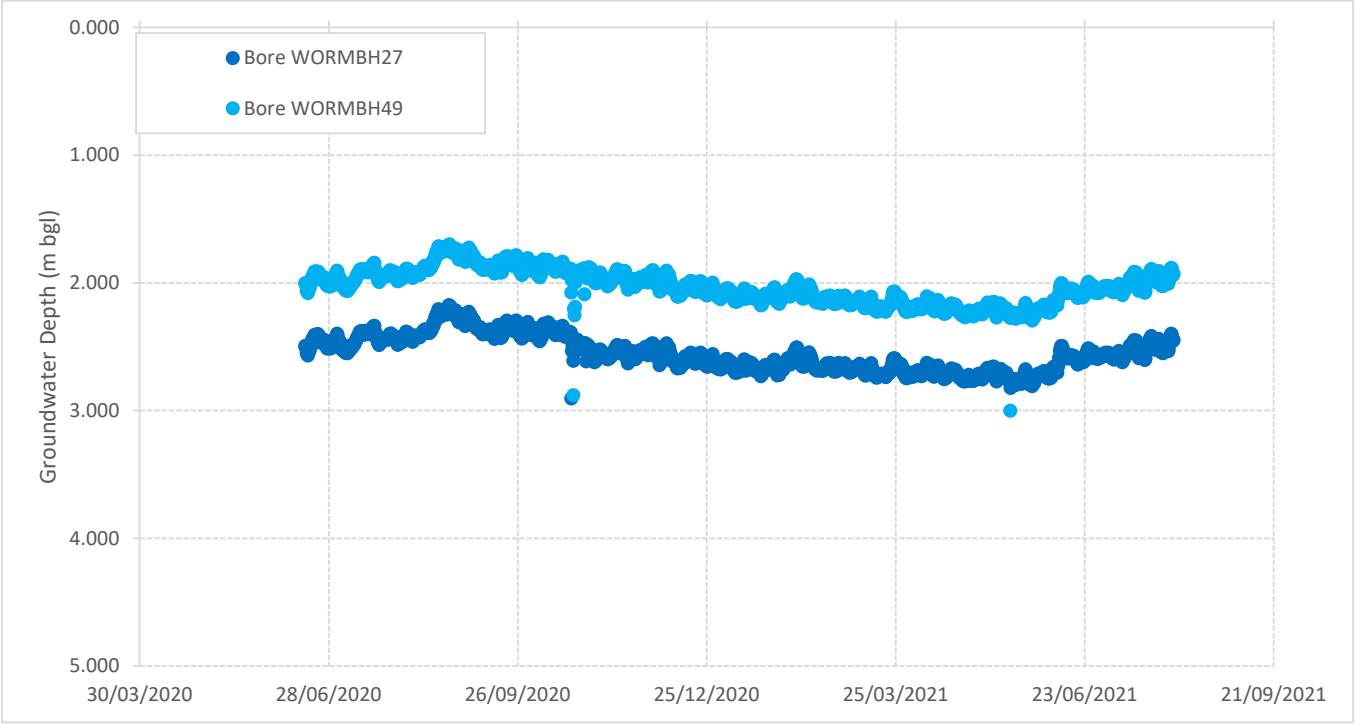

227.000
226.000
225.000
224.000
223.000
Groundwater Elevation (mAHD)
WORMBH32
30/03/2020
28/06/2020
26/09/2020
25/12/2020
25/03/2021
23/06/2021
21/09/2021


0.000
1.000
2.000
3.000
4.000
5.000
6.000
7.000
8.000
9.000
10.000
Groundwater depth (m bgl)
WORMBH32
30/03/2020
28/06/2020
26/09/2020
25/12/2020
25/03/2021
23/06/2021
21/09/2021


99.000
98.000
97.000
96.000
95.000
94.000
Groundwater Elevation (mAHD)
Bore WORMBH22
Bore WORMBH23
Bore WORMBH23a
30/03/2020
28/06/2020
26/09/2020
25/12/2020
25/03/2021
23/06/2021
21/09/2021


0.000
1.000
2.000
3.000
4.000
5.000
6.000
7.000
8.000
9.000
10.000
Groundwater depth (m bgl)
Bore WORMBH22
Bore WORMBH23
Bore WORMBH23a
30/03/2020
28/06/2020
26/09/2020
25/12/2020
25/03/2021
23/06/2021
21/09/2021


Bore WORMBH27
Bore WORMBH49
Groundwater Elevation (mAHD)
258.000
257.000
256.000
255.000
254.000
253.000
30/03/2020
28/06/2020
26/09/2020
25/12/2020
25/03/2021
23/06/2021
21/09/2021


Bore WORMBH27
Bore WORMBH49
Groundwater Depth (m bgl)
0.000
1.000
2.000
3.000
4.000
5.000
30/03/2020
28/06/2020
26/09/2020
25/12/2020
25/03/2021
23/06/2021
21/09/2021

# Appendix D

## Groundwater purging and sampling records

# Groundwater Sampling Sheet

**Bore ID:** BH04

| | |
|---|---|
| **Client:** APA | **Date:** 13.08.2020 |
| **Project:** WORM | **Time:** 13:45 |
| **Job No:** 12529997 | **Staff:** MM |

**Sampling Method:** Bailer
**Water Quality Meter:** YSI Pro Plus
**Initial Depth to Water:** 5.570 m bgl
**Depth of Pump:** N/A
**Depth to Water (after pump):** N/A
**Measured Depth of Well:**
**Any Sediment at Base of Well:**

| Low Flow Settings | |
|---|---|
| CPM: | |
| Discharge: | |
| Refill: | |
| Pressure: | |

**Gatic Type:** Flush / Monument
**Gatic Maintanence:** Y / N *(If Y, provide comments)*
**Casing Diameter (mm):** 25 / 50 / 100

**Screen Interval:** 17.0 - 20.0
**Filter Pack:** N/A
**Depth of Well:**

| Time *every 5 minutes* | Flow rate (L/min) | Depth to Water (m TOC) | Cumulative Volume (L) | pH | Redox ( mV ) | DO ( ppm ) | Temp. ( °c ) | EC ( µS ) | Comments (colour, turbidity, odour) |
|---|---|---|---|---|---|---|---|---|---|
| *Stable after three consecutive readings* | | *stable* | | *± 0.05* | *± 10 mV* | *± 10%* | *± 0.5 °C* | *± 3%* | *e.g. ,pale grey, low, none* |
| | | | | | | | | | |
| 13:59 | N/A | | 4 | 8.10 | 17.7 | 6.96 | 16.7 | 3,380 | pale grey, low to moderate, none |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Primary sample ID: BH04
Duplicate ID:
Triplicate ID:
Rinsate ID:

Air bubbles in vials: Y / N
Metals field filtered: Y / N
Equipment decontaminated: Y / N
Samples placed on ice: Y / N

COC No.:
No. of sample bottles collected: 3

COMMENTS:

- metals bottle not filtered
- temporary PVC casing installed in borehole on 12 August 2020, screened 17 to 20 m, followed immediately by development.
- sample collected using a bailer on 13 August 2020, followed immediately by removal of casing and backfilling of borehole

CALCULATIONS

Job no. 12529997 Sheet 1 of 1
Calcs by MM Date
Checked by Date

Client APA
Project WORM
Subject Groundwater Sampling Record

GHD

Bore ID: BH09 Gatic: Flush SWL (m TOC): 8.140
Method: Low Flow Casing: 50mm ID Pump Depth: 10.00
WQM: YSI Pro Plus Screen: 9.0 - 12.0 SWL with Pump (m TOC): 8.054

Low Flow Settings: CPM 4 Discharge 2 Refill 13 Pressure 36 psi 09.09.2020

| Time | Flow Rate (L/min) | SWL (m TOC) | Cumulative Volume (L) | pH | Redox (mV) | DO (mg/L) | Temp (°C) | EC (µS/cm) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 10.22 | 0.25 | 8.206 | 0.50 | 7.69 | 84.9 | 5.63 | 14.7 | 6972 | pale brown, bio-mod., none |
| 10.27 | - | 8.220 | 1.75 | 7.16 | 89.4 | 4.64 | 15.2 | 7104 | " " |
| 10.32 | - | - | 3.00 | 6.82 | 91.0 | 4.46 | 15.2 | 7104 | " " |
| 10.37 | - | - | 4.25 | 6.73 | 94.2 | 4.44 | 15.5 | 7132 | " " |
| 10.42 | - | - | 5.50 | 6.68 | 95.6 | 4.12 | 15.6 | 7120 | " " |
| 10.47 | - | - | 6.75 | 6.68 | 95.5 | 4.17 | 15.7 | 7118 | " " |
| 10.52 | - | - | 8.00 | 6.70 | 94.2 | 4.16 | 15.7 | 7117 | " " |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Sample ID: BH09, QC1, QC2
No. of Sample Bottles: 9

Not stored

GHD Pty Ltd ABN 39 008 488 373

CALCULATIONS

Client APA Job no. 12529997 Sheet 1 of 1
Project WORM Calcs by MM Date
Subject Groundwater Sampling Record Checked by Date

Bore ID: BH11 Gatic: Flush SWL (m TOC): 8.469
Method: Bailer Casing: 50mm ID Pump Depth: N/A
WQM: YSI Pro Plus Screen: SWL with Pump (m TOC): N/A

Low Flow Settings: CPM 4 Discharge - Refill - Pressure - 26.08.2020

| Time | Flow Rate (L/min) | SWL (m TOC) | Cumulative Volume (L) | pH | Redox (mV) | DO (mg/L) | Temp (°C) | EC (µS/cm) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 9:30 | - | DRY | 7 | 7.83 | 86.9 | 6.39 | 14.6 | 2586 | clear, low, none |
| | | | | | | | | | " " |
| | | | | | | | | | " " |
| | | | | | | | | | " " |
| | | | | | | | | | " " |
| | | | | | | | | | " " |

Sample ID: BH11

No. of Sample Bottles: 3

GHD Pty Ltd ABN 39 008 488 373

CALCULATIONS

Client APA Job no. 12529997 Sheet 1 of 1
Project WORM Calcs by MM Date
Subject Groundwater Sampling Record Checked by Date

Bore ID: BH12 Gatic: Flush SWL (m TOC): 0.283
Method: Low Flow Casing: 50mm ID Pump Depth: 4.5
WQM: YSI Pro Plus Screen: 3.0 – 6.0 SWL with Pump (m TOC): 0.250

Low Flow Settings: CPM 4 Discharge 1.5 Refill 13.5 Pressure 30 psi 18.08.2020

| Time | Flow Rate (L/min) | SWL (m TOC) | Cumulative Volume (L) | pH | Redox (mV) | DO (mg/L) | Temp (°C) | EC (µS/cm) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 15:35 | 0.2 | 0.361 | 0.5 | 7.62 | 54.6 | 2.22 | 13.7 | 2411 | clear, low, none |
| 15:40 | – | 0.365 | 1.5 | 7.26 | 53.4 | 1.89 | 13.9 | 2425 | " " " |
| 15:45 | – | [illegible] | 2.5 | 7.19 | 51.0 | 1.81 | 13.9 | 2426 | " " |
| 15:50 | – | [illegible] | 3.5 | 7.15 | 50.0 | 1.74 | 13.8 | 2419 | " " |
| 15:55 | – | – | 4.5 | 7.14 | 49.7 | 1.67 | 13.8 | 2419 | " " |
| [illegible] | – | – | [illegible] | [illegible] | 71.1 | [illegible] | [illegible] | [illegible] | " " |

Sample ID: BH14

No. of Sample Bottles: 10

GHD Pty Ltd ABN 39 008 488 373

Client APA Project WORM Subject Groundwater Sampling Record

Job no. 12529997 Calcs by MM Checked by

Sheet 1 of 1 Date Date

Bore ID: BH14 Gatic: Flush SWL (m TOC): 1.480

Method: Low Flow Casing: 50mm ID Pump Depth: 7.5

WQM: YSI Pro Plus Screen: 6.0 - 9.0 SWL with Pump (m TOC): 1.062

Low Flow Settings: CPM 4 Discharge 1.5 Refill 13.5 Pressure 31 psi 18.08.2020

| Time | Flow Rate (L/min) | SWL (m TOC) | Cumulative Volume (L) | pH | Redox (mV) | DO (mg/L) | Temp (°C) | EC (µS/cm) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 12:50 | 0.2 | 1.215 | 0.1 | 8.38 | 104.0 | 5.98 | 14.7 | 1501 | pale grey, low, none |
| 12:55 | - | 1.748 | 1.1 | 7.85 | 93.8 | 5.02 | 15.1 | 1514 | clear, low, none |
| 13:00 | - | 2.183 | 2.1 | 7.74 | 85.9 | 5.23 | 15.1 | 1516 | " " |
| 13:05 | 0.1 | 2.234 | 2.6 | 7.72 | 78.8 | 5.10 | 14.8 | 1505 | " " |
| 13:10 | - | - | 3.1 | 7.69 | 73.9 | 4.98 | 14.6 | 1501 | " " |
| 13:15 | - | - | 3.6 | 7.67 | 71.1 | 4.92 | 14.7 | 1502 | " " |

Sample ID: BH14

No. of Sample Bottles: 10

GHD Pty Ltd 008 488 373

CALCULATIONS

Client APA Project WORM Subject Groundwater Sampling Record

Job no. 12529997 Calcs by MM Checked by

Sheet 1 of 1 Date Date

Bore ID: BH16 Gatic: Flush SWL (m TOC): 7.642

Method: Low Flow Casing: 50mm ID Pump Depth: 9.50

WQM: YSI Pro Plus Screen: 7.1 – 10.1 SWL with Pump (m TOC): 7.540

Low Flow Settings: CPM 4 Discharge 2 Refill 13 Pressure 25 psi 26.08.2020

| Time | Flow Rate (L/min) | SWL (m TOC) | Cumulative Volume (L) | pH | Redox (mV) | DO (mg/L) | Temp (°C) | EC (µS/cm) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 11:13 | 0.10 | 7.810 | 0.5 | 8.15 | 87.6 | 6.03 | 15.7 | 1348 | pale grey brown, low |
| 11:18 | – | – | 1.0 | 7.30 | 83.6 | 4.32 | 15.8 | 1351 | -moderate, none |
| 11:23 | – | – | 1.5 | 7.19 | 74.5 | 4.04 | 16.0 | 1355 | " " |
| 11:28 | – | 7.910 | 2.0 | 7.14 | 70.2 | 3.80 | 16.2 | 1355 | " " |
| 11:33 | – | 8.113 | 2.5 | 7.11 | 68.9 | 4.21 | 16.1 | 1328 | " " |
| 11:38 | – | 8.292 | 3.0 | 7.07 | 69.0 | 4.46 | 16.1 | 1323 | " " |
| 11:43 | – | 8.416 | 3.5 | 7.06 | 68.8 | 4.48 | 16.0 | 1329 | " " |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Sample ID: BH16

No. of Sample Bottles: 3

Water level would not stabilise

GHD Pty Ltd ABN

CALCULATIONS

Sheet 1 of 1

Job no. 12529997

Calcs by MM Date

Checked by Date

Client APA

Project WoRM

Subject Groundwater Sampling Record

Bore ID: BH22 Gatic: Flush SWL (m TOC): 27.085

Method: Low Flow Casing: 50mm ID Pump Depth: 29.00

WQM: YSI Pro Plus Screen: SWL with Pump (m TOC): 26.189

Low Flow Settings: CPM 4 Discharge 3.5 Refill 11.5 Pressure 62 psi 02.09.2020

| Time | Flow Rate (L/min) | SWL (m TOC) | Cumulative Volume (L) | pH | Redox (mV) | DO (mg/L) | Temp (°C) | EC (µS/cm) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 11.05 | 0.25 | 25.888 | 0.50 | 8.11 | -32.1 | 5.76 | 15.9 | 4948 | clear, low, H2S |
| 11.10 | – | 25.826 | 1.75 | 7.30 | -46.2 | 2.26 | 16.3 | 5022 | " " " |
| 11.15 | – | 25.803 | 3.00 | 7.14 | -53.2 | 2.05 | 16.5 | 5039 | " " |
| 11.20 | – | [illegible] | 4.25 | 7.11 | -55.9 | 1.98 | 16.5 | 5043 | " " |
| 11.25 | – | [illegible] | 5.50 | 7.10 | -55.2 | 2.05 | 16.5 | 5047 | " " |
| 11.30 | – | [illegible] | 6.75 | 7.09 | -54.9 | 2.08 | 16.5 | 5050 | " " |
| [illegible] | | | | | | | | | |

Sample ID: BH22

No. of Sample Bottles: 10

GHD Pty Ltd ABN 39 008 488 373

CALCULATIONS

Job no. 12529997 Sheet 1 of 1
Calcs by MM Date
Checked by Date

Client APA
Project WORM
Subject Groundwater Sampling Record

Bore ID: BH22 Gatic: Flush SWL (m TOC): 5.808
Method: Low Flow Casing: 50mm ID Pump Depth: 28.00
WQM: YSI Pro Plus Screen: 27.0 - 30.0 SWL with Pump (m TOC): 4.849

Low Flow Settings: CPM 4 Discharge 3.5 Refill 11.5 Pressure 65 psi 10.09.2020

| Time | Flow Rate (L/min) | SWL (m TOC) | Cumulative Volume (L) | pH | Redox (mV) | DO (mg/L) | Temp (°C) | EC (µS/cm) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 12.12 | 0.25 | 5.025 | 0.50 | 7.78 | 82.4 | 3.67 | 17.8 | 5257 | clear, low, none |
| 12.17 | - | 5.613 | 1.75 | 7.17 | 130.5 | 3.17 | 17.1 | 5146 | " " |
| 12.22 | - | 6.402 | 3.00 | 6.92 | 159.2 | 3.08 | 17.0 | 5135 | " " |
| 12.27 | 0.15 | 6.898 | 3.75 | 6.86 | 169.0 | 2.92 | 16.9 | 5125 | " " |
| 12.32 | - | 7.014 | 4.50 | 6.85 | 166.4 | 2.88 | 16.9 | 5129 | " " |
| 12.37 | 0.10 | 7.170 | 5.00 | 6.84 | 168.8 | 2.82 | 16.9 | 5111 | " " |
| 12.42 | - | 7.269 | 5.50 | 6.87 | 167.1 | 2.83 | 16.9 | 5115 | " " |

Sample ID: BH22 - 202

No. of Sample Bottles: 10

Water level would not stabilise

GHD Pty Ltd ABN 39 008 488 373

Checked by | Date

CALCULATIONS

Client APA | Project WORM | Subject Groundwater Sampling Record

Job no. 12529997 | Calcs by MM | Checked by | Date

Sheet 1 of 1

Bore ID: BH23A | Gatic: Flush | SWL (m TOC): 3.360

Method: Low Flow | Casing: 50mm ID | Pump Depth: 23.0

WQM: YSI Pro Plus | Screen: 22.0 – 25.0 | SWL with Pump (m TOC): 2.521

Low Flow Settings: CPM 4 | Discharge 2.5 → 1.5 | Refill 12.5 → 13.5 | Pressure 55 psi | 19.08.2020

| Time | Flow Rate (L/min) | SWL (m TOC) | Cumulative Volume (L) | pH | Redox (mV) | DO (mg/L) | Temp (°C) | EC (µS/cm) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 12.54 | 0.2 | 2.682 | 0.5 | 7.73 | 27.7 | 3.09 | 13.7 | 4443 | clear, low, none |
| 12.59 | – | 3.264 | 1.5 | 7.04 | 51.3 | 2.36 | 15.4 | 4660 | " " " |
| 13.04 | – | 3.830 | 2.5 | 6.85 | 69.9 | 2.34 | 15.4 | 4669 | " " |
| 13.09 | – | 4.415 | 3.5 | 6.77 | 85.2 | 2.21 | 15.5 | 4676 | " " |
| 13.14 | 0.1 | 4.546 | 4.0 | 6.75 | 88.6 | 2.22 | 14.6 | 4591 | " " |
| 13.19 | – | 4.595 | 4.5 | 6.74 | 92.3 | 2.21 | 14.4 | 4556 | " " |
| 13.24 | – | 4.631 | 5.0 | 6.73 | 94.9 | 2.19 | 14.4 | 4540 | " " |

Sample ID: BH23A

No. of Sample Bottles: 10

GHD Pty Ltd ABN 39 008 488 373

Bore ID: BH32 Gatic: Flush SWL (m TOC): 7.291
Method: Low Flow Casing: 50mm ID Pump Depth: 14.50
WQM: YSI Pro Plus Screen: SWL with Pump (m TOC): 6.838

Low Flow Settings: CPM 4 Discharge 1.5 Refill 13.5 Pressure 42 psi 20.08.2020

| Time | Flow Rate (L/min) | SWL (m TOC) | Cumulative Volume (L) | pH | Redox (mV) | DO (mg/L) | Temp (°C) | EC (µS/cm) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 9.45 | 0.15 | 7.165 | 0.50 | 7.93 | 53.2 | 3.14 | 15.0 | 8162 | clear, low, none |
| 9.50 | – | 7.359 | 1.25 | 7.49 | 51.7 | 2.46 | 15.4 | 8290 | " " " |
| 9.55 | – | 7.499 | 2.00 | 7.37 | 47.0 | 2.14 | 15.4 | 8297 | " " |
| 10.00 | – | 7.580 | 2.75 | 7.33 | 43.9 | 2.01 | 15.6 | 8347 | " " |
| 10.05 | – | 7.588 | 3.50 | 7.33 | 42.3 | 2.10 | 15.3 | 8279 | " " |
| 10.10 | – | 7.590 | 4.25 | 7.31 | 42.9 | 2.11 | 15.2 | 8245 | " " |
| [illegible] | – | [illegible] | 5.0 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | " " |

Sample ID: BH32
No. of Sample Bottles: 10

Client APA Job no. 12529997 Sheet 1 of 1
Project WORM Calcs by MM Date
Subject Groundwater Sampling Record Checked by Date

CALCULATIONS

GHD Pty Ltd ABN 39 008 488 373

# Purging and Sampling Record

Bore ID: WORMBH15

**Job Information**
Client: APA
Project: WORM pipeline
Proj. No.: 12529997/08
Sampler: ADW

**Sampling Information**
Sample Method: micropurge
WQ Meter Type: ys1
Flow Cell: (Y)/ N  Pump Depth: 18 m
WLevel Meter Type: Dip/Interface/ fox
NAPL Check: Nil

**Bore Information**
SWL: 1.84 m  Logic Check: ✓
Date: 29/10/2020  Time: 14:10
Ref.datum: PVC  Stick Up: 0 m
Bore Depth: 20 m  Bore Diam.: 50 mm
Screen From: ~~17~~ to ~~20~~ m  Well Cap Secure? ✓

| Time (.....) | Volume (L) | Temp (°C) | pH (pH units) | Elec.Cond (µS/cm) | Dis.Oxygen (mg/L) | Ox-Red Pt. (± mV) | SWL (m) | (pf/df) | Comment: Colour, turbidity, sediment load, sheen, odour, flow rate purged dry? |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1.12 | | w/ pump in place |
| 14:25 | | | | Start purging | | | | 50/15 | |
| 14:40 | 0.5 | 15.5 | 6.38 | 8684 | 4.43 | 125 | 1.69 | | Clear, sed free, no odour |
| 14:47 | 1 | 15.7 | 6.33 | 8683 | 2.19 | 115.8 | 1.85 | | |
| 14:53 | 1.5 | -"- | 6.36 | 8668 | 0.81 | 115.4 | 2.01 | | |
| 14:59 | 2 | -"- | 6.38 | 8669 | 0.61 | 120.3 | 2.12 | | |
| ~~15:06~~ 15:00 | 2.5 | 15.8 | 6.39 | 8649 | 0.53 | 126.2 | 2.15 | | |
| 15:11 | 3 | 15.8 | 6.40 | 8672 | 0.55 | 127.3 | 2.25 | | |
| | | | | | Sampled | | | | |
| 15:45 | | | | | | | 2.43 | | @ end of sampling |
| | | flow rate @ ~1 Lpm, ie. v. slow. stable. | | | | | water level keeps falling but other parameters | | |

**Field QA Checks:**
Air bubbles in vials? Y / (N)  Any violent reactions? Y / (N)
Decontamination as per GHD procedure? (Y)/ N
Was sampling equipment pre-cleaned? (Y)/ N
COC updated? (Y)/ N  Parameter Stabilisation(5%) (Y)/ N

| Parameters | BTEX | TPH | PAH | CHC | PCB | OCP | OPP | Tot. Metal | Biol. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservatives | | | | | | | | | | | | | |

Comment: Duplicate samples collected, bottles used, access, condition of headworks etc

**Purge Volumes**

| Casing Int. Dia (mm) | 50 | 100 | 150 |
|---|---|---|---|
| Vol (L/m of casing) | 2.0 | 7.9 | 17.7 |

# Purging and Sampling Record

Bore ID: BH22

**Job Information**
Client: APA
Project: WORM pipeline
Proj. No.: 12529997/08
Sampler: ADW

**Sampling Information**
Sample Method: microPurge
WQ Meter Type: YSI
Flow Cell: (Y) N
Pump Depth: 28 m
WLevel Meter Type: Dip/Interface/ fox
NAPL Check: Nil

**Bore Information**
SWL: 5.70 m
Date: 29/Oct/2020
Ref.datum: PVC
Bore Depth: 30 m
Screen From: 27 to 30 m
Logic Check: ✓
Time: 10:35
Stick Up: 0 m
Bore Diam.: 50 mm
Well Cap Secure? ✓

| Time (.....) | Volume (L) | Temp (°C) | pH (pH units) | Elec.Cond (µS/cm) | Dis.Oxygen (mg/L) | Ox-Red Pt. (± mV) | SWL (m) | (rf/rd) | Comment: Colour, turbidity, sediment load, sheen, odour, flow rate purged dry? |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 4.66 | | w/ pump in place |
| 10:55 | Start purging | | | | | | | 45/102 | |
| 11:21 | 0.5 | 20.5 | 6.80 | 7884 | 4.17 | 95.3 | 5.23 | 50/15 | Clear, no sed, no odour |
| 11:26 | 1 | 20.3 | 6.86 | 7347 | 4.81 | 59.7 | 5.45 | | |
| 11:32 | ~1.2 | 19.5 | 6.88 | 7373 | 5.96 | -12.7 | 5.62 | 45/15 | |
| 11:36 | 1.5 | 18.6 | 6.86 | 7401 | 5.74 | -42.1 | 5.82 | | |
| 11:40 | 2 | 19.2 | 6.89 | 7293 | 5.05 | -70.9 | 6.01 | | |
| 11:46 | 2.5 | 17.6 | 6.86 | 7364 | 4.81 | -84.1 | 6.23 | 50/15 | |
| 11:51 | 3 | 16.9 | 6.86 | 7428 | 4.59 | -85.2 | 6.33 | | |
| | | | Sampled | | | | 6.80 | | @ end of sampling |
| | | | | | | | | | |
| Flow rate set @ 1 LPM (v. slow) but water level keeps falling - similar to last sampling event. | | | | | | | | | |

**Field QA Checks:**
Air bubbles in vials? Y / (N) Any violent reactions? Y / (N)
Decontamination as per GHD procedure? (Y) N
Was sampling equipment pre-cleaned? (Y) / N
COC updated? (Y) / N Parameter Stabilisation(5%) Y / N

| Parameters | BTEX | TPH | PAH | CHC | PCB | OCP | OPP | Tot. Metal | Biol. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservatives | | | | | | | | | | | | | |

**Comment:** Duplicate samples collected, bottles used, access, condition of headworks etc

Logger removed from bore during sampling

**Purge Volumes**

| Casing Int. Dia (mm) | 50 | 100 | 150 |
|---|---|---|---|
| Vol (L/m of casing) | 2.0 | 7.9 | 17.7 |

*Double for gravel pack

# Purging and Sampling Record

**Bore ID:** WORMBH23a

**Job Information**
- Client: APA
- Project: WORM pipeline
- Proj. No.: 12529997/08
- Sampler: ADW

**Sampling Information**
- Sample Method: Micro purge
- WQ Meter Type: YSI
- Flow Cell: (Y) / N  Pump Depth: 24 m
- WLevel Meter Type: Dip/Interface/ fox
- NAPL Check: N

**Bore Information**
- SWL: 3.39 m  Logic Check: ✓
- Date: 29 Oct 2020  Time: 08:25
- Ref.datum: PVC  Stick Up: 0 m
- Bore Depth: 25 m  Bore Diam.: 50 mm
- Screen From: 22 to 25 m  Well Cap Secure? ✓

| Time (.....) | Volume (L) | Temp (°C) | pH (pH units) | Elec.Cond (µS/.....) | Dis.Oxygen (mg/L....) | Ox-Red Pt. (± mV) | SWL (m) | (pf/pd.) | Comment: Colour, turbidity, sediment load, sheen, odour, flow rate purged dry? |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 2.35 | ~~soft~~ | w/ pump in place |
| 08:39 | Start purging | | | | | | | 54/10 | |
| 08:52 | 0.2 | 15.2 | 6.87 | 7110 | 8.19 | -118.4 | 2.73 | 54/12 | clear, sed free, mod $H_2S$ odour |
| 08:58 | 0.5 | 15.3 | 6.84 | 7027 | 8.31 | -135.5 | 2.86 | | |
| 09:08 | 1 | 15.7 | 6.82 | 7025 | 7.59 | -142.7 | 3.11 | | |
| 09:14 | 1.5 | 15.1 | 6.81 | 7038 | 7.07 | -155.7 | 3.35 | | " " , slight $H_2S$ odour |
| 09:21 | 2 | 15.8 | 6.81 | 7010 | 6.13 | -161.8 | 3.52 | | |
| 09:27 | 2.5 | 15.2 | -"- | 7026 | 4.97 | -172.7 | 3.78 | | |
| 09:31 | 3 | 15.3 | 6.81 | 7003 | 4.27 | -177 | 3.88 | | |
| 09:35 | 3.5 | 15.2 | 6.81 | 7025 | 3.70 | -179 | 4.04 | | |
| | | | | Sampled | | | 4.46 | | (End of sampling) |
| | Flow rate set at less than 1CPM (v slow) | | | | | | | | but SWL keeps falling |
| | other parameters stable. | | | | | | | | |

**Field QA Checks:**
Air bubbles in vials? Y / N  Any violent reactions? Y / N
Decontamination as per GHD procedure? (Y) N
Was sampling equipment pre-cleaned? (Y) N
COC updated? (Y) / N  Parameter Stabilisation(5%) Y / N

| Parameters / Preservatives | BTEX | TPH | PAH | CHC | PCB | OCP | OPP | Tot. Metal | Biol. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | |

**Comment:** Duplicate samples collected, bottles used, access, condition of headworks etc
Logger removed from bore during sampling

Was sample Field Filtered for Metals? ~~Y/N~~

**Purge Volumes**

| Casing Int. Dia (mm) | 50 | 100 | 150 |
|---|---|---|---|
| Vol (L/m of casing) | 2.0 | 7.9 | 17.7 |

*Double for gravel pack

# Purging and Sampling Record

**Bore ID:** WORMBH27

| Job Information | Sampling Information | Bore Information |
|---|---|---|
| **Client:** APA | **Sample Method:** mini pump | **SWL:** 2.43 m **Logic Check:** ✓ |
| **Project:** WORM pipeline | **WQ Meter Type:** YSI | **Date:** 28/Oct/2020 **Time:** 09:10 |
| | **Flow Cell:** (Y) / N **Pump Depth:** 18 m | **Ref.datum:** RVS **Stick Up:** 0 m |
| **Proj. No.:** 12529997/08 | **WLevel Meter Type:** Dip/Interface/ fox | **Bore Depth:** 20 m **Bore Diam.:** 50 mm |
| **Sampler:** AOW | **NAPL Check:** Nil | **Screen From:** 17 to 20 m **Well Cap Secure?** ✓ |

| Time (.....) | Volume (L) | Temp (°C) | pH (pH units) | Elec.Cond (µS.....) | Dis.Oxygen (.....) | Ox-Red Pt. (± mV) | SWL (m) | (pf.lpd.) | Comment: Colour, turbidity, sediment load, sheen, odour, flow rate purged dry? |
|---|---|---|---|---|---|---|---|---|---|
| @ | | | | | | | 2.0 | | w/ pump in place |
| 09:24 | | — | Start purging | | — | | | 5/6 | |
| 09:35 | | NO water - check pump/sample line. All ok. kink in hose in bucket. | | | | | | | |
| 09:46 | 0.5 | 14.3 | 9.35 | 2118 | 5.0 | 87.3 | 2.45 | 5/10 | clear, sed free, no odour |
| 09:54 | 1 | 14.6 | 8.76 | 2370 | 4.58 | 101.3 | 2.66 | | |
| 09:59 | 1.5 | 14.7 | 8.65 | 2376 | 3.29 | 101.9 | 2.73 | | |
| 10:04 | 2 | 14.6 | 8.64 | 2367 | 2.79 | 101.3 | 2.89 | | |
| 10:09 | 2.5 | 14.5 | 8.61 | 2352 | 2.45 | 102 | 2.96 | | |
| 10:13 | 3 | 14.7 | 8.58 | 2356 | 2.31 | 102.2 | 3.02 | | |
| 10:18 | 3.5 | 14.6 | 8.56 | 2352 | 2.16 | 102.3 | 3.07 | | |
| | | | | — Sampled | | | — | — | |
| | | | | | | | | | |
| 10:50 | | — | End sampling | | | — | 3.26 | | |
| | | | | | | | | | |
| | | Flow rate set @ 1 L/m (v. slow) | | | | | | but water levels still falling | |
| | | Other parameters stable. | | | | | | | |

*Field QA Checks:*
Air bubbles in vials? Y / (N) Any violent reactions? Y / (N)
Decontamination as per GHD procedure? (Y) N
Was sampling equipment pre-cleaned? (Y) N
COC updated? (Y) N Parameter Stabilisation(5%) (Y) N

| Parameters | BTEX | TPH | PAH | CHC | PCB | OCP | OPP | Tot. Metal | Biol. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservatives | | | | | | | | | | | | | |

**Comment:** Duplicate samples collected, bottles used, access, condition of headworks etc

Logger removed during sampling

*Was sample Field Filtered for Metals?* (Y) N

*Purge Volumes*

| Casing Int. Dia (mm) | 50 | 100 | 150 |
|---|---|---|---|
| Vol (L/m of casing) | 2.0 | 7.9 | 17.7 |

*Double for gravel pack

# Purging and Sampling Record

**Bore ID:** WormBH49

| Job Information | Sampling Information | Bore Information |
|---|---|---|
| **Client:** APA | **Sample Method:** Micropurge | **SWL:** 2.17 m **Logic Check:** ✓ |
| **Project:** WORM pipeline | **WQ Meter Type:** YSI | **Date:** 27/Oct/2020 **Time:** 14:50 |
| | **Flow Cell:** (Y) N **Pump Depth:** ..... m | **Ref.datum:** PVC **Stick Up:** 0 m |
| **Proj. No.:** 12529997/08 | **WLevel Meter Type:** Dip/Interface/ fox | **Bore Depth:** 20 m **Bore Diam.:** 50 mm |
| **Sampler:** ADW. | **NAPL Check:** N/A | **Screen From:** 17 to 20 m **Well Cap Secure?** ✓ |

| Time (.....) | Volume (L) | Temp (°C) | pH (pH units) | Elec.Cond (µS.....) | Dis.Oxygen (mg/L...) | Ox-Red Pt. (± mV) | SWL (m) | (~~GPM~~.....) | Comment: Colour, turbidity, sediment load, sheen, odour, flow rate purged dry? |
|---|---|---|---|---|---|---|---|---|---|
| | — | | | | — | — | 1.55 | PF/PD | w/ pump in place |
| 15:08 | Start purging | | | | | | | 2 36/6 | — |
| 15:12 | 0.5 | 14.1 | 7.68 | 2550 | 6.82 | 102 | 1.97 | -"- | Clear, sed free |
| 15:15 | 1 | 14.2 | 7.75 | 2543 | 6.84 | 103.7 | 2.20 | 50/6 | — " — Slow purge rate |
| 15:18 | 1.5 | 14.3 | 7.76 | 2542 | 6.60 | 104.8 | 2.46 | | Clear, sed free, no odour. |
| 15:27 | 3 | 14.2 | 7.75 | 2538 | 6.40 | 107.9 | 2.83 | | — " — |
| 15:32 | 3.5 | 14.1 | 7.77 | 2533 | 6.29 | 108.8 | 3.01 | | — " — |
| | | | | — | Sampled | | — | — | |
| | | | | | | | | | |
| 16.00 | | All samples collected. SWL @ end: | | | | | 3.83 | | |
| | | | | | | | | | |
| | | | - Slow purging (1 GPM) | | | | w/ ~~static~~ WL | | Still falling, i.e. slow flow rate |
| | | | - Field parameters stabilised | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Field QA Checks:**
Air bubbles in vials? Y / (N) Any violent reactions? Y / (N)
Decontamination as per GHD procedure? (Y) / N
Was sampling equipment pre-cleaned? (Y) N
COC updated? (Y) / N Parameter Stabilisation(5%) (Y) / N

| Parameters | BTEX | TPH | PAH | CHC | PCB | OCP | OPP | Tot. Metal | Biol. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservatives | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | |

**Comment:** Duplicate samples collected, bottles used, access, condition of headworks etc

- WormBH49 (Rekool)
- Datalogger removed during sampling.

*Was sample Field Filtered for Metals?* (Y)/N

**Purge Volumes**

| Casing Int. Dia (mm) | 50 | 100 | 150 |
|---|---|---|---|
| Vol (L/m of casing) | 2.0 | 7.9 | 17.7 |

*Double for gravel pack

# Purging and Sampling Record

Bore ID: WORM BH09

**Job Information**

Client: APA
Project: WORM EES
Proj. No.: 12529997
Sampler: AOW

**Sampling Information**

Sample Method: Bail
WQ Meter Type: YSI
Flow Cell: Y / N  Pump Depth: — m
WLevel Meter Type: Dip/Interface/ fox
NAPL Check: N.I.

**Bore Information**

SWL: 7.94 m  Logic Check: ✓
Date: 2 Feb 2020  Time: 13:05
Ref.datum: P.VC  Stick Up: 0 m
Bore Depth: 12 m  Bore Diam.: 50 mm
Screen From: 9 to 12 m  Well Cap Secure? ✓

| Time (.....) | Volume (L) | Temp (°C) | pH (pH units) | Elec.Cond (mS.....) | Dis.Oxygen (%.....) | Ox-Red Pt. (± mV) | SWL (m) | (.....) | Comment: Colour, turbidity, sediment load, sheen, odour, flow rate purged dry? |
|---|---|---|---|---|---|---|---|---|---|
| 13:20 | 5 | 16.1 | 7.29 | 7930 | 77.1 | 165 | | | Light grey brown, silty - no odour |
| 13:24 | 10 | 15.9 | 7.52 | 9323 | 70.0 | 169.4 | | | |
| 13:27 | 15 | 16 | 7.54 | 9078 | 62.0 | 172.4 | | | |
| 13:30 | 20 | -"- | 7.55 | 9350 | 62.9 | 175.0 | | | |
| 13:33 | 25 | -"- | 7.56 | 9374 | 62.9 | 176.7 | | | |
| 13:35 | 30 | 15.8 | 7.58 | 9339 | 64.6 | 177.9 | | | |
| | | | | Sampled | | | | | |

Note: - Heavy rainfall in late Jan appears to have inundated this location. water in gatic (sucked out w/ syringe) & area boggy w/ roadside salt & puddles in road.
- Parked half on road / half shoulder to sample to avoid getting car bogged.

*Field QA Checks:*
Air bubbles in vials? Y / (N)  Any violent reactions? Y / (N)
Decontamination as per GHD procedure? (Y) / N
Was sampling equipment pre-cleaned? (Y) / N
COC updated? (Y) / N  Parameter Stabilisation(5%) (Y) / N

| Parameters | BTEX | TPH | PAH | CHC | PCB | OCP | OPP | Tot. Metal | Biol. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservatives | | | | | | | | | | | | | |

**Comment:** Duplicate samples collected, bottles used, access, condition of headworks etc

Was sample Field Filtered for Metals? (Y)N

*Purge Volumes*

| Casing Int. Dia (mm) | 50 | 100 | 150 |
|---|---|---|---|
| Vol (L/m of casing) | 2.0 | 7.9 | 17.7 |

*Double for gravel pack

# Purging and Sampling Record

Bore ID: 100mBH-11

**Job Information**

Client: APA
Project: WORM EES
Proj. No.: 12529997
Sampler: ADW.

**Sampling Information**

Sample Method: Bail
WQ Meter Type: YSI
Flow Cell: Y / (N) Pump Depth: — m
WLevel Meter Type: (Dip/Interface/ fox
NAPL Check: N/A

**Bore Information**

SWL: 8.36 m Logic Check: ✓
Date: 1 Feb 2021 Time: 16:10
Ref.datum: PVC Stick Up: 0 m
Bore Depth: 10 m Bore Diam.: 50 mm
Screen From: 7 to 10 m Well Cap Secure? ✓

| Time (.....) | Volume (L) | Temp (°C) | pH (pH units) | Elec.Cond (mS.....) | Dis.Oxygen (..%....) | Ox-Red Pt. (± mV) | SWL (m) | (.....) | Comment: Colour, turbidity, sediment load, sheen, odour, flow rate purged dry? |
|---|---|---|---|---|---|---|---|---|---|
| 16:30 | 4 | 16.4 | 7.08 | 4735 | 68.1 | 174.3 | | | grey, silty. |
| | Almost bailed dry @ 4L. Sample taken | | | | | | | | |

**Field QA Checks:**

Air bubbles in vials? Y / N Any violent reactions? Y / (N)
Decontamination as per GHD procedure? (Y) / N
Was sampling equipment pre-cleaned? (Y) / N
COC updated? (Y) / N Parameter Stabilisation(5%) Y / N

| Parameters | BTEX | TPH | PAH | CHC | PCB | OCP | OPP | Tot. Metal | Biol. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservatives | | | | | | | | | | | | | |

**Comment:** Duplicate samples collected, bottles used, access, condition of headworks etc

Was sample Field Filtered for Metals? (Y)/N

**Purge Volumes**

| Casing Int. Dia (mm) | 50 | 100 | 150 |
|---|---|---|---|
| Vol (L/m of casing) | 2.0 | 7.9 | 17.7 |

*Double for gravel pack

# Purging and Sampling Record

Bore ID: WORMBH12

**Job Information**

Client: APA

Project: WORM EES

Proj. No.: 12529997

Sampler: ADW

**Sampling Information**

Sample Method: micropurge

WQ Meter Type: YSI

Flow Cell: Y / N  Pump Depth: 5 m

WLevel Meter Type: Dip/Interface/ fox

NAPL Check: N/A

**Bore Information**

SWL: 1.30 m  Logic Check: ✓

Date: 2 Feb 2024  Time: 14:55

Ref.datum: PVC  Stick Up: 0 m

Bore Depth: 6 m  Bore Diam.: 50 mm

Screen From: 3 to 6 m  Well Cap Secure? ✓

| Time (.....) | Volume (L) | Temp (°C) | pH (pH units) | Elec.Cond (..µS.....) | Dis.Oxygen (..%.....) | Ox-Red Pt. (± mV) | SWL (m) | (Pl.Pd..) | Comment: Colour, turbidity, sediment load, sheen, odour, flow rate purged dry? |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1.27 | | w/ pump in place |
| 15:09 | Start purging | | | | | | | 2/6 | |
| 15:15 | 1 | 18.1 | 6.95 | 3831 | 16.2 | 207.5 | 1.32 | | clear, nosed, no odour |
| 15:18 | 1.5 | 17.2 | 6.96 | 3846 | 11.4 | 202.8 | 1.31 | | |
| 15:21 | 2 | 17.7 | 6.97 | 3805 | 12.4 | 199.3 | 1.30 | | |
| 15:25 | 2.5 | 17.1 | -11- | 3841 | 11.8 | 195.8 | 1.32 | | |
| 15:29 | 3 | 17.6 | 6.97 | 3820 | 13.1 | 192.6 | 1.31 | | |
| | | | | Sampled | | | | | |

**Field QA Checks:**

Air bubbles in vials? Y / N  Any violent reactions? Y / N

Decontamination as per GHD procedure? Y / N

Was sampling equipment pre-cleaned? Y / N

COC updated? Y / N  Parameter Stabilisation(5%) Y / N

| Parameters | BTEX | TPH | PAH | CHC | PCB | OCP | OPP | Tot. Metal | Biol. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservatives | | | | | | | | | | | | | |

**Comment:** Duplicate samples collected, bottles used, access, condition of headworks etc

Logger removed during sampling

Duplicate sample for ALS taken 'DUP01'

↳ No metals, oil & grease, BOD, TSS, MB HS

Was sample Field Filtered for Metals? Y/N

**Purge Volumes**

| Casing Int. Dia (mm) | 50 | 100 | 150 |
|---|---|---|---|
| Vol (L/m of casing) | 2.0 | 7.9 | 17.7 |

*Double for gravel pack

# Purging and Sampling Record

Bore ID: wormBH-14

**Job Information**

Client: APA
Project: WORM EES
Proj. No.: 12529997
Sampler: AOW

**Sampling Information**

Sample Method: Micropurge
WQ Meter Type: YSI
Flow Cell: (Y) N  Pump Depth: ~7.5 m
WLevel Meter Type: (Dip)/Interface/ fox
NAPL Check: N.I.A

**Bore Information**

SWL: 1.12 m  Logic Check: ✓
Date: 1 Feb 2021  Time: 11:30
Ref.datum: Bor  Stick Up: 0 m
Bore Depth: 9 m  Bore Diam.: 50 mm
Screen From: 6 to 9 m  Well Cap Secure? ✓

| Time (.....) | Volume (L) | Temp (°C) | pH (pH units) | Elec.Cond (..µS.....) | Dis.Oxygen (...%....) | Ox-Red Pt. (± mV) | SWL (m) | (L/m...) | Comment: Colour, turbidity, sediment load, sheen, odour, flow rate purged dry? |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.8 | | w/ pump in place |
| 11:52 | Start | Purging | | | | | | 2(6\|24) | |
| 12:03 | 0.52 | 17.9 | 7.37 | 1432 | 28.6 | -120.8 | 1.42 | | clear, sed free. Mod $H_2S$ odour |
| 12:09 | 0.5 | 17.8 | 7.32 | 1229 | 25.5 | -157.9 | 1.70 | 1(10\|50) | " " |
| 12:17 | 2 | 18.9 | 7.35 | 1301 | 27.3 | -167.6 | 1.78 | | " " |
| 12:22 | 2.5 | 18.8 | 7.41 | 1572 | 28.6 | -157.7 | 1.84 | | " " |
| 12:26 | 3 | 19.1 | 7.43 | 1713 | 27.7 | -145.2 | 1.86 | | Clear, sed free, slight $H_2S$ odour. |
| 12:33 | 3.5 | 19 | -"- | 1864 | 32.0 | -122.4 | 1.90 | | " " |
| 12:38 | 4 | 19 | 7.44 | 1921 | 28.7 | -115 | 1.95 | | " " |
| | | | | Sampled | | | | | |
| | | | | | | | | | |
| | | | | Lubricant noticed on pump (prior to use). Confirmed w/ Hydroterra that lubricant is Silicon gel. Hydroterra to send SDS for lubricant. | | | | | |

**Field QA Checks:**

Air bubbles in vials? Y / (N)  Any violent reactions? Y / (N)
Decontamination as per GHD procedure? (Y) / N
Was sampling equipment pre-cleaned? (Y) / N
COC updated? (Y) / N  Parameter Stabilisation(5%) (Y) / N

| Parameters | BTEX | TPH | PAH | CHC | PCB | OCP | OPP | Tot. Metal | Biol. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservatives | | | | | | | | | | | | | |

**Comment:** Duplicate samples collected, bottles used, access, condition of headworks etc
- Donnybrook Rd
- Logger removed during sampling

Was sample Field Filtered for Metals? (Y)/N

**Purge Volumes**

| Casing Int. Dia (mm) | 50 | 100 | 150 |
|---|---|---|---|
| Vol (L/m of casing) | 2.0 | 7.9 | 17.7 |

*Double for gravel pack

# Purging and Sampling Record

Bore ID: WORM BH 16

**Job Information**

Client: APA

Project: WORM EES

Proj. No.: 12529997

Sampler: ADW

**Sampling Information**

Sample Method: Bail

WQ Meter Type: YSI

Flow Cell: Y / N  Pump Depth: ✓ m

WLevel Meter Type: Dip/Interface/ fox

NAPL Check: N/A

**Bore Information**

SWL: 7.14 m  Logic Check: ✓

Date: 1 Feb 2021  Time: 14:30

Ref.datum: ROC  Stick Up: 0 m

Bore Depth: 10 m  Bore Diam.: ✓ mm

Screen From: 7 to 10 m  Well Cap Secure? Y

| Time (.....) | Volume (L) | Temp (°C) | pH (pH units) | Elec.Cond (..mS....) | Dis.Oxygen (...%....) | Ox-Red Pt. (± mV) | SWL (m) | (.....) | Comment: Colour, turbidity, sediment load, sheen, odour, flow rate purged dry? |
|---|---|---|---|---|---|---|---|---|---|
| 14:33 | 5 | 16.5 | 6.74 | 1854 | 64.8 | 144.8 | | | Light red, silty. |
| 14:36 | 10 | 16.3 | 6.77 | 1856 | 55.7 | 77.4 | | | Mod-dark red, silty |
| 14:46 | 15 | 16.4 | 6.87 | 1881 | 50.0 | 80.3 | | | —"— |
| 14:50 | 20 | —"— | 6.92 | 1892 | 35.8 | 0.7 | | | Dark red-brown, silty. |
| | | | | | | | | | |
| • | Almost bailed dry - bailer @ base of bore w/ minimal water recovered in bailer | | | | | | | | |
| • | Sampled | | | | | | | | |
| | | Bailed dry during sampling. Insuff water for E.coli, Oil & grease, surfactants | | | | | | | |

**Field QA Checks:**

Air bubbles in vials? Y / N  Any violent reactions? Y / N

Decontamination as per GHD procedure? Y / N

Was sampling equipment pre-cleaned? Y / N

COC updated? Y / N  Parameter Stabilisation(5%) Y / N

| Parameters | BTEX | TPH | PAH | CHC | PCB | OCP | OPP | Tot. Metal | Biol. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservatives | | | | | | | | | | | | | |

**Comment:** Duplicate samples collected, bottles used, access, condition of headworks etc

Was sample Field Filtered for Metals? Y/N

**Purge Volumes**

| Casing Int. Dia (mm) | 50 | 100 | 150 |
|---|---|---|---|
| Vol (L/m of casing) | 2.0 | 7.9 | 17.7 |

*Double for gravel pack

# Purging and Sampling Record

Bore ID: WORM BH22

**Job Information**

Client: APA

Project: WORM EES

Proj. No.: 12529997

Sampler: tow

**Sampling Information**

Sample Method: Micropurge

WQ Meter Type: 491

Flow Cell: (Y) / N  Pump Depth: ~28 m

WLevel Meter Type: (Dip)/Interface/ fox

NAPL Check: N/A

**Bore Information**

SWL: 6.14 m  Logic Check: ✓

Date: 3 Feb 2021  Time: 15:00

Ref.datum: PVC  Stick Up: 0 m

Bore Depth: 30 m  Bore Diam.: 50 mm

Screen From: 27 to 30 m  Well Cap Secure? ✓

| Time (.....) | Volume (L) | Temp (°C) | pH (pH units) | Elec.Cond (.....) | Dis.Oxygen (.....) | Ox-Red Pt. (± mV) | SWL (m) | (pf/pd.) | Comment: Colour, turbidity, sediment load, sheen, odour, flow rate purged dry? |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 5.04 | | w/ pump in place |
| 15:08 | Start | Purge | | | | | | 30/15 | |
| 15:39 | 0.5 | 19.8 | 7.09 | 7039 | 32.7 | 67 | 5.73 | | Clear, no sed, no odour. |
| 15:42 | 1 | 19.5 | 6.99 | 7092 | 14.4 | 8.7 | 5.91 | | ↓ ↓ |
| 15:45 | 1.5 | 19.2 | 7.00 | 7118 | 6.1 | -32.6 | 6.14 | | |
| 15:48 | 2 | 19.1 | 7.01 | 7115 | 4.8 | -42.1 | 6.27 | | |
| 15:52 | 2.5 | 18.9 | 7.02 | 7110 | 4.2 | -54.4 | 6.42 | 40/15 | Slow purge rate |
| 15:55 | 3 | 18.5 | -"- | 7084 | 3.5 | -68 | 6.62 | | Clear, sed free, no odour. |
| 15:59 | 3.5 | 19 | 7.03 | 7070 | 3.1 | -80.1 | 6.82 | 45/15 | SWL will not stabilise (as per previous sampling) |
| | | Sampled | | | | | | | |
| | | | | | | | 7.97 | | => @ end of sampling |

**Field QA Checks:**

Air bubbles in vials? Y / (N)  Any violent reactions? Y / (N)

Decontamination as per GHD procedure? (Y) / N

Was sampling equipment pre-cleaned? (Y) / N

COC updated? (Y) / N  Parameter Stabilisation(5%) (Y) / N

| Parameters | BTEX | TPH | PAH | CHC | PCB | OCP | OPP | Tot. Metal | Biol. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservatives | | | | | | | | | | | | | |

**Comment:** Duplicate samples collected, bottles used, access, condition of headworks etc  TB01  RB01 from pump.

Was sample Field Filtered for Metals? (Y)/N

**Purge Volumes**

| Casing Int. Dia (mm) | 50 | 100 | 150 |
|---|---|---|---|
| Vol (L/m of casing) | 2.0 | 7.9 | 17.7 |

*Double for gravel pack

# Purging and Sampling Record

**Bore ID:** WORMBH23a

**Job Information**
Client: APA
Project: WORM EES
Proj. No.: 12529997
Sampler: dow

**Sampling Information**
Sample Method: Micro purge
WQ Meter Type: YSI
Flow Cell: (Y)/N Pump Depth: .....m
WLevel Meter Type: Dip/Interface/ fox
NAPL Check: N/A

**Bore Information**
SWL: 3.57 m Logic Check: ✓
Date: 3 Feb 2021 Time: 12:30
Ref.datum: PVC Stick Up: 0 m
Bore Depth: 25 m Bore Diam.: 50 mm
Screen From: 22 to 25 m Well Cap Secure? ✓

| Time (.....) | Volume (L) | Temp (°C) | pH (pH units) | Elec.Cond (.mS.....) | Dis.Oxygen (....%....) | Ox-Red Pt. (± mV) | SWL (m) | (pf/pd.) | Comment: Colour, turbidity, sediment load, sheen, odour, flow rate purged dry? |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 2.57 | | ↓ pump in place |
| 12:45 | — | — | Start purging | | | — | 28 | 50/10 | |
| 13:13 | 0.5 | 24.8 | 7.09 | 6843 | 16 | -112.4 | 3.14 | 50/15 | clear, sed free. Slight $H_2S$ odour. |
| 13:16 | 1 | 24.3 | 6.99 | 6879 | 14.2 | -103.8 | 3.23 | | |
| 13:23 | 1.5 | 23.7 | 6.92 | 6831 | 6.5 | -101.3 | 3.43 | | |
| 13:32 | 2 | —"— | —"— | 6817 | 6.0 | -107.9 | 3.52 | | |
| 13:38 | 2.5 | 23.6 | —"— | 6840 | 4.0 | -111.3 | 3.78 | | |
| 13:45 | 3 | 23.9 | 6.92 | 6808 | 3.4 | -112.4 | 3.95 | | |
| | | — | Sampled | | | — | | — | |
| | | | | | | | | | Water level will not stabilise (same as last sampling event). |

**Field QA Checks:**
Air bubbles in vials? Y / (N) Any violent reactions? Y / (N)
Decontamination as per GHD procedure? (Y) / N
Was sampling equipment pre-cleaned? (Y) / N
COC updated? (Y) / N Parameter Stabilisation(5%) (Y) / N

| Parameters | BTEX | TPH | PAH | CHC | PCB | OCP | OPP | Tot. Metal | Biol. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservatives | | | | | | | | | | | | | |

**Comment:** Duplicate samples collected, bottles used, access, condition of headworks etc

Was sample Field Filtered for Metals? (Y)/N

**Purge Volumes**

| Casing Int. Dia (mm) | 50 | 100 | 150 |
|---|---|---|---|
| Vol (L/m of casing) | 2.0 | 7.9 | 17.7 |

*Double for gravel pack

# Purging and Sampling Record

Bore ID: WORMBH-32

**Job Information**

Client: APA
Project: WORM EES
Proj. No.: 12529997
Sampler: ADW

**Sampling Information**

Sample Method: Micropurge
WQ Meter Type: YSI
Flow Cell: (Y) / N  Pump Depth: 18 m
WLevel Meter Type: Dip/Interface/ fox
NAPL Check: N/A

**Bore Information**

SWL: 7.14 m  Logic Check: ✓
Date: 02 Feb 2021  Time: 10:30
Ref.datum: pvc  Stick Up: 0 m
Bore Depth: 20 m  Bore Diam.: 50 mm
Screen From: 17 to 20 m  Well Cap Secure? ✓

| Time (.....) | Volume (L) | Temp (°C) | pH (pH units) | Elec.Cond (.....) | Dis.Oxygen (.....) | Ox-Red Pt. (± mV) | SWL (m) | pf/pd (.....) | Comment: Colour, turbidity, sediment load, sheen, odour, flow rate purged dry? |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 6.84 | | w/ pump in place |
| 10:51 | Start | purging | | | | | | 10/40 | |
| 11:01 | 0.5 | 16.5 | 7.20 | 11715 | 23.5 | 185.1 | 7.30 | | Clear, no sed, no odour |
| 11:05 | 1 | 16.4 | 7.27 | 11749 | 19.5 | 180.5 | 7.35 | | Cloudy, no sed, no odour |
| 11:10 | 1.5 | 17 | 7.25 | 11803 | 18.5 | 176.2 | 7.39 | | Cloudy to clear |
| 11:15 | 2 | 16.9 | 7.19 | 11872 | 15.8 | 173.5 | 7.42 | 12/40 | —"— |
| 11:20 | 2.5 | 16.5 | 7.06 | 11884 | 14.3 | 172.9 | 7.43 | | Clear to slighty cloudy. No sed, odour |
| 11:25 | 3 | 16.8 | 7.07 | 11890 | 20.0 | 171.2 | 7.51 | | —"— |
| 11:31 | 3.5 | 17.6 | 6.98 | 11842 | 21.4 | 170.2 | 7.53 | | —"— |
| 11:35 | 4 | 17.8 | 6.91 | 11934 | 13.5 | 169.7 | —"— | | —"— |
| | | | — | Sampled | — | | | | |
| | | | | | EC stable, DO (%) fluctuating, sux stable, ORP stable. | | | | |

**Field QA Checks:**

Air bubbles in vials? Y / (N)  Any violent reactions? Y / (N)
Decontamination as per GHD procedure? (Y) / N
Was sampling equipment pre-cleaned? (Y) / N
COC updated? (Y) / N  Parameter Stabilisation(5%) (Y) / N

| Parameters | BTEX | TPH | PAH | CHC | PCB | OCP | OPP | Tot. Metal | Biol. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservatives | | | | | | | | | | | | | |

**Comment:** Duplicate samples collected, bottles used, access, condition of headworks etc

Logger (RT & BT) removed from bore during sampling.

*Was sample Field Filtered for Metals?* (Y)/N

**Purge Volumes**

| Casing Int. Dia (mm) | 50 | 100 | 150 |
|---|---|---|---|
| Vol (L/m of casing) | 2.0 | 7.9 | 17.7 |

*Double for gravel pack

GHD

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## Groundwater Gauging Sheet

Client: APA
Project: WORM
Job No.: 12529997
Location: Vanous

WL Meter Type: Dip / Fox / Int.Fce / Oge
Date: 18/5/21
Time: —
Sampler: KC

| Location / Bore ID | Stick up (m) | Depth to LNAPL (mbTOC) | SWL (mbTOC) | Depth of Well (mbTOC) | Time | Comment |
|---|---|---|---|---|---|---|
| BH~~7~~9 | - | NO NAPL TONE | 1.866 | 19.91 | 0940 | - Logger SN 737849 Downloaded |
| | | | | | ↓ | |
| | | | | | 1100 | - water in gatic |
| | | | | | | ↳ put back in well. |
| BH27 | - | NO NAPL TONE | 2.673 | 19.92 | 1420 | - Logger SN 737912 Download |
| | | | | | ↓ | |
| | | | | | 1540 | |
| | | | | | | ↳ put back in well |
| BH14 | - | NO NAPL TONE | 1.212 | 9.00 | 1710 | - Logger SN 747500 Download |
| | | | | | ↓ | |
| | | | | | 1713 | |



Scanned with CamScanner

[Southern side of creek]

# Purging and Sampling Record

**Bore ID:** WORMBH27

| Job Information | Sampling Information | Bore Information |
|---|---|---|
| Client: APA | Purge Method: low flow | SWL(mbTOC): 2.673 m |
| Project: WORM | Sample Method: low flow | Logic Check: ✓ |
| Proj. No.: 12529997 | WQ Meter Type: YSI | Screen: From: 17 to 20 m |
| Sampler: KC | Flow Cell: Y / N | Stick Up: – m |
| Date: 18/5/21 | Pump Depth: 18.0 m | NAPL Check: NO NAPL TONE |
| Round: May 2021 | WLevel Meter Type: Dip / Fox / (Int.Fce) / Gge | Ref.datum: TOC |
| | Field Filtered? Y / N (filter vessel, disposable filter, filter/syringe) | Bore Depth: 19.92 m |
| | | Bore Diam.: 50 ✓ mm |
| | | Well Cap Secure? |

| Time (.....) | Volume (L) | Temp (°C) | pH (pH units) | Elec.Cond (µS/cm) | Dis.Oxygen (mg/L) | Ox-Red Pt. (± mV) | SWL (m TOC) | (LPM) | Comment: Colour, turbidity, sediment load, sheen, odour, flow rate, purged dry? |
|---|---|---|---|---|---|---|---|---|---|
| *Stable when (3 consecutive readings):* | - | *+/- 0.05 pH* | *+/- 3%* | *+/- 10%* | *+/- 10 mV* | *stable* | | | |
| | | | | | | | 2.105 | – | in pump |
| 1434 | 0 | 15.4 | 10.06 | 520 | 4.30 | -193.4 | 2.502 | 1 (50/10) | no colour, no turb, no o/sheen |
| 1439 | 0.5 | 15.6 | 9.04 | 1863 | 2.65 | -220.9 | 2.710 | " | " |
| 1444 | 1 | 15.7 | 8.62 | 2045 | 1.37 | -267.9 | 2.884 | " | " |
| 1449 | 1.5 | 15.7 | 8.55 | 2055 | 0.94 | -299.9 | 3.045 | " | low-med turb |
| 1454 | 2 | 15.7 | 8.56 | 2050 | 0.73 | -312.9 | 3.198 | " | " |
| 1459 | 2.5 | 15.7 | 8.57 | 2041 | 0.65 | -320.5 | 3.305 | " | " |
| 1504 | 3 | 15.7 | 8.57 | 2033 | 0.54 | -325.1 | 3.401 | " | " |
| 1509 | 3.5 | 15.7 | 8.57 | 2038 | 0.58 | -328.8 | 3.472 | " | " |
| SWL falling, parameters stable, sample @ 1510 | | | | | | | | | |

*Field QA Checks:*
Air bubbles in vials? Y / N Any violent reactions? Y / N
Decontamination as per GHD procedure? Y / N
Was sampling equipment pre-cleaned? Y / N
COC updated? Y / N

| Parameters | BTEX | TPH | PAH | CHC | PCB | OCP | OPP | Tot. Metal | Biol. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservatives | | | | | | | | | | | | | |

**Comment:** Duplicate samples collected, bottles used, access, condition of headworks etc

Logger removed while sampling.

*Purge Volumes*
Casing Int. Dia (mm) 50 100 150
Vol (L/m of casing) 2.0 7.9 17.7
*Double for gravel pack

QCO2 risate off pump

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# Purging and Sampling Record

[North side of Mervi creek]

Bore ID: WORM B.H 49

**Job Information**

Client: APA
Project: WORM
Proj. No.: 12529997
Sampler: KC
Date: 18/5/21
Round: May 2021

**Sampling Information**

Purge Method: low flow
Sample Method: low flow
WQ Meter Type: YSI
Flow Cell: (Y) / N
Pump Depth: 18 m
WLevel Meter Type: Dip / Fox / (Int.Fce) / Gge
Field Filtered? (Y) / N (filter vessel, disposable filter, filter/syringe)

**Bore Information**

SWL(mbTOC): 1.866 m
Logic Check:
Screen: From: 17 to 20 m
Stick Up: 0 m
NAPL Check: NO NAPL TONE
Bore Diam.: 50 mm
Ref.datum: TOC
Well Cap Secure? ✓
Bore Depth: 19.91 m

| Time (.....) | Volume (L) | Temp (°C) | pH (pH units) | Elec.Cond (mS/cm) | Dis.Oxygen (mg/L) | Ox-Red Pt. (± mV) | SWL (m TOC) | (CPM) | Comment: Colour, turbidity, sediment load, sheen, odour, flow rate, purged dry? |
|---|---|---|---|---|---|---|---|---|---|
| Stable when (3 consecutive readings): | | - | +/- 0.05 pH | +/- 3% | +/- 10% | +/- 10 mV | stable | (R/D) | |
| | | | | | | | 1.263 | - | w pump |
| 1014 | 0 | 14.8 | 7.77 | 1957 | 2.75 | -243.9 | 1.582 | 1 (50/10) | no colour, no turb, no/sheen |
| 1019 | 0.5 | 15.1 | 8.13 | 2063 | 1.91 | -271.6 | 1.945 | " | " |
| 1024 | 1 | 15.1 | 8.20 | 2126 | 1.45 | -336.2 | 2.164 | 1 (50/5) | " |
| 1029 | 1.5 | 15.2 | 8.18 | 2125 | 1.27 | -353.4 | 2.368 | " | " |
| 1034 | 2 | 15.3 | 8.17 | 2108 | 0.73 | -359.2 | 2.602 | " | " |
| 1039 | 2.5 | 15.3 | 8.16 | 2078 | 0.74 | -351.8 | 2.816 | " | " |
| 1044 | 3 | 15.3 | 8.14 | 2073 | 0.64 | -349.0 | 3.012 | " | " |
| | SWL | falling, slow flow rate, parameters stabile → sample @ 1046 | | | | | | | |

**Field QA Checks:**

Air bubbles in vials? Y / (N) Any violent reactions? Y / (N)
Decontamination as per GHD procedure? (Y) / N
Was sampling equipment pre-cleaned? (Y) / N
COC updated? (Y) / N

| Parameters | BTEX | TPH | PAH | CHC | PCB | OCP | OPP | Tot. Metal | Biol. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservatives | | | | | | | | | | | | | |

**Comment:** Duplicate samples collected, bottles used, access, condition of headworks etc

QC01 → Trip blank.

*Purge Volumes*

| Casing Int. Dia (mm) | 50 | 100 | 150 |
|---|---|---|---|
| Vol (L/m of casing) | 2.0 | 7.9 | 17.7 |

*Double for gravel pack

Logger removed during sampling.

Scanned with CamScanner

# Groundwater Sampling Sheet

**Bore ID:** WORM-BH22

| | |
|---|---|
| **Client:** APA | **Date:** 24.05.2021 |
| **Project:** APA WORM | **Time:** 10.20 |
| **Job No:** 12529997 | **Staff:** MM |

**Gatic Type:** Flush / Monument
**Gatic Maintanence:** Y / N *(If Y, provide comments)*
**Casing Diameter (mm):** 25 / 50 / 100

**Screen Interval:** 27.0 - 30.0
**Filter Pack:**
**Depth of Well:**

**Sampling Method:** Low Flow
**Water Quality Meter:** YSI Pro Plus
**Initial Depth to Water:** 6.225 m TOC
**Depth of Pump:** 28.000 m bgl
**Depth to Water (after pump):** 5.207 m TOC
**Measured Depth of Well:**
**Any Sediment at Base of Well:**

| Low Flow Settings | |
|---|---|
| CPM: | 4 |
| Discharge: | 3.5, 3 |
| Refill: | 11.5, 12 |
| Pressure: | 65 psi |

| Time *every 5 minutes* | Flow rate (L/min) | Depth to Water (m TOC) | Cumulative Volume (L) | pH | Redox (mV) | DO (ppm) | Temp. (°c) | EC (µS) | Comments (colour, turbidity, odour) |
|---|---|---|---|---|---|---|---|---|---|
| *Stable after three consecutive readings* | | *stable* | | *± 0.05* | *± 10 mV* | *± 10%* | *± 0.5°C* | *± 3%* | *e.g. ,pale grey, low, none* |
| 10.35 | 0.25 | 5.386 | 0.50 | 7.46 | 23.8 | 2.33 | 15.8 | 5444 | clear, low, none |
| 10.40 | - | 5.921 | 1.75 | 7.04 | -103.5 | 1.03 | 16.5 | 5701 | " " |
| 10.45 | - | 6.455 | 3.00 | 6.84 | -110.1 | 0.52 | 16.5 | 5676 | " " |
| 10.50 | - | 7.109 | 4.25 | 6.77 | -119.7 | 0.63 | 16.6 | 5617 | " " |
| 10.55 | 0.10 | 7.588 | 5.50 | 6.83 | -132.5 | 0.62 | 16.6 | 5598 | " " |
| 11.00 | - | 7.844 | 6.00 | 6.71 | -131.4 | 0.69 | 16.5 | 5580 | " " |
| 11.05 | - | 8.225 | 6.50 | 6.59 | -121.0 | 0.83 | 16.5 | 5591 | " " |
| 11.10 | - | 8.559 | 7.00 | 6.53 | -113.5 | 0.97 | 16.6 | 5588 | " " |
| 11.15 | - | 8.850 | 7.50 | 6.76 | -133.0 | 0.91 | 16.6 | 5605 | " " |
| 11.20 | - | 9.122 | 8.00 | 6.67 | -127.7 | 0.91 | 16.6 | 5613 | " " |
| 11.25 | - | 9.371 | 8.50 | 6.72 | -130.0 | 0.96 | 16.6 | 5621 | " " |

**Primary sample ID:** BH22
**Duplicate ID:**
**Triplicate ID:**
**Rinsate ID:**

**COC No.:**

**Air bubbles in vials:** Y / N
**Metals field filtered:** Y / N
**Equipment decontaminated:** Y / N
**Samples placed on ice:** Y / N

**No. of sample bottles collected:** 6

**COMMENTS:** Datalogger downloaded. Water level would not stabilise pH would not stabilise

# Groundwater Sampling Sheet

**Bore ID:** WORM-BH23A

| | |
|---|---|
| **Client:** APA | **Date:** 24.05.2020 |
| **Project:** APA WORM | **Time:** 8.20 |
| **Job No:** 12529997 | **Staff:** MM |

**Gatic Type:** Flush / Monument
**Gatic Maintanence:** Y / N *(If Y, provide comments)*
**Casing Diameter (mm):** 25 / 50 / 100

**Screen Interval:** 22.0 - 25.0
**Filter Pack:**
**Depth of Well:**

**Sampling Method:** Low Flow
**Water Quality Meter:** YSI Pro Plus
**Initial Depth to Water:** 3.460 m TOC
**Depth of Pump:** 23.000 m bgl
**Depth to Water (after pump):** 2.490 m TOC
**Measured Depth of Well:**
**Any Sediment at Base of Well:**

| Low Flow Settings | |
|---|---|
| CPM: | 4 |
| Discharge: | 3.5, 2.5 |
| Refill: | 11.5, 12.5 |
| Pressure: | 55 psi |

| Time *every 5 minutes* | Flow rate (L/min) | Depth to Water (m TOC) | Cumulative Volume (L) | pH | Redox ( mV ) | DO ( ppm ) | Temp. ( °c ) | EC ( µS ) | Comments (colour, turbidity, odour) |
|---|---|---|---|---|---|---|---|---|---|
| *Stable after three consecutive readings* | | *stable* | | *± 0.05* | *± 10 mV* | *± 10%* | *± 0.5°C* | *± 3%* | *e.g. ,pale grey, low, none* |
| 8.36 | 0.25 | 2.839 | 0.50 | 7.19 | -146.5 | 1.62 | 14.9 | 5119 | clear, low, none |
| 8.41 | - | 3.384 | 1.75 | 6.84 | -148.6 | 0.76 | 15.8 | 5383 | clear, low, H2S |
| 8.46 | - | 4.102 | 3.00 | 6.85 | -157.6 | 0.56 | 15.8 | 5320 | " " |
| 8.51 | - | 4.803 | 4.25 | 6.91 | -166.3 | 0.47 | 15.9 | 5297 | " " |
| 8.56 | - | 5.514 | 5.50 | 6.93 | -172.7 | 0.39 | 15.8 | 5282 | " " |
| 9.01 | 0.10 | 5.799 | 6.00 | 6.96 | -176.4 | 0.41 | 15.6 | 5259 | " " |
| 9.06 | - | 6.075 | 6.50 | 6.99 | -179.9 | 0.44 | 15.6 | 5194 | " " |
| 9.11 | - | 6.336 | 7.00 | 7.00 | -183.2 | 0.45 | 15.6 | 5212 | " " |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Primary sample ID: BH23A
Duplicate ID: QC1
Triplicate ID: QC2
Rinsate ID:

Air bubbles in vials: Y / N
Metals field filtered: Y / N
Equipment decontaminated: Y / N
Samples placed on ice: Y / N

COC No.:
No. of sample bottles collected: 18

COMMENTS: Datalogger downloaded
Water level would not stabilise

# Purging and Sampling Record

**Bore ID:** WORMBH12

**Job Information**
Client: APA
Project: WORM
Proj. No.: 12529997
Sampler: KC
Date: 4/8/21
Round: Aug 21

**Sampling Information**
Purge Method: low flow
Sample Method: low flow
WQ Meter Type: YSI
Flow Cell: (Y) / N  Pump Depth: 4.5 m
WLevel Meter Type: Dip / Fox / (Int.Fce) / Gge
Field Filtered? (Y) / N (filter vessel, disposable filter, filter/syringe)

**Bore Information**
SWL(mbTOC): 0.258 m  Logic Check: ✓
Screen: From: — to: — m  Stick Up: — m
NAPL Check: NO NAPL  Bore Diam.: 50 ✓ mm
Ref.datum: —  Well Cap Secure?
Bore Depth: 6.03 m

| Time (.....) | Volume (L) | Temp (°C) | pH (pH units) | Elec.Cond (µS/cm) | Dis.Oxygen (mg/L) | Ox-Red Pt. (± mV) | SWL (m TOC) | (L/m) | Comment: Colour, turbidity, sediment load, sheen, odour, flow rate, purged dry? |
|---|---|---|---|---|---|---|---|---|---|
| Stable when (3 consecutive readings): | | - | +/- 0.05 pH | +/- 3% | +/- 10% | +/- 10 mV | stable | | |
| | | | | | | | 0.258 | — | w pump |
| 1011 | 0 | 11.4 | 7.16 | 2993 | 6.57 | 83.3 | 0.370 | 4 | no colour, low turb, no odour/sheen |
| 1016 | 2 | 12.2 | 7.07 | 3052 | 5.37 | 85.5 | 0.370 | " | no turb |
| 1021 | 4 | 12.3 | 7.06 | 3054 | 5.12 | 86.1 | 0.370 | " | " |
| 1026 | 6 | 12.3 | 7.04 | 3047 | 4.61 | 87.3 | 0.370 | " | " |
| 1031 | 8 | 12.4 | 7.03 | 3046 | 4.31 | 88.0 | 0.370 | " | " |
| parameters stabile, sample | | | | | | | | | |

**Field QA Checks:**
Air bubbles in vials? Y (N)  Any violent reactions? Y (N)
Decontamination as per GHD procedure? (Y) / N
Was sampling equipment pre-cleaned? (Y) / N
COC updated? (Y) / N

| Parameters | BTEX | TPH | PAH | CHC | PCB | OCP | OPP | Tot. Metal | Biol. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservatives | | | | | | | | | | | | | |

**Comment:** Duplicate samples collected, bottles used, access, condition of headworks etc

QC01 (field dup) taken. Plus extra SVOC bottles for lab QC.

Metals filtered.

*Purge Volumes*
Casing Int. Dia (mm) 50 100 150
Vol (L/m of casing) 2.0 7.9 17.7
*Double for gravel pack

Scanned with CamScanner

# Purging and Sampling Record

**Bore ID:** WORMBH15

**Job Information**
Client: APA
Project: WORM
Proj. No.: 12529997
Sampler: KC
Date: 31/8/21
Round: AUG

**Sampling Information**
Purge Method: Bailer
Sample Method: Bailer
WQ Meter Type: YSI pro
Flow Cell: Y / N
Pump Depth: —m
WLevel Meter Type: Dip / Fox / Int.Fce / Gge
Field Filtered? Y / N (filter vessel, disposable filter, filter/syringe)

**Bore Information**
SWL(mbTOC): 1.653 m
Logic Check: ✓
Screen: From: — to — m
Stick Up: — m
NAPL Check: —
Bore Diam.: 50 mm
Ref.datum: —
Well Cap Secure? ✓
Bore Depth: 19.97 m

| Time (.....) | Volume (L) | Temp (°C) | pH (pH units) | Elec.Cond (mS/cm) | Dis.Oxygen (mg/L) | Ox-Red Pt. (± mV) | SWL (m TOC) | — (.....) | Comment: Colour, turbidity, sediment load, sheen, odour, flow rate, purged dry? |
|---|---|---|---|---|---|---|---|---|---|
| *Stable when (3 consecutive readings):* | | - | *+/- 0.05 pH* | *+/- 3%* | *+/- 10%* | *+/- 10 mV* | *stable* | | |
| 1304 | 5 | 13.7 | 6.82 | 6186 | 5.01 | 13.8 | 3.195 | — | no colour, low turb, no odour / sheen |
| 1310 | 10 | 14.2 | 6.84 | 6260 | 3.80 | 39.0 | 4.234 | — | no turb. |
| 1314 | 15 | 14.6 | 6.75 | 6323 | 5.46 | -43.4 | 6.110 | — | " |
| 1320 | 20 | 14.6 | 6.68 | 6356 | 4.41 | -57.9 | 7.270 | — | " |
| 1327 | 25 | 14.7 | 6.64 | 6354 | 1.96 | -58.0 | 8.300 | — | " |
| 1332 | 30 | 14.7 | 6.66 | 6379 | 3.33 | -60.6 | 8.750 | — | " |
| DO won't stabilise. SWL dropping. Other parameters stabile. Sample → | | | | | | | | | |

**Field QA Checks:**
Air bubbles in vials? Y / N
Any violent reactions? Y / N
Decontamination as per GHD procedure? Y / N
Was sampling equipment pre-cleaned? Y / N
COC updated? Y / N

| Parameters | BTEX | TPH | PAH | CHC | PCB | OCP | OPP | Tot. Metal | Biol. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservatives | | | | | | | | | | | | | |

**Comment:** Duplicate samples collected, bottles used, access, condition of headworks etc

Metals not filtered

**Purge Volumes**

| Casing Int. Dia (mm) | 50 | 100 | 150 |
|---|---|---|---|
| Vol (L/m of casing) | 2.0 | 7.9 | 17.7 |

*Double for gravel pack

Scanned with CamScanner

# Purging and Sampling Record

**Bore ID:** WORMBH16

**Job Information**
Client: APA
Project: WORM
Proj. No.: 12529997
Sampler: KC
Date: 41824
Round: Aug 21

**Sampling Information**
Purge Method: low flow
Sample Method: low flow
WQ Meter Type: XS
Flow Cell: (Y) / N  Pump Depth: 9.5 m
WLevel Meter Type: Dip / Fox / (Int.Fce) / Gge
Field Filtered? (Y) / N (filter vessel, disposable filter, filter/syringe)

**Bore Information**
SWL(mbTOC): 7.153 m  Logic Check: ✓
Screen: From: — to — m  Stick Up: — m
NAPL Check: —  Bore Diam.: 50 mm
Ref.datum: —  Well Cap Secure? ✓
Bore Depth: 10.03 m

| Time (.....) | Volume (L) | Temp (°C) | pH (pH units) | Elec.Cond (µS/cm) | Dis.Oxygen (mg/L) | Ox-Red Pt. (± mV) | SWL (m TOC) | (cpm) | Comment: Colour, turbidity, sediment load, sheen, odour, flow rate, purged dry? |
|---|---|---|---|---|---|---|---|---|---|
| *Stable when (3 consecutive readings):* | | - | *+/- 0.05 pH* | *+/- 3%* | *+/- 10%* | *+/- 10 mV* | *stable* | | |
| | | | | | | | 6.952 | — | w pump |
| 1209 | 0 | 12.6 | 6.95 | 1375 | 8.25 | 88.1 | 7.460 | 4 | brown-grey, high turb, no odour/sheen |
| 1214 | 2 | 13.6 | 6.82 | 1148 | 7.81 | 71.8 | ~~7.685~~ | " | " |
| 1219 | 3 | 13.0 | 6.81 | 1386 | 7.66 | 73.4 | 7.685 | 2 | " |
| 1224 | 4 | 13.0 | 6.82 | 1386 | 7.48 | 63.6 | 7.835 | " | " |
| 1229 | 5 | 13.0 | 6.81 | 1381 | 7.22 | 60.9 | 7.915 | " | " |
| 1234 | 6 | 13.0 | 6.80 | 1383 | 7.03 | 66.7 | 8.010 | " | " |
| SWL dropping but all parameters stabile, sample | | | | | | | | | |

**Field QA Checks:**
Air bubbles in vials? Y / (N)  Any violent reactions? Y / (N)
Decontamination as per GHD procedure? (Y) / N
Was sampling equipment pre-cleaned? (Y) / N
COC updated? (Y) / N

| Parameters | BTEX | TPH | PAH | CHC | PCB | OCP | OPP | Tot. Metal | Biol. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservatives | | | | | | | | | | | | | |

**Comment:** Duplicate samples collected, bottles used, access, condition of headworks etc

*Purge Volumes*
Casing Int. Dia (mm) 50 100 150
Vol (L/m of casing) 2.0 7.9 17.7
*Double for gravel pack

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# Appendix E

## Tabulated laboratory analytical results

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | **Bore ID** | WORMBH04 | WORMBH09 | WORMBH09 | WORMBH11 | WORMBH11 | WORMBH12 | WORMBH12 | WORMBH14 | WORMBH14 | WORMBH15 | WORMBH15 | WORMBH15 | WORMBH16 | WORMBH16 | WORMBH16 |
| | | | | | | | | | **Sampled_Date_Time** | 13/08/2020 | 5/05/2020 | 2/02/2021 | 26/08/2020 | 1/02/2021 | 18/08/2020 | 2/02/2021 | 4/08/2021 | 18/08/2020 | 1/02/2021 | 3/03/2020 | 29/10/2020 | 3/05/2021 | 26/08/2020 | 1/02/2021 | 4/08/2021 |
| | | | | | | | | | **Lab_Report_Number** | EM2014137 | EM2015608 | EM2101443 | EM2014726 | EM2101385 | EM2014371 | EM2101443 | EM2115365 | EM2014371 | EM2101385 | EM2003567 | EM2019188 | EM2115187 | EM2014726 | EM2101385 | EM2113365 |
| | | | | | | | | | **SampleCode** | EM2014137007 | EM2015608002 | EM2101443002 | EM2014726001 | EM2101385003 | EM2014371002 | EM2101443003 | EM2115365001 | EM2014371001 | EM2101385001 | EM2003567006 | EM2019188005 | EM2115187001 | EM2014726002 | EM2101385002 | EM2113365002 |
| | | | | ADWG 2011 Aesthetic (v2.6 updated 2021) | ANZECC 2000 Stock Watering | ANZECC 2000 Irrigation Long-term Trigger Values | ANZECC 2000 Irrigation Short-term Trigger Values | ANZG (2018) - FW - 95% (updated 20 July 2021) | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Class_Group* | *ChemName* | *subunit* | *RW* | | | | | | | | | | | | | | | | | | | | | | |
| Inorganics | pH (Lab) | pHUnits | 0.01 | 6.5-8.5 | | 6-9 | | | | 7.98 | 7.12 | 7.98 | 7.54 | 7.68 | 7.64 | 7.65 | 7.71 | 7.76 | 7.75 | 6.85 | 6.83 | 7.15 | 7.05 | 7.41 | 7.49 |
| | Electrical conductivity (lab) | µS/cm | 1 | | | 2900 | | | | 4840 | 10,300 | 8840 | 3830 | 4660 | 3900 | 3860 | 4340 | 2410 | 2030 | 7420 | 8360 | 8980 | 2000 | 1830 | 1770 |
| | Total Dissolved Solids | mg/L | 10 | 600 | 5000 | | | | | - | 5300 | | 1920 | | 3790 | | 2550 | 1300 | - | - | - | 4820 | 1180 | - | - | 1140 |
| | Total Dissolved Solids (sat.) | mg/L | 1 | - | 5000 | | | | | 3150 | - | 8750 | - | 3050 | - | 2520 | - | - | 1320 | 4820 | 5560 | - | - | - | 1190 | - |
| | Total Suspended Solids | mg/L | 5 | | | | | | | - | - | 984 | - | - | 15 | 9 | - | 25 | <5 | - | 5 | - | - | - | 19,800 | - |
| | Salinity | mg/L | 0.00001 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | ^^^ | mg/L | 10 | | | | | | | - | - | <mn | - | - | 14 | <mn | - | 14 | 41 | - | <mn | - | - | 175 | - |
| *Biological* | Escherichia coli (Colilert) | cmc/100mL | 1 | | | | | | | - | - | 150 | - | - | 0 | 0 | - | 0 | 10 | - | 3 | - | - | - | - |
| Cyanide | Cyanide (Total) | mg/L | 0.004 | | | | | | 0.007 | - | - | <0.004 | - | - | <0.004 | <0.004 | - | <0.004 | <1 | - | - | - | - | <0.004 | <0.004 |
| Acidity & Alkalinity | Alkalinity (Carbonate as CaCO3) | mg/L | 1 | | | | | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| | Alkalinity (Bicarbonate as CaCO3) | mg/L | 1 | | | | | | | 518 | 474 | 458 | 314 | 413 | 367 | 355 | 415 | 469 | 466 | 1360 | 1680 | 1700 | 364 | 525 | 491 |
| | Alkalinity (Hydroxide as CaCO3) | mg/L | 1 | | | | | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| | Alkalinity (Total as CaCO3) | mg/L | 1 | | | | | | | 518 | 474 | 458 | 314 | 413 | 367 | 355 | 415 | 469 | 466 | 1360 | 1680 | 1700 | 364 | 525 | 491 |
| Major Ions | Calcium (Filtered) | mg/L | 1 | | 1000 | | | | | 86 | 97 | 83 | 63 | 83 | 71 | 72 | 85 | 32 | 29 | 187 | 185 | 181 | 92 | 86 | 84 |
| | Magnesium (Filtered) | mg/L | 1 | | | | | | | 178 | 413 | 405 | 99 | 161 | 156 | 212 | 251 | 66 | 63 | 290 | 316 | 318 | 77 | 83 | 79 |
| | Potassium (Filtered) | mg/L | 1 | | | | | | | 32 | 11 | 12 | 8 | 10 | 13 | 14 | 14 | 9 | 11 | 60 | 49 | 52 | 4 | 4 | 3 |
| | Sodium (Filtered) | mg/L | 1 | 180 | | | | | | 567 | 1340 | 1280 | 521 | 597 | 333 | 330 | 358 | 315 | 275 | 990 | 1100 | 1060 | 195 | 186 | 181 |
| | Chloride | mg/L | 1 | 250 | | 350 | | | | 1190 | 3440 | 3000 | 974 | 1410 | 1060 | 1060 | 1150 | 457 | 454 | 1820 | 1900 | 2070 | 354 | 372 | 328 |
| | Sulfate (Filtered) | mg/L | 1 | 250 | 1000 | | | | | 7 | 313 | 305 | 232 | 101 | 123 | 113 | 120 | 86 | 50 | 41 | 11 | 6 | 193 | 135 | 124 |
| | Fluoride | mg/L | 0.1 | | 2 | 1 | 2 | | | - | - | 0.7 | - | - | <0.1 | 0.3 | - | 0.5 | - | 0.4 | 0.3 | - | 0.2 | 0.2 | |
| | Calcium Total | meq/L | 0.01 | | | | | | | 45.4 | 96.9 | 93.4 | 34.2 | 43.6 | 34.4 | 35.8 | 40.8 | 21 | 18.9 | 77.8 | 84.3 | 82.5 | 19.5 | 19.3 | 18.6 |
| | Arsenic Total | meq/L | 0.01 | | | | | | | 52 | 113 | 100 | 38.6 | 50.2 | 40.4 | 45.2 | 43.2 | 24.5 | 23.6 | 79.4 | 87 | 92.5 | 21.7 | 23.4 | 21.8 |
| | Ionic Balance | % | 0.01 | | | | | | | 6.8 | 7.71 | 5.44 | 6.08 | 7.06 | 8.06 | 5.84 | 2.88 | 7.77 | 11.1 | 1 | 1.55 | 5.72 | 5.25 | 9.69 | 7.45 |
| Nutrients | Ammonia as N | mg/L | 0.01 | | | | | 0.9 | | 1.4 | 0.02 | 0.58 | 0.08 | <0.01 | 0.02 | <0.01 | <0.01 | 0.03 | 0.09 | 1.1 | 0.81 | 2.4 | <0.01 | 0.2 | <0.01 |
| | Nitrate (as N) | mg/L | 0.01 | | 90 | | | 2.4 | | 0.19 | 0.92 | 0.58 | 0.01 | 0.02 | 0.01 | 0.73 | 0.01 | 0.01 | 0.01 | 0.01 | <0.01 | <0.01 | 0.02 | 0.02 | 0.02 |
| | Nitrite (as N) | mg/L | 0.01 | | 9.1 | | | | | <0.01 | <0.01 | 0.01 | 0.01 | 0.02 | <0.01 | 0.01 | <0.01 | 0.01 | 0.01 | <0.01 | <0.01 | 0.05 | <0.01 | <0.01 | <0.01 |
| | Nitrogen (Total Oxidised) (as N) | mg/L | 0.01 | | | | | | | 0.19 | 0.92 | 0.58 | 1.46 | 0.48 | 0.72 | 0.64 | 0.44 | 1.05 | 0.55 | <0.01 | <0.01 | 0.07 | 0.01 | 0.03 | 0.28 |
| | Nitrogen (Total) | mg/L | 0.1 | | | 5 | | 25 | | 1.6 | 1.1 | 2.4 | 1.6 | 1.1 | 0.9 | 0.9 | 0.6 | 1.2 | 1.4 | 2.2 | 1.9 | 2.8 | 0.2 | 2.1 | 0.7 |
| | Kjeldahl Nitrogen Total | mg/L | 0.1 | | | | | | | 1.4 | 0.2 | 1.8 | 0.3 | 0.6 | 0.2 | 0.3 | 0.2 | 0.2 | 0.8 | 2.2 | 1.9 | 2.7 | 0.2 | 2.1 | 0.4 |
| | Phosphorus (Total) | mg/L | 0.01 | | | 0.05 | | 0.6 | | 0.04 | 0.39 | 0.07 | <0.01 | 0.44 | 0.14 | 0.07 | 0.04 | 0.23 | 0.17 | 0.12 | 0.09 | 0.21 | 1.13 | 25.4 | 0.27 |
| Organic Indicators | BOD | mg/L | 2 | | | | | | | - | - | <2 | - | - | <2 | <2 | - | <2 | 6 | - | <8 | - | - | 30 | - |
| Metals | Arsenic (Filtered) | mg/L | 0.001 | | 0.5 | 0.1 | | 2 | 0.013 | 0.004 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.001 | 0.018 | 0.001 | 0.006 | <0.001 | <0.001 | <0.001 |
| | Cadmium (Filtered) | mg/L | 0.0001 | | 0.01 | 0.01 | | 0.03 | 0.0002 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | 0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| | Chromium (III+VI) (Filtered) | mg/L | 0.001 | | 1 | 0.1 | | 1 | 0.001 | 0.001 | 0.003 | - | 0.008 | - | <0.001 | - | - | 0.001 | - | <0.001 | <0.001 | <0.001 | - | <0.001 | - | - |
| | Chromium (hexavalent) (Filtered) | mg/L | 0.01 | | | | | | 0.001 | - | - | <0.01 | - | - | <0.01 | <0.01 | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | <0.01 | <0.01 |
| | Copper (Filtered) | mg/L | 0.001 | 1 | 1 | 0.2 | 5 | 0.0014 | | 0.001 | 0.014 | <0.001 | <0.001 | <0.001 | 0.012 | 0.01 | 0.004 | 0.018 | 0.002 | 0.010 | 0.018 | <0.001 | 0.015 | <0.001 | 0.003 |
| | Lead (Filtered) | mg/L | 0.001 | | 1 | 2 | 5 | 0.0034 | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.024 | <0.001 | <0.001 | <0.001 | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| | Mercury (Filtered) | mg/L | 0.0001 | | 0.002 | 0.002 | | 0.0006 | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| | Nickel (Filtered) | mg/L | 0.001 | | 0.15 | 0.02 | | 0.02 | | - | - | <0.001 | - | - | <0.001 | <0.001 | - | <0.001 | <0.001 | - | <0.001 | - | - | <0.001 | <0.001 | <0.001 |
| | Selenium (Filtered) | mg/L | 0.001 | | | 0.2 | | | 0.011 | 0.009 | 0.011 | 0.002 | <0.001 | <0.001 | 0.008 | 0.002 | 0.003 | 0.012 | 0.003 | 0.008 | 0.063 | 0.04 | 0.024 | 0.003 | 0.002 | |
| | Selenium (Filtered) | mg/L | 0.01 | | 0.02 | 0.02 | | 0.02 | 0.011 | - | - | <0.01 | - | <0.01 | - | <0.01 | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | <0.01 | <0.01 |
| | Silver (Filtered) | mg/L | 0.001 | | | | | | 0.00005 | - | - | - | 0.022 | - | <0.001 | - | <0.001 | - | <0.001 | - | <0.001 | <0.001 | <0.001 | - | <0.001 | <0.001 |
| | Tin (Filtered) | mg/L | 0.001 | | | | | | | <0.001 | - | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | - | <0.001 | <0.001 | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| | Zinc (Filtered) | mg/L | 0.005 | 3 | 20 | 2 | 5 | 0.008 | | 0.01 | 0.042 | 0.006 | <0.005 | 0.013 | 0.041 | 0.149 | 0.017 | 0.078 | 0.007 | 0.074 | 0.118 | <0.005 | 0.053 | 0.006 | 0.029 | |
| BTEXN | Benzene | µg/L | 1 | | | | | | 950 | - | - | <1 | - | - | <1 | <1 | - | <1 | <1 | - | <1 | <1 | - | <1 | <1 | <1 |
| | Toluene | µg/L | 2 | 25 | | | | | 180 | - | - | <2 | - | - | <2 | <2 | - | <2 | <2 | - | <2 | <2 | - | <2 | <2 | <2 |
| | Ethylbenzene | µg/L | 2 | 3 | | | | | 80 | - | - | <2 | - | - | <2 | <2 | - | <2 | <2 | - | <2 | <2 | - | <2 | <2 | <2 |
| | Xylene (m) | µg/L | 2 | | | | | | 950 | - | - | <2 | - | - | <2 | <2 | - | <2 | <2 | - | <2 | <2 | - | <2 | <2 | <2 |
| | Xylene (m & p) | µg/L | 2 | | | | | | | - | - | <2 | - | - | <2 | <2 | - | <2 | <2 | - | <2 | <2 | - | <2 | <2 | <2 |
| | Xylene Total | µg/L | 2 | 20 | | | | | | - | - | <2 | - | - | <2 | <2 | - | <2 | <2 | - | <2 | <2 | - | <2 | <2 | <2 |
| | BTEX (Sum of Total) - Lab Calc | µg/L | 1 | | | | | | | - | - | <1 | - | - | <1 | <1 | - | <1 | <1 | - | <1 | <1 | - | <1 | <1 | <1 |
| | Naphthalene | µg/L | 1 | | | | | | 16 | - | - | <1 | - | - | <1 | <1 | - | <1 | <1 | - | <1 | <1 | - | <1 | <1 | <1 |
| TRH - NEPM 2013 | F1 (C6-C10 minus BTEX) | µg/L | 20 | | | | | | | - | - | <20 | - | - | <20 | <20 | - | <20 | <20 | - | <20 | <20 | - | <20 | <20 | <20 |
| | C6-C10 Fraction | µg/L | 20 | | | | | | | - | - | <20 | - | - | <20 | <20 | - | <20 | <20 | - | <20 | <20 | - | <20 | <20 | <20 |
| | F2 (>C10-C16 minus Naphthalene) | µg/L | 100 | | | | | | | - | - | <100 | - | - | <100 | <100 | - | <100 | <100 | - | <100 | <100 | - | <100 | <100 | <100 |
| | >C10-C16 Fraction | µg/L | 100 | | | | | | | - | - | <100 | - | - | <100 | <100 | - | <100 | <100 | - | <100 | <100 | - | <100 | <100 | <100 |
| | F3 (>C16-C34 Fraction) | µg/L | 100 | | | | | | | - | - | <100 | - | - | <100 | <100 | - | <100 | <100 | - | <100 | <100 | - | 1100 | <100 | |
| | F4 (>C34-C40 Fraction) | µg/L | 100 | | | | | | | - | - | <100 | - | - | <100 | <100 | - | <100 | <100 | - | <100 | <100 | - | 180 | <100 | |
| | >C10-C40 (Sum of Total) | µg/L | 100 | | | | | | | - | - | <100 | - | - | <100 | <100 | <100 | <100 | <100 | - | <100 | <100 | - | 1280 | <100 | |
| TRH - NEPM 1999 | C6-C9 Fraction | µg/L | 20 | | | | | | | - | - | <20 | - | - | <20 | <20 | <20 | <20 | <20 | - | <20 | <20 | - | <20 | <20 | <20 |
| | C10-C14 Fraction | µg/L | 50 | | | | | | | - | - | <50 | - | - | <50 | <50 | <50 | <50 | <50 | - | <50 | <50 | - | <50 | <50 | |
| | C15-C28 Fraction | µg/L | 100 | | | | | | | - | - | <100 | - | - | <100 | <100 | <100 | <100 | <100 | - | <100 | <100 | - | 780 | <100 | |
| | C29-C36 Fraction | µg/L | 50 | | | | | | | - | - | <50 | - | - | <50 | <50 | <50 | <50 | <50 | - | <50 | <50 | - | 460 | <50 | |
| | C10-C36 (Sum of Total) | µg/L | 50 | | | | | | | - | - | <50 | - | - | <50 | <50 | <50 | <50 | <50 | - | <50 | <50 | - | 1240 | <50 | |
| TPH | Oil & Grease | µg/L | 5000 | | | | | | | - | - | <5000 | - | - | <5000 | <5000 | - | <5000 | <5000 | - | <5000 | - | - | - | - | |
| PAHs - standard 16 | Acenaphthene | µg/L | 1 | | | | | | | - | - | <1 | - | - | <1 | <1 | - | <1 | <1 | - | <1 | <1 | - | <1 | <1 | <1 |
| | Acenaphthylene | µg/L | 1 | | | | | | | - | - | <1 | - | - | <2 | <1 | - | <1 | <1 | - | <1 | <1 | - | <1 | <1 | <1 |
| | Anthracene | µg/L | 1 | | | | | | 0.4 | - | - | <1 | - | - | <2 | <1 | - | <1 | <1 | - | <1 | <1 | - | <1 | <1 | <1 |
| | Benz(a)anthracene | µg/L | 1 | | | | | | | - | - | <1 | - | - | <2 | <1 | - | <1 | <1 | - | <1 | <1 | - | <1 | <1 | <1 |
| | Benzo(a)pyrene | µg/L | 0.5 | | | | | | 0.2 | - | - | <0.5 | - | - | <2 | <0.5 | <0.5 | <2 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | <0.5 |
| | Benz(b+j)fluoranthene | µg/L | 1 | | | | | | | - | - | <1 | - | - | <1 | <1 | - | - | <1 | - | <1 | <1 | - | <1 | <1 | <1 |
| | Benzo(b)fluoranthene | µg/L | 1 | | | | | | | - | - | <1 | - | - | - | <1 | <1 | - | <1 | - | <1 | <1 | - | <1 | <1 | <1 |
| | Benzo(j,k)perylene | µg/L | 1 | | | | | | | - | - | <1 | - | - | <2 | <1 | <1 | <2 | <1 | - | <1 | <1 | - | <1 | <1 | <1 |
| | Chrysene | µg/L | 1 | | | | | | | - | - | <1 | - | - | <2 | <1 | <1 | <2 | <1 | - | <1 | <1 | - | <1 | <1 | <1 |
| | Dibenz(a,h)anthracene | µg/L | 1 | | | | | | | - | - | <1 | - | - | <2 | <1 | <1 | <2 | <1 | - | <1 | <1 | - | <1 | <1 | <1 |
| | Fluoranthene | µg/L | 1 | | | | | | 1.4 | - | - | <1 | - | - | <2 | <1 | <1 | <2 | <1 | - | <1 | <1 | - | <1 | <1 | <1 |
| | Fluorene | µg/L | 1 | | | | | | | - | - | <1 | - | - | <2 | <1 | <1 | <2 | <1 | - | <1 | <1 | - | <1 | <1 | <1 |
| | Indeno(1,2,3-c,d)pyrene | µg/L | 1 | | | | | | | - | - | <1 | - | - | <2 | <1 | <1 | <2 | <1 | - | <1 | <1 | - | <1 | <1 | <1 |
| | Phenanthrene | µg/L | 1 | | | | | | 6 | - | - | <1 | - | - | <2 | <1 | <1 | <2 | <1 | - | <1 | <1 | - | <1 | <1 | <1 |
| | Pyrene | µg/L | 1 | | | | | | | - | - | <1 | - | - | <2 | <1 | <1 | <2 | <1 | - | <1 | <1 | - | <1 | <1 | <1 |
| | PAHs (Sum of total) - Lab calc | µg/L | 0.5 | | | | | | | - | - | <0.5 | - | - | <2 | <0.5 | <0.5 | <2 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | <0.5 |
| | Total PAHs (as BaP TEQ(zero LOR)) - Lab Calc | µg/L | 0.5 | | | | | | | - | - | <0.5 | - | - | <2 | <0.5 | <0.5 | <2 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | <0.5 |
| PAHs - extended | 1-methylnaphthalene | µg/L | 2 | | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - | - |
| | 3-methylcholanthrene | µg/L | 2 | | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - | - |
| | 7,12-dimethylbenz(a)anthracene | µg/L | 2 | | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - | - |
| | Benzo(b+j+k)fluoranthene | µg/L | 4 | | | | | | | - | - | - | - | - | <4 | - | - | <4 | - | - | - | - | - | - | - | - |
| Phenols - Halogenated | 2-Chlorophenol | µg/L | 2 | 0.1 | | | | | 490 | - | - | <2 | - | - | <2 | <2 | <2 | <2 | <2 | - | <2 | <2 | - | <2 | <2 | <2 |
| | 2,4-Dichlorophenol | µg/L | 2 | 0.3 | | | | | 100 | - | - | <2 | - | - | <2 | <2 | <2 | <2 | <2 | - | <2 | <2 | - | <2 | <2 | <2 |
| | 2,4,5-Trichlorophenol | µg/L | 2 | | | | | | | - | - | <2 | - | - | <2 | <2 | <2 | <2 | <2 | - | <2 | <2 | - | <2 | <2 | <2 |
| | 2,4,6-Trichlorophenol | µg/L | 2 | 2 | | | | | 20 | - | - | <2 | - | - | <2 | <2 | <2 | <2 | <2 | - | <2 | <2 | - | <2 | <2 | <2 |
| | 2,6-Dichlorophenol | µg/L | 2 | | | | | | | - | - | <2 | - | - | <2 | <2 | <2 | <2 | <2 | - | <2 | <2 | - | <2 | <2 | <2 |
| | 4-Chloro-3-methylphenol | µg/L | 2 | | | | | | | - | - | <4 | - | - | <4 | <2 | <2 | <4 | <2 | - | <4 | <4 | - | <4 | <4 | <4 |
| | Pentachlorophenol | µg/L | 2 | | | | | | 10 | - | - | <2 | - | - | <4 | <2 | <2 | <4 | <2 | - | <2 | <2 | - | <2 | <2 | <2 |
| | Phenols (halogenated) - Lab Calc | µg/L | 2 | | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | <2 | - | - | - | - | - |
| Phenols - Non-Halogenated | Phenol | µg/L | 2 | | | | | | 320 | - | - | <4 | - | - | <2 | <4 | <4 | <2 | <4 | - | <4 | <4 | - | <4 | <4 | <4 |
| | 2-Methylphenol | µg/L | 2 | | | | | | | - | - | <4 | - | - | <2 | <4 | <4 | <2 | <4 | - | <4 | <4 | - | <4 | <4 | <4 |
| | 2-Methylphenol (o-Cresol) | µg/L | 2 | | | | | | | - | - | <4 | - | - | <2 | <4 | <4 | <2 | <4 | - | <4 | <4 | - | <4 | <4 | <4 |
| | 3,4-Methylphenol (m,p-cresol) | µg/L | 4 | | | | | | | - | - | <4 | - | - | <4 | <4 | <4 | <4 | <4 | - | <4 | <4 | - | <4 | <4 | <4 |
| | 2,4-Dimethylphenol | µg/L | 2 | | | | | | | - | - | <4 | - | - | <2 | <4 | <4 | <2 | <4 | - | <4 | <4 | - | <4 | <4 | <4 |
| | 2,4-Dinitrophenol | µg/L | 100 | | | | | | 45 | - | - | <100 | - | - | - | <100 | <100 | - | <100 | - | <100 | <100 | - | <100 | <100 | <100 |
| | 4,6-Dinitro-2-methylphenol | µg/L | 50 | | | | | | | - | - | <50 | - | - | - | <50 | <50 | - | <50 | - | <50 | <50 | - | <50 | <50 | <50 |
| | 4,6-Dinitro-o-cyclohexyl phenol | µg/L | 50 | | | | | | | - | - | <50 | - | - | - | <50 | <50 | - | <50 | - | <50 | <50 | - | <50 | <50 | <50 |
| | 4-Nitrophenol | µg/L | 50 | | | | | | | - | - | <50 | - | - | - | <50 | <50 | - | <50 | - | <50 | <50 | - | <50 | <50 | <50 |
| | Phenols (Total Non-Halogenated) | µg/L | 4 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | <4 | - | - | - | - | - |
| Phenols | 2,3,5,6-Tetrachlorophenol | µg/L | 2 | | | | | | | - | - | <2 | - | - | <2 | <2 | - | <2 | <2 | - | <2 | <2 | - | <2 | <2 | <2 |
| | 2,3,4,5 & 2,3,4,6-Tetrachlorophenol | µg/L | 2 | | | | | | | - | - | <2 | - | - | - | <2 | <2 | - | <2 | - | <2 | <2 | - | <2 | <2 | <2 |
| OC Pesticides | 4,4'-DDE | µg/L | 0.5 | | | | | | | - | - | <0.5 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | <0.5 |
| | a-BHC | µg/L | 0.5 | | | | | | | - | - | <0.5 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | <0.5 |
| | Aldrin | µg/L | 0.5 | | | | | | | - | - | <0.5 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | <0.5 |
| | Aldrin + Dieldrin | µg/L | 0.5 | | | | | | | - | - | - | - | - | - | - | - | <0.5 | - | - | <0.5 | - | - | - | - | - |
| | b-BHC | µg/L | 0.5 | | | | | | | - | - | - | - | - | <0.5 | - | - | <0.5 | - | - | - | - | - | - | - | - |
| | Chlordane | µg/L | 0.5 | | | | | | 0.08 | - | - | - | - | - | <0.5 | - | - | <0.5 | - | - | - | - | - | - | - | - |
| | Chlordane (cis) | µg/L | 0.5 | | | | | | | - | - | <0.5 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | <0.5 |
| | Chlordane (trans) | µg/L | 0.5 | | | | | | | - | - | <0.5 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | <0.5 |
| | d-BHC | µg/L | 0.5 | | | | | | | - | - | - | - | - | <0.5 | - | - | <0.5 | - | - | - | - | - | - | - | - |
| | 4,4 DDD | µg/L | 0.5 | | | | | | | - | - | <0.5 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | <0.5 |
| | 4,4 DDT | µg/L | 0.5 | | | | | | 0.01 | - | - | <0.5 | - | - | <2 | <0.5 | <0.5 | <2 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | <0.5 |
| | DDT+DDE+DDD - Lab Calc | µg/L | 0.5 | | | | | | | - | - | - | - | - | <0.5 | - | - | <0.5 | - | - | - | - | - | - | - | - |
| | Dieldrin | µg/L | 0.5 | | | | | | | - | - | <0.5 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | <0.5 |
| | Endosulfan I (alpha) | µg/L | 0.5 | | | | | | | - | - | - | - | - | <0.5 | - | - | <0.5 | - | - | - | - | - | - | - | - |
| | Endosulfan II (beta) | µg/L | 0.5 | | | | | | | - | - | - | - | - | <0.5 | - | - | <0.5 | - | - | - | - | - | - | - | - |
| | Endosulfan Sulfate | µg/L | 0.5 | | | | | | | - | - | - | - | - | <0.5 | - | - | <0.5 | - | - | - | - | - | - | - | - |
| | Endrin | µg/L | 0.5 | | | | | | 0.02 | - | - | - | - | - | <0.5 | - | - | <0.5 | - | - | - | - | - | - | - | - |
| | Endrin aldehyde | µg/L | 0.5 | | | | | | | - | - | - | - | - | <0.5 | - | - | <0.5 | - | - | - | - | - | - | - | - |
| | Endrin ketone | µg/L | 0.5 | | | | | | | - | - | - | - | - | <0.5 | - | - | <0.5 | - | - | - | - | - | - | - | - |
| | g-BHC (Lindane) | µg/L | 0.5 | | | | | | 0.2 | - | - | - | - | - | <0.5 | - | - | <0.5 | - | - | - | - | - | - | - | - |
| | Heptachlor | µg/L | 0.5 | | | | | | 0.03 | - | - | <0.5 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | <0.5 |
| | Heptachlor epoxide | µg/L | 0.5 | | | | | | | - | - | - | - | - | <0.5 | - | - | <0.5 | - | - | - | - | - | - | - | - |
| | Hexachlorobenzene | µg/L | 0.5 | | | | | | 0.1 | - | - | - | - | - | <0.5 | - | - | <0.5 | - | - | - | - | - | - | - | - |
| | Methoxychlor | ug/L | 2 | | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - | - |

| Chem_Group | ChemName | output unit | EQL | ADWG 2011 Aesthetic (v3.6 updated 2021) | ANZECC 2000 Stock Watering | ANZECC 2000 Irrigation Long-term Trigger Values | ANZECC 2000 Irrigation Short-term Trigger Values | ANZG (2018) - FW - 95% (updated 26 July 2021) | WORMBH04 | WORMBH09 | WORMBH09 | WORMBH11 | WORMBH11 | WORMBH12 | WORMBH12 | WORMBH12 | WORM BH-14 | WORM BH-14 | WORMBH15 | WORMBH15 | WORMBH15 | WORMBH16 | WORMBH16 | WORMBH16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Sampled_Date_Time | 13/08/2020 | 9/09/2020 | 2/02/2021 | 26/08/2020 | 1/02/2021 | 18/08/2020 | 2/02/2021 | 4/08/2021 | 18/08/2020 | 1/02/2021 | 3/03/2020 | 29/10/2020 | 3/08/2021 | 26/08/2020 | 1/02/2021 | 4/08/2021 |
| | | | | | | | | Lab_Report_Number | EM2014137 | EM2015608 | EM2101443 | EM2014726 | EM2101365 | EM2014371 | EM2101443 | EM2115365 | EM2014371 | EM2101365 | EM2003567 | EM2019188 | EM2115167 | EM2014726 | EM2101365 | EM2115365 |
| | | | | | | | | SampleCode | EM2014137007 | EM2015608002 | EM2101443002 | EM2014726001 | EM2101365003 | EM2014371002 | EM2101443003 | EM2115365001 | EM2014371001 | EM2101365001 | EM2003567006 | EM2019188005 | EM2115167001 | EM2014726002 | EM2101365002 | EM2115365002 |
| | | | | | | | | | Wool Packs | | | | | | | | | | | | | | | |
| OP Pesticides | Chlorfenvinphos | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Chlorpyrifos | µg/L | 2 | | | | | 0.01 | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Chlorpyrifos-methyl | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Diazinon | µg/L | 2 | | | | | 0.01 | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Dichlorvos | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Dimethoate | µg/L | 2 | | | | | 0.15 | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Ethion | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Fenthion | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Malathion | µg/L | 2 | | | | | 0.05 | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Pirimphos-ethyl | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Prothiofos | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| Chlorinated Hydrocarbons | 1,1,1,2-tetrachloroethane | µg/L | 5 | | | | | | - | - | <5 | - | - | <5 | <5 | <5 | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | 1,1,1-trichloroethane | µg/L | 5 | | | | | 270 | - | - | <5 | - | - | <5 | <5 | <5 | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | 1,1,2,2-tetrachloroethane | µg/L | 5 | | | | | 400 | - | - | <5 | - | - | <5 | <5 | <5 | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | 1,1,2-trichloroethane | µg/L | 5 | | | | | 6500 | - | - | <5 | - | - | <5 | <5 | <5 | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | 1,1-dichloroethene | µg/L | 5 | | | | | 700 | - | - | <5 | - | - | <5 | <5 | <5 | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | 1,1-dichloropropene | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | 1,2,4-trichlorobenzene | µg/L | 2 | | | | | 170 | - | - | <5 | - | - | <2 | <5 | <5 | <2 | <5 | - | <5 | <5 | - | <5 | <5 |
| | 1,2-dibromo-3-chloropropane | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | 1,2-dichlorobenzene | µg/L | 2 | 1 | | | | 160 | - | - | <5 | - | - | <2 | <5 | <5 | <2 | <5 | - | <5 | <5 | - | <5 | <5 |
| | 1,2-dichloroethane | µg/L | 5 | | | | | 1900 | - | - | <5 | - | - | <5 | <5 | <5 | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | 1,2-dichloropropane | µg/L | 5 | | | | | 1100 | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | 1,3-dichloropropane | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | 1,4-dichlorobenzene | µg/L | 2 | 0.3 | | | | 60 | - | - | <5 | - | - | <2 | <5 | <5 | <2 | <5 | - | <5 | <5 | - | <5 | <5 |
| | 2,2-dichloropropane | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | 2-chloronaphthalene | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | 2-chlorotoluene | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | 4-chlorotoluene | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | Bromobenzene | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | Carbon tetrachloride | µg/L | 5 | | | | | 240 | - | - | <5 | - | - | <5 | <5 | <5 | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | Chlorobenzene | µg/L | 5 | 10 | | | | 55 | - | - | <5 | - | - | <5 | <5 | <5 | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | Chloroform | µg/L | 5 | | | | | 770 | - | - | <5 | - | - | <5 | <5 | <5 | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | Chloromethane | µg/L | 50 | | | | | | - | - | - | - | - | <50 | - | - | <50 | - | - | - | - | - | - | - |
| | cis-1,2-dichloroethene | µg/L | 5 | | | | | | - | - | <5 | - | - | <5 | <5 | <5 | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | Methylene chloride | µg/L | 5 | | | | | 4000 | - | - | <5 | - | - | - | <5 | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 |
| | Hexachlorobutadiene | µg/L | 2 | | | | | | - | - | <5 | - | - | <2 | <5 | <5 | <2 | <5 | - | <5 | <5 | - | <5 | <5 |
| | Vinyl chloride | µg/L | 50 | | | | | 100 | - | - | <50 | - | - | <50 | <50 | <50 | <50 | <50 | - | <50 | <50 | - | <50 | <50 |
| Explosives | 1,3,5-Trinitrobenzene | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | 2,4-Dinitrotoluene | µg/L | 4 | | | | | 65 | - | - | - | - | - | <4 | - | - | <4 | - | - | - | - | - | - | - |
| | 2,6-dinitrotoluene | µg/L | 4 | | | | | | - | - | - | - | - | <4 | - | - | <4 | - | - | - | - | - | - | - |
| | Nitrobenzene | µg/L | 2 | | | | | 550 | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| Halogenated Hydrocarbons | Bromomethane | µg/L | 50 | | | | | | - | - | - | - | - | <50 | - | - | <50 | - | - | - | - | - | - | - |
| | Dichlorodifluoromethane | µg/L | 50 | | | | | | - | - | - | - | - | <50 | - | - | <50 | - | - | - | - | - | - | - |
| Herbicides | Dinoseb | µg/L | 50 | | | | | | - | - | <50 | - | - | - | <50 | <50 | - | <50 | - | <50 | <50 | - | <50 | <50 |
| | Propamide | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| Nitroaromatics and Ketones | 2-Picoline | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | 4-aminobiphenyl | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Acetophenone | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | N-Nitrosodiphenyl & Diphenylamine | µg/L | 4 | | | | | | - | - | - | - | - | <4 | - | - | <4 | - | - | - | - | - | - | - |
| | Pentachloronitrobenzene | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| Solvents | 2-hexanone (MBK) | µg/L | 50 | | | | | | - | - | - | - | - | <50 | - | - | <50 | - | - | - | - | - | - | - |
| | Carbon disulfide | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | Isophorone | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Vinyl acetate | µg/L | 50 | | | | | | - | - | - | - | - | <50 | - | - | <50 | - | - | - | - | - | - | - |
| PCBs | PCBs (Total) | µg/L | 1 | | | | | | - | - | <1 | - | - | <1 | <1 | <1 | <1 | <1 | - | <1 | <1 | - | <1 | <1 |
| Phthalates | Bis(2-ethylhexyl) phthalate | µg/L | 10 | | | | | | - | - | - | - | - | <10 | - | - | <10 | - | - | - | - | - | - | - |
| | Butyl benzyl phthalate | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Diethylphthalate | µg/L | 2 | | | | | 1000 | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Dimethyl phthalate | µg/L | 2 | | | | | 3700 | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Di-n-butyl phthalate | µg/L | 2 | | | | | 26 | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Di-n-octyl phthalate | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| Surfactants | Anionic Surfactants as MBAS | µg/L | 50 | | | | | | - | - | <100 | - | - | <100 | <100 | - | <100 | <100 | - | <50 | - | - | - | - |
| MAH | 1,2,4-trimethylbenzene | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | 1,3,5-trimethylbenzene | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | Isopropylbenzene | µg/L | 5 | | | | | 30 | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | Styrene | µg/L | 5 | 4 | | | | | - | - | <5 | - | - | <5 | <5 | <5 | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | n-butylbenzene | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | n-propylbenzene | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | sec-butylbenzene | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | tert-butylbenzene | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | p-isopropyltoluene | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| SVOCs | 1-naphthylamine | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | 2-(acetylamino) fluorene | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | 2-nitroaniline | µg/L | 4 | | | | | | - | - | - | - | - | <4 | - | - | <4 | - | - | - | - | - | - | - |
| | 3,3-Dichlorobenzidine | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | 3-nitroaniline | µg/L | 4 | | | | | | - | - | - | - | - | <4 | - | - | <4 | - | - | - | - | - | - | - |
| | 4-(dimethylamino) azobenzene | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | 4-bromophenyl phenyl ether | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | 4-chloroaniline | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | 4-chlorophenyl phenyl ether | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | 4-nitroaniline | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | 4-Nitroquinoline-N-oxide | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | 5-nitro-o-toluidine | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Aniline | µg/L | 2 | | | | | 250 | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Azobenzene | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Bis(2-chloroethoxy) methane | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Bis(2-chloroethyl)ether | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Carbazole | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Chlorobenzilate | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Dibenzofuran | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Hexachlorocyclopentadiene | µg/L | 10 | | | | | | - | - | - | - | - | <10 | - | - | <10 | - | - | - | - | - | - | - |
| | Hexachloroethane | µg/L | 2 | | | | | 360 | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Hexachloropropene | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Methapyrilene | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | N-nitrosodiethylamine | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | N-nitrosodi-n-butylamine | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | N-nitrosodi-n-propylamine | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | N-Nitrosomethylethylamine | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | N-nitrosomorpholine | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | N-nitrosopiperidine | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | N-nitrosopyrrolidine | µg/L | 4 | | | | | | - | - | - | - | - | <4 | - | - | <4 | - | - | - | - | - | - | - |
| | Pentachlorobenzene | µg/L | 2 | | | | | 2 | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | Phenacetin | µg/L | 2 | | | | | | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| VOCs | 1,1-dichloroethane | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | 1,2,3-trichlorobenzene | µg/L | 5 | | | | | 10 | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | 1,2,3-trichloropropane | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | 1,2-dibromoethane | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | 1,3-dichlorobenzene | µg/L | 2 | 20 | | | | 260 | - | - | - | - | - | <2 | - | - | <2 | - | - | - | - | - | - | - |
| | 2-butanone (MEK) | µg/L | 50 | | | | | | - | - | - | - | - | <50 | - | - | <50 | - | - | - | - | - | - | - |
| | 4-methyl-2-pentanone (MIBK) | µg/L | 50 | | | | | | - | - | - | - | - | <50 | - | - | <50 | - | - | - | - | - | - | - |
| | Bromodichloromethane | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | Bromoform | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | Chlorodibromomethane | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | Chloroethane | µg/L | 50 | | | | | | - | - | - | - | - | <50 | - | - | <50 | - | - | - | - | - | - | - |
| | cis-1,3-dichloropropene | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | cis-1,4-Dichloro-2-butene | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | Dibromomethane | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | Iodomethane | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | Pentachloroethane | µg/L | 5 | | | | | 80 | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | Trichloroethene | µg/L | 5 | | | | | 330 | - | - | <5 | - | - | <5 | <5 | <5 | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | Tetrachloroethene | µg/L | 5 | | | | | 70 | - | - | <5 | - | - | <5 | <5 | <5 | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | trans-1,3-dichloropropene | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | trans-1,2-dichloroethene | µg/L | 5 | | | | | | - | - | <5 | - | - | <5 | <5 | <5 | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | trans-1,4-Dichloro-2-butene | µg/L | 5 | | | | | | - | - | - | - | - | <5 | - | - | <5 | - | - | - | - | - | - | - |
| | Trichlorofluoromethane | µg/L | 50 | | | | | | - | - | - | - | - | <50 | - | - | <50 | - | - | - | - | - | - | - |
| PFAS - Perfluoroalkyl Carboxylic Acids | Perfluorobutanoic acid (PFBA) | µg/L | 0.01 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.01 | - | - | - | - |
| | Perfluoropentanoic acid (PFPeA) | µg/L | 0.002 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.002 | - | - | - | - |
| | Perfluorohexanoic acid (PFHxA) | µg/L | 0.002 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.002 | - | - | - | - |
| | Perfluoroheptanoic acid (PFHpA) | µg/L | 0.002 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.002 | - | - | - | - |
| | Perfluorooctanoic acid (PFOA) | µg/L | 0.002 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.002 | - | - | - | - |
| | Perfluorononanoic acid (PFNA) | µg/L | 0.002 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.002 | - | - | - | - |
| | Perfluorodecanoic acid (PFDA) | µg/L | 0.002 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.002 | - | - | - | - |
| | Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.002 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.002 | - | - | - | - |
| | Perfluorododecanoic acid (PFDoDA) | µg/L | 0.002 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.002 | - | - | - | - |
| | Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.002 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.002 | - | - | - | - |
| | Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.005 | - | - | - | - |
| PFAS - Perfluoroalkyl Sulfonic Acids | Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.002 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.002 | - | - | - | - |
| | Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.002 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.002 | - | - | - | - |
| | Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.002 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.002 | - | - | - | - |
| | Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.002 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.002 | - | - | - | - |
| | Perfluorooctane sulfonic acid (PFOS) | µg/L | 0.002 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.002 | - | - | - | - |
| | Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.002 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.002 | - | - | - | - |
| PFAS - Perfluoroalkyl Sulfonamide | Perfluorooctane sulfonamide (FOSA) | µg/L | 0.002 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.002 | - | - | - | - |
| | N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.005 | - | - | - | - |
| | N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.005 | - | - | - | - |
| | N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | µg/L | 0.002 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.002 | - | - | - | - |
| | N-Methyl perfluorooctane sulfonamidoethanol (MEFOSE) | µg/L | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.005 | - | - | - | - |
| | N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.005 | - | - | - | - |
| | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | µg/L | 0.002 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.002 | - | - | - | - |
| PFAS - Fluorotelomer Sulfonic Acids | 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.005 | - | - | - | - |
| | 6:2 Fluorotelomer Sulfonate (6:2 FTS) | µg/L | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.005 | - | - | - | - |
| | 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.005 | - | - | - | - |
| | 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.005 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.005 | - | - | - | - |
| PFAS - Sums | Sum of PFHxS and PFOS | µg/L | 0.002 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.002 | - | - | - | - |
| | PFAS (Sum of Total) | µg/L | 0.002 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.002 | - | - | - | - |
| | PFAS (Sum of Total)(WA DER List) | µg/L | 0.002 | | | | | | - | - | - | - | - | - | - | - | - | - | - | <0.002 | - | - | - | - |

| | | | | | | | | | Bore ID | WORMBH22 | WORMBH22 | WORMBH2 | WORMBH52 | WORMBH52 | WORMBH23 | WORMBH23A | WORMBH33A | WORMBH23A | WORMBH23A | WORMBH27 | WORMBH27 | WORMBH27 | WORMBH32 | WORMBH32 | WORMBH32 | WORMBH49 | WORMBH49 | WORMBH49 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Sampled_Date_Time | 26/3/2020 | 10/09/2020 | 29/10/2020 | 3/02/2021 | 24/05/2021 | 26/3/2020 | 19/08/2020 | 29/10/2020 | 3/02/2021 | 24/05/2021 | 3/03/2020 | 29/10/2020 | 18/05/2021 | 2/03/2020 | 29/08/2020 | 2/02/2021 | 3/03/2020 | 27/10/2020 | 18/05/2021 |
| | | | | | | | | | Lab_Report_Number | EM2003567 | EM2015608 | EM2019188 | EM2101804 | EM2109616 | EM2003567 | EM2014377 | EM2019188 | EM2101804 | EM2109616 | EM2003567 | EM2019000 | EM2109232 | EM2003567 | EM2014440 | EM2101443 | EM2003567 | EM2019000 | EM2109232 |
| | | | | | | | | | SampleCode | EM2003567002 | EM2015608001 | EM2019188002 | EM2101804002 | EM2109616001 | EM2003567003 | EM2014377003 | EM2019188001 | EM2101804001 | EM2109616002 | EM2003567005 | EM2019000002 | EM2109232003 | EM2003567001 | EM2014440001 | EM2101443001 | EM2003567004 | EM2019000001 | EM2109232001 |
| | | | | ADWG 2011 Aesthetic (v3.6 updated 2021) | ANZECC 2000 Stock Watering | ANZECC 2000 Irrigation Long-term Trigger Values | ANZECC 2000 Irrigation Short-term Trigger Values | ANZG (2018) - FW - 95% (updated 26 July 2021) | | | | | | | | | | | | | | | | | | | | |
| Class_Group | ChemName | subcat unit | RIN | | | | | | | | | | | | | | | | | | | | | | | | | |
| Inorganics | pH (Lab) | pH Units | 0.01 | 6.5-8.5 | | 6-9 | | | | 7.73 | 8.93 | 7.26 | 7.84 | 8.73 | 8.08 | 7.41 | 7.22 | 7.78 | 6.98 | 8.36 | 8.54 | 8.46 | 8.09 | 7.73 | 6.87 | 8.3 | 7.97 | 8.21 |
| | Electrical conductivity (lab) | µS/cm | 1 | | | 2900 | | | | 5710 | 7040 | 7350 | 6810 | 7410 | 6460 | 7150 | 7020 | 6980 | 7040 | 1400 | 2410 | 2480 | 7760 | 12300 | 12300 | 2460 | 2380 | 2580 |
| | Total Dissolved Solids | mg/L | 10 | 600 | 5000 | | | | | | 3960 | | | | | 3560 | | | | | | | | | | | | | |
| | Total Dissolved Solids (sat.) | mg/L | 1 | | 5000 | | | | | 3710 | - | 4780 | 4490 | 4820 | 4200 | - | 4570 | 4280 | 4580 | 910 | 1570 | - | 5060 | - | 8060 | 1600 | 1550 | - |
| | Total Suspended Solids | mg/L | 5 | | | | | | | - | 30 | - | 28 | - | - | 12 | - | 42 | - | - | 66 | - | 21 | 462 | - | <5 | - | - | - |
| | Salinity | mg/L | 0.00001 | | | | | | | - | - | - | - | - | - | - | - | - | - | 0.00129 | - | - | - | - | - | - | - | 0.00135 |
| | ??? | ms/cm | 10 | | | | | | | - | - | <10 | - | ?? | - | - | ?4 | - | <10 | - | <10 | - | 41 | <?0 | - | <10 | - | - |
| Biological | Escherichia coli (Colilert) | cmle/100mL | 1 | | | | | | | - | 0 | - | 8 | - | - | 0 | - | 0 | - | - | - | 0 | - | <10 | - | 8 | - | 0 |
| Cyanide | Cyanide (Total) | mg/L | 0.004 | | | | | 0.007 | | - | <1 | <1 | <0.004 | <1 | <1 | <1 | <1 | <0.004 | <1 | 3 | 17 | <0.004 | <0.004 | <1 | <0.004 | <1 | <0.004 | <0.004 |
| Acidity & Alkalinity | Alkalinity (Carbonate as CaCO3) | mg/L | 1 | | | | | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 3 | 17 | 26 | <1 | <1 | <1 | <1 | 2 | <1 |
| | Alkalinity (Bicarbonate as CaCO3) | mg/L | 1 | | | | | | | 322 | 348 | 414 | 363 | 427 | 542 | 469 | 578 | 513 | 552 | 159 | 265 | 261 | 156 | 388 | 424 | 232 | 247 | 249 |
| | Alkalinity (Hydroxide as CaCO3) | mg/L | 1 | | | | | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| | Alkalinity (Total as CaCO3) | mg/L | 1 | | | | | | | 322 | 348 | 414 | 363 | 427 | 542 | 469 | 578 | 513 | 552 | 162 | 282 | 286 | 156 | 388 | 424 | 232 | 247 | 249 |
| Major Ions | Calcium (Filtered) | mg/L | 1 | | 1000 | | | | | 106 | 124 | 114 | 116 | 133 | 136 | 137 | 195 | 121 | 132 | 7 | 12 | 12 | 135 | 135 | 116 | 16 | 15 | 19 |
| | Magnesium (Filtered) | mg/L | 1 | | | | | | | 205 | 253 | 268 | 269 | 286 | 236 | 238 | 225 | 249 | 241 | 21 | 40 | 45 | 95 | 321 | 284 | 64 | 66 | 71 |
| | Potassium (Filtered) | mg/L | 1 | | | | | | | 22 | 24 | 25 | 26 | 23 | 37 | 32 | 31 | 34 | 44 | 17 | 28 | 27 | 10 | 15 | 16 | 23 | 22 | 22 |
| | Sodium (Filtered) | mg/L | 1 | 180 | | | | | | 804 | 930 | 1040 | 974 | 976 | 895 | 926 | 935 | 936 | 931 | 217 | 371 | 380 | 1200 | 1960 | 1860 | 545 | 548 | 555 |
| | Chloride | mg/L | 1 | 250 | | 350 | | | | 1460 | 1950 | 1780 | 1940 | 1810 | 1730 | 1920 | 1660 | 1840 | 1730 | 385 | 691 | 620 | 2500 | 4090 | 4070 | 875 | 820 | 838 |
| | Sulfate (Filtered) | mg/L | 1 | 250 | 1000 | | | | | 446 | 508 | 563 | 527 | 527 | 286 | 388 | 403 | 401 | 395 | 41 | 64 | 57 | 453 | 641 | 608 | 114 | 78 | 100 |
| | Fluoride | mg/L | 0.1 | | 2 | 1 | 2 | | | - | - | - | 0.3 | - | - | - | - | 0.3 | - | - | 0.2 | 0.2 | - | - | 1 | - | 0.1 | 0.2 |
| | Cations Total | meq/L | 0.01 | | | | | | | 57.7 | 68.1 | 72.6 | 71 | 71.6 | 66.1 | 67.5 | 65.2 | 68.1 | 66 | 12 | 20.7 | 21.5 | 67 | 120 | 112 | 21.8 | 21.8 | 22.8 |
| | Anions Total | meq/L | 0.01 | | | | | | | 56.9 | 72.5 | 70.2 | 73.3 | 70.6 | 65.8 | 71.8 | 66.8 | 70.8 | 67.8 | 15 | 23.9 | 24.4 | 82.1 | 136 | 136 | 26 | 24 | 25.6 |
| | Ionic Balance | % | 0.01 | | | | | | | 0.69 | 3.17 | 2.38 | 1.66 | 0.71 | 0.38 | 2.91 | 1.17 | 1.81 | 0.14 | 11.1 | 7.11 | 6.25 | 13.1 | 8.58 | 9.75 | 8.37 | 4.32 | 5.84 |
| Nutrients | Ammonia as N | mg/L | 0.01 | | | | | 0.9 | | 0.18 | 0.42 | - | 0.19 | 0.23 | 0.41 | 0.3 | - | 0.46 | 0.63 | 0.05 | 0.08 | 0.07 | 0.33 | 0.03 | <0.01 | 0.09 | 0.04 | 0.02 |
| | Nitrate (as N) | mg/L | 0.01 | | 90 | | | 2.4 | | <0.01 | <0.01 | - | <0.01 | <0.01 | <0.01 | <0.01 | - | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| | Nitrite (as N) | mg/L | 0.01 | | 9.1 | | | | | <0.01 | <0.01 | - | <0.01 | <0.01 | <0.01 | <0.01 | - | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| | Nitrogen (Total Oxidised) (as N) | mg/L | 0.01 | | | | | | | <0.01 | <0.01 | - | <0.01 | 0.02 | <0.01 | <0.01 | - | 0.1 | 0.01 | <0.01 | <0.01 | 0.01 | <0.01 | 0.08 | 0.13 | <0.01 | <0.01 | 0.02 |
| | Nitrogen (Total) | mg/L | 0.1 | | | 5 | 25 | | | 0.3 | 0.4 | - | 0.4 | 0.4 | 14.1 | 0.3 | - | 1.2 | 0.8 | 0.3 | <0.1 | 0.2 | 15.1 | <0.1 | 0.3 | <0.1 | <0.1 | 0.2 |
| | Kjeldahl Nitrogen Total | mg/L | 0.1 | | | | | | | 0.3 | 0.4 | - | 0.4 | 0.4 | 14.1 | 0.3 | - | 1.1 | 0.8 | 0.3 | <0.1 | 0.2 | 15.1 | <0.1 | 0.2 | <0.1 | <0.1 | 0.2 |
| | Phosphorus (Total) | mg/L | 0.01 | | | 0.05 | 0.8 | | | 0.03 | 0.01 | - | 0.07 | 0.05 | 20.6 | 0.02 | - | 0.1 | 0.05 | 0.29 | 0.31 | 0.29 | 4.07 | 0.03 | 0.13 | 0.25 | 0.22 | 0.19 |
| Organic Indicators | BOD | mg/L | 2 | | | | | | | - | <6 | - | 5 | - | - | <2 | - | <2 | - | - | 8 | - | <2 | <2 | <2 | - | <2 | - |
| Metals | Arsenic (Filtered) | mg/L | 0.001 | | 0.5 | 0.1 | 2 | 0.013 | | 0.001 | <0.001 | - | 0.007 | 0.003 | 0.003 | <0.001 | - | 0.004 | <0.001 | 0.003 | 0.002 | <0.001 | 0.002 | <0.001 | <0.001 | 0.001 | 0.002 | 0.009 |
| | Cadmium (Filtered) | mg/L | 0.0001 | | 0.01 | 0.01 | 0.05 | 0.0002 | | <0.0001 | <0.0001 | - | <0.0001 | <0.0001 | <0.0001 | <0.0001 | - | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | 0.0002 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| | Chromium (III+VI) (Filtered) | mg/L | 0.001 | | 1 | 0.1 | 1 | 0.001 | | <0.001 | <0.001 | - | <0.001 | <0.001 | <0.001 | <0.001 | - | <0.001 | <0.001 | <0.001 | 0.002 | - | 0.26 | <0.001 | <0.001 | <0.001 | - | - |
| | Chromium (hexavalent) (Filtered) | mg/L | 0.001 | | | | | 0.001 | | - | - | - | <0.01 | - | - | - | - | <0.01 | - | <0.01 | - | <0.01 | <0.01 | <0.01 | <0.01 | - | <0.01 | <0.01 |
| | Copper (Filtered) | mg/L | 0.001 | 1 | 1 | 0.2 | 5 | 0.0014 | | 0.011 | 0.02 | - | 0.004 | <0.001 | 0.012 | 0.002 | - | <0.001 | <0.001 | 0.002 | 0.01 | <0.001 | 0.012 | 0.163 | 0.004 | 0.008 | <0.001 | <0.001 |
| | Lead (Filtered) | mg/L | 0.001 | | 0.1 | 2 | 5 | 0.0034 | | <0.001 | <0.001 | - | <0.001 | <0.001 | <0.001 | <0.001 | - | <0.001 | <0.001 | 0.001 | <0.001 | <0.001 | <0.001 | 0.002 | <0.001 | <0.001 | <0.001 | <0.001 |
| | Mercury (Filtered) | mg/L | 0.0001 | | 0.002 | 0.002 | 0.002 | 0.0006 | | <0.0001 | <0.0001 | - | <0.0001 | <0.0001 | <0.0001 | <0.0001 | - | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| | Nickel (Filtered) | mg/L | 0.001 | | 0.15 | 0.02 | 0.02 | | | 0.001 | 0.001 | - | 0.001 | 0.001 | 0.001 | 0.001 | - | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| | Selenium (Filtered) | mg/L | 0.001 | | 0.2 | 0.2 | 2 | 0.011 | | 0.018 | 0.031 | - | 0.039 | 0.031 | 0.014 | 0.023 | - | 0.052 | 0.004 | 0.006 | 0.006 | <0.001 | 0.007 | 0.015 | 0.004 | 0.008 | 0.009 | 0.012 |
| | Selenium (Filtered) | mg/L | 0.01 | | 0.02 | 0.02 | 0.02 | 0.011 | | - | - | - | <0.01 | - | - | - | - | <0.01 | - | - | <0.01 | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 |
| | Silver (Filtered) | mg/L | 0.001 | | | | | 0.00005 | | - | - | - | <0.001 | - | - | - | - | <0.001 | - | - | <0.001 | <0.001 | - | - | 0.005 | - | <0.001 | <0.001 |
| | Tin (Filtered) | mg/L | 0.001 | | | | | | | - | - | - | <0.001 | - | - | - | - | <0.001 | - | - | <0.001 | <0.001 | - | - | <0.001 | - | 0.001 | <0.001 |
| | Zinc (Filtered) | mg/L | 0.005 | 3 | 20 | 2 | 5 | 0.008 | | 0.105 | 0.066 | - | 0.032 | 0.007 | 0.032 | 0.087 | - | 0.02 | <0.005 | 0.048 | 0.012 | <0.005 | 0.036 | 0.129 | 0.063 | 0.053 | 0.025 | <0.005 |
| BTEXN | Benzene | µg/L | 1 | | | | | 950 | | - | <1 | - | <1 | <1 | <1 | <1 | - | <1 | <1 | - | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| | Toluene | µg/L | 2 | 25 | | | | 180 | | - | <2 | - | <2 | <2 | <2 | <2 | - | <2 | <2 | - | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| | Ethylbenzene | µg/L | 2 | 3 | | | | 80 | | - | <2 | - | <2 | <2 | <2 | <2 | - | <2 | <2 | - | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| | Xylene (m) | µg/L | 2 | | | | | 200 | | - | <2 | - | <2 | <2 | <2 | <2 | - | <2 | <2 | - | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| | Xylene (m & p) | µg/L | 2 | | | | | | | - | <2 | - | <2 | <2 | <2 | <2 | - | <2 | <2 | - | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| | Xylene Total | µg/L | 2 | 20 | | | | | | - | <2 | - | <2 | <2 | <2 | <2 | - | <2 | <2 | - | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| | BTEX (Sum of Total) - Lab Calc | µg/L | 1 | | | | | | | - | <1 | - | <1 | <1 | <1 | <1 | - | <1 | <1 | - | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| | Naphthalene | µg/L | 1 | | | | | 16 | | - | <1 | - | <1 | <1 | <1 | <1 | - | <1 | <1 | - | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| TRH - NEPM 2013 | C6-C9 Fraction minus BTEX) | µg/L | 20 | | | | | | | - | <20 | - | <20 | <20 | <20 | <20 | - | <20 | <20 | - | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 |
| | C6-C10 Fraction | µg/L | 20 | | | | | | | - | <20 | - | <20 | <20 | <20 | <20 | - | <20 | <20 | - | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 |
| | F2 (>C10-C16 minus Naphthalene) | µg/L | 100 | | | | | | | - | <100 | - | <100 | <100 | <100 | <100 | - | <100 | <100 | - | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 |
| | >C10-C16 Fraction | µg/L | 100 | | | | | | | - | <100 | - | <100 | <100 | <100 | <100 | - | <100 | <100 | - | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 |
| | F3 (>C16-C34 Fraction) | µg/L | 100 | | | | | | | - | <100 | - | 360 | <100 | - | <100 | - | 110 | <100 | - | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 |
| | F4 (>C34-C40 Fraction) | µg/L | 100 | | | | | | | - | <100 | - | <100 | <100 | <100 | <100 | - | <100 | <100 | - | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 |
| | >C10-C40 (Sum of Total) | µg/L | 100 | | | | | | | - | <100 | - | 360 | <100 | - | <100 | - | 110 | <100 | - | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 |
| TRH - NEPM 1999 | C6-C9 Fraction | µg/L | 20 | | | | | | | - | <20 | - | <20 | <20 | <20 | <20 | - | <20 | <20 | - | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 |
| | C10-C14 Fraction | µg/L | 50 | | | | | | | - | <50 | - | <50 | <50 | <50 | <50 | - | <50 | <50 | - | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 |
| | C15-C28 Fraction | µg/L | 100 | | | | | | | - | <100 | - | 320 | <100 | - | <100 | - | 120 | <100 | - | <100 | <100 | <100 | <100 | <100 | <100 | <100 | <100 |
| | C29-C36 Fraction | µg/L | 50 | | | | | | | - | <50 | - | 80 | <50 | - | <50 | - | 120 | <50 | - | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 |
| | C10-C36 (Sum of Total) | µg/L | 50 | | | | | | | - | <50 | - | 400 | <50 | - | <50 | - | 120 | <50 | - | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 |
| TPH | Oil & Grease | µg/L | 5000 | | | | | | | - | <5000 | - | <5000 | - | - | <5000 | - | - | - | - | <5000 | <5000 | - | <5000 | <5000 | - | <5000 | - |
| PAHs - standard 16 | Acenaphthene | µg/L | 1 | | | | | | | - | <2 | - | <1 | <2 | - | <2 | - | <1 | <2 | - | <1 | <2 | <1 | <2 | <1 | - | <1 | <1 |
| | Acenaphthylene | µg/L | 1 | | | | | | | - | <2 | - | <1 | <2 | - | <2 | - | <1 | <2 | - | <1 | <2 | <1 | <2 | <1 | - | <1 | <1 |
| | Anthracene | µg/L | 1 | | | | | 0.4 | | - | <2 | - | <1 | <2 | - | <2 | - | <1 | <2 | - | <1 | <2 | <1 | <2 | <1 | - | <1 | <1 |
| | Benz(a)anthracene | µg/L | 1 | | | | | | | - | <2 | - | <1 | <2 | - | <2 | - | <1 | <2 | - | <1 | <2 | <1 | <2 | <1 | - | <1 | <1 |
| | Benzo(a)pyrene | µg/L | 0.5 | | | | | 0.2 | | - | <2 | - | <0.5 | <2 | - | <2 | - | <0.5 | <2 | - | <0.5 | <0.5 | <0.5 | <2 | <0.5 | - | <0.5 | <0.5 |
| | Benzo(b+j)fluoranthene | µg/L | 1 | | | | | | | - | - | - | <1 | - | - | - | - | <1 | - | - | <1 | <1 | <1 | - | <1 | - | <1 | <1 |
| | Benzo(g,h,i)perylene | µg/L | 1 | | | | | | | - | <2 | - | <1 | <2 | - | <2 | - | <1 | <2 | - | <1 | <1 | <1 | <2 | <1 | - | <1 | <1 |
| | Benzo(k)fluoranthene | µg/L | 1 | | | | | | | - | <2 | - | <1 | <2 | - | <2 | - | <1 | <2 | - | <1 | <1 | <1 | <2 | <1 | - | <1 | <1 |
| | Chrysene | µg/L | 1 | | | | | | | - | <2 | - | <1 | <2 | - | <2 | - | <1 | <2 | - | <1 | <1 | <1 | <2 | <1 | - | <1 | <1 |
| | Dibenz(a,h)anthracene | µg/L | 1 | | | | | | | - | <2 | - | <1 | <2 | - | <2 | - | <1 | <2 | - | <1 | <1 | <1 | <2 | <1 | - | <1 | <1 |
| | Fluoranthene | µg/L | 1 | | | | | 1.4 | | - | <2 | - | <1 | <2 | - | <2 | - | <1 | <2 | - | <1 | <1 | <1 | <2 | <1 | - | <1 | <1 |
| | Fluorene | µg/L | 1 | | | | | | | - | <2 | - | <1 | <2 | - | <2 | - | <1 | <2 | - | <1 | <1 | <1 | <2 | <1 | - | <1 | <1 |
| | Indeno(1,2,3-c,d)pyrene | µg/L | 1 | | | | | | | - | <2 | - | <1 | <2 | - | <2 | - | <1 | <2 | - | <1 | <1 | <1 | <2 | <1 | - | <1 | <1 |
| | Phenanthrene | µg/L | 1 | | | | | 2 | | - | <2 | - | <1 | <2 | - | <2 | - | <1 | <2 | - | <1 | <1 | <1 | <2 | <1 | - | <1 | <1 |
| | Pyrene | µg/L | 1 | | | | | | | - | <2 | - | <1 | <2 | - | <2 | - | <1 | <2 | - | <1 | <1 | <1 | <2 | <1 | - | <1 | <1 |
| | PAHs (Sum of total) - Lab calc | µg/L | 0.5 | | | | | | | - | <2 | - | <0.5 | <2 | - | <2 | - | <0.5 | <2 | - | <0.5 | <0.5 | <0.5 | <2 | <0.5 | - | <0.5 | <0.5 |
| | Total B(a)P (NEPM) (half TEQ/Users LOR) - Lab Calc | µg/L | 0.5 | | | | | | | - | <2 | - | <0.5 | <2 | - | <2 | - | <0.5 | <2 | - | <0.5 | <0.5 | <0.5 | <2 | <0.5 | - | <0.5 | <0.5 |
| PAHs - extended | 1-methylfluorene | µg/L | 2 | | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | 3-methylcholanthrene | µg/L | 2 | | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | 7,12-dimethylbenz(a)anthracene | µg/L | 2 | | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Benzo(b+j+k)fluoranthene | µg/L | 4 | | | | | | | - | <4 | - | - | <4 | - | <4 | - | - | <4 | - | - | - | - | <4 | - | - | - | - |
| Phenols - Halogenated | 2-Chlorophenol | µg/L | 2 | | 0.1 | | | 490 | | - | <2 | - | <2 | <2 | - | <2 | - | <2 | <2 | - | <2 | <2 | <2 | <2 | <2 | - | <2 | <2 |
| | 2,4-Dichlorophenol | µg/L | 2 | | 0.3 | | | 760 | | - | <2 | - | <2 | <2 | - | <2 | - | <2 | <2 | - | <2 | <2 | <2 | <2 | <2 | - | <2 | <2 |
| | 2,4,5-Trichlorophenol | µg/L | 2 | | | | | | | - | <2 | - | <2 | <2 | - | <2 | - | <2 | <2 | - | <2 | <2 | <2 | <2 | <2 | - | <2 | <2 |
| | 2,4,6-Trichlorophenol | µg/L | 2 | | 2 | | | 20 | | - | <2 | - | <2 | <2 | - | <2 | - | <2 | <2 | - | <2 | <2 | <2 | <2 | <2 | - | <2 | <2 |
| | 2,6-Dichlorophenol | µg/L | 2 | | | | | | | - | <2 | - | <2 | <2 | - | <2 | - | <2 | <2 | - | <2 | <2 | <2 | <2 | <2 | - | <2 | <2 |
| | 4-Chloro-3-methylphenol | µg/L | 2 | | | | | | | - | <2 | - | <4 | <2 | - | <2 | - | <4 | <2 | - | <4 | <4 | - | <2 | <4 | - | <4 | <4 |
| | Pentachlorophenol | µg/L | 2 | | | | | 10 | | - | <4 | - | <2 | <4 | - | <4 | - | <2 | <4 | - | <2 | <2 | <2 | <4 | <2 | - | <2 | <2 |
| | Phenols(halonnated) - Lab Calc | µg/L | 2 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Phenols - Non-Halogenated | Phenol | µg/L | 2 | | | | | 300 | | - | <2 | - | <4 | <2 | - | <2 | - | <4 | <2 | - | <4 | <4 | - | <2 | <4 | - | <4 | <4 |
| | 2-Methylphenol | µg/L | 2 | | | | | | | - | <2 | - | <4 | <2 | - | <2 | - | <4 | <2 | - | <4 | <4 | - | <2 | <4 | - | <4 | <4 |
| | 2-Methylphenol (o-Cresol) | µg/L | 2 | | | | | | | - | <2 | - | <4 | <2 | - | <2 | - | <4 | <2 | - | <4 | <4 | - | <2 | <4 | - | <4 | <4 |
| | 3,4-Methylphenol (m,p-cresol) | µg/L | 4 | | | | | | | - | <4 | - | <4 | <4 | - | <4 | - | <4 | <4 | - | <4 | <4 | - | <4 | <4 | - | <4 | <4 |
| | 2,4-Dimethylphenol | µg/L | 2 | | | | | | | - | <2 | - | <4 | <2 | - | <2 | - | <4 | <2 | - | <4 | <4 | - | <2 | <4 | - | <4 | <4 |
| | 2,4-Dichlorophenol | µg/L | 100 | | | | | 45 | | - | - | - | <100 | - | - | - | - | <100 | - | - | <100 | <100 | - | - | <100 | - | <100 | <100 |
| | 4,6-Dinitro-2-methylphenol | µg/L | 50 | | | | | | | - | - | - | <50 | - | - | - | - | <50 | - | - | <50 | <50 | - | - | <50 | - | <50 | <50 |
| | 4,6-Dinitro-o-cyclohexylphenol | µg/L | 50 | | | | | | | - | - | - | <50 | - | - | - | - | <50 | - | - | <50 | <50 | - | - | <50 | - | <50 | <50 |
| | 4-Nitrophenol | µg/L | 50 | | | | | | | - | - | - | <50 | - | - | - | - | <50 | - | - | <50 | <50 | - | - | <50 | - | <50 | <50 |
| | Phenols (Total Non-Halogenated) | µg/L | 4 | | | | | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Phenols | 2,3,5,6-Tetrachlorophenol | µg/L | 2 | | | | | | | - | - | - | <2 | - | - | - | - | <2 | - | - | <2 | <2 | - | - | <2 | - | <2 | <2 |
| | 2,3,4,5 & 2,3,4,6-Tetrachlorophenol | µg/L | 2 | | | | | | | - | - | - | <2 | - | - | - | - | <2 | - | - | <2 | <2 | - | - | <2 | - | <2 | <2 |
| OC Pesticides | 4,4'-DDE | µg/L | 0.5 | | | | | | | - | <2 | - | <0.5 | <0.5 | - | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 |
| | a-BHC | µg/L | 0.5 | | | | | | | - | <2 | - | <0.5 | <0.5 | - | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 |
| | Aldrin | µg/L | 0.5 | | | | | | | - | <2 | - | <0.5 | <0.5 | - | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 |
| | Aldrin + Dieldrin | µg/L | 0.5 | | | | | | | - | <2 | - | - | <0.5 | - | <0.5 | - | - | <0.5 | - | - | - | - | <0.5 | - | - | - | - |
| | Chlordane | µg/L | 0.5 | | | | | 0.08 | | - | <2 | - | - | <0.5 | - | <0.5 | - | - | <0.5 | - | - | - | - | <0.5 | - | - | - | - |
| | Chlordane (cis) | µg/L | 0.5 | | | | | | | - | - | - | <0.5 | <0.5 | - | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 |
| | Chlordane (trans) | µg/L | 0.5 | | | | | | | - | - | - | <0.5 | <0.5 | - | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 |
| | d-BHC | µg/L | 0.5 | | | | | | | - | <2 | - | - | <0.5 | - | <0.5 | - | - | <0.5 | - | - | - | - | <0.5 | - | - | - | - |
| | 4,4 DDD | µg/L | 0.5 | | | | | | | - | <2 | - | <0.5 | <0.5 | - | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 |
| | 4,4 DDT | µg/L | 0.5 | | | | | 0.01 | | - | <4 | - | <0.5 | <2 | - | <2 | - | <0.5 | <2 | - | <0.5 | <0.5 | - | <2 | <0.5 | - | <0.5 | <0.5 |
| | DDT+DDE+DDD - Lab Calc | µg/L | 0.5 | | | | | | | - | <4 | - | - | <0.5 | - | <0.5 | - | - | <0.5 | - | - | - | - | <0.5 | - | - | - | - |
| | Dieldrin | µg/L | 0.5 | | | | | | | - | <2 | - | <0.5 | <0.5 | - | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 |
| | Endosulfan I (alpha) | µg/L | 0.5 | | | | | | | - | <2 | - | - | <0.5 | - | <0.5 | - | - | <0.5 | - | - | - | - | <0.5 | - | - | - | - |
| | Endosulfan II (beta) | µg/L | 0.5 | | | | | | | - | <2 | - | - | <0.5 | - | <0.5 | - | - | <0.5 | - | - | - | - | <0.5 | - | - | - | - |
| | Endosulfan Sulfate | µg/L | 0.5 | | | | | | | - | <2 | - | - | <0.5 | - | <0.5 | - | - | <0.5 | - | - | - | - | <0.5 | - | - | - | - |
| | Endrin | µg/L | 0.5 | | | | | 0.02 | | - | <2 | - | - | <0.5 | - | <0.5 | - | - | <0.5 | - | - | - | - | <0.5 | - | - | - | - |
| | Endrin aldehyde | µg/L | 0.5 | | | | | | | - | - | - | - | <0.5 | - | <0.5 | - | - | <0.5 | - | - | - | - | <0.5 | - | - | - | - |
| | Endrin ketone | µg/L | 0.5 | | | | | | | - | - | - | - | <0.5 | - | <0.5 | - | - | <0.5 | - | - | - | - | <0.5 | - | - | - | - |
| | g-BHC (Lindane) | µg/L | 0.5 | | | | | 0.2 | | - | <2 | - | <0.5 | <0.5 | - | <0.5 | - | - | <0.5 | - | - | - | - | <0.5 | - | - | - | - |
| | Heptachlor | µg/L | 0.5 | | | | | 0.09 | | - | <2 | - | <0.5 | <0.5 | - | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | <0.5 |
| | Heptachlor epoxide | µg/L | 0.5 | | | | | | | - | <2 | - | - | <0.5 | - | <0.5 | - | - | <0.5 | - | - | - | - | <0.5 | - | - | - | - |
| | Hexachlorobenzene | µg/L | 0.5 | | | | | 0.1 | | - | <4 | - | - | <0.5 | - | <0.5 | - | - | <0.5 | - | - | - | - | <0.5 | - | - | - | - |
| | Methoxychlor | ug/L | 2 | | | | | | | - | - | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |

| Chem_Group | ChemName | output unit | EQL | ADWG 2011 Aesthetic (v3.6 updated 2021) | ANZECC 2000 Stock Watering | ANZECC 2000 Irrigation Long-term Trigger Values | ANZECC 2000 Irrigation Short-term Trigger Values | ANZG (2018) - FW - 95% (updated 26 July 2021) | WORMBH22<br>2/03/2020<br>EM2003567<br>EM2003567002 | WORMBH22<br>10/09/2020<br>EM2015608<br>EM2015608001 | WORMBH22<br>29/10/2020<br>EM2019188<br>EM2019188002 | WORMBH22<br>3/02/2021<br>EM2101604<br>EM2101604002 | WORM-BH22<br>24/05/2021<br>EM2109616<br>EM2109616001 | WORMBH23<br>2/03/2020<br>EM2003567<br>EM2003567003 | WORMBH23A<br>19/08/2020<br>EM2014371<br>EM2014371003 | WORMBH23A<br>29/10/2020<br>EM2019188<br>EM2019188001 | WORMBH23A<br>3/02/2021<br>EM2101604<br>EM2101604001 | WORMBH23A<br>24/05/2021<br>EM2109616<br>EM2109616002 | WORMBH27<br>3/03/2020<br>EM2003567<br>EM2003567005 | WORMBH27<br>28/10/2020<br>EM2019000<br>EM2019000002 | WORMBH27<br>18/05/2021<br>EM2109232<br>EM2109232003 | WORMBH32<br>2/03/2020<br>EM2003567<br>EM2003567001 | WORMBH32<br>20/08/2020<br>EM2014440<br>EM2014440001 | WORMBH32<br>2/02/2021<br>EM2101443<br>EM2101443001 | WORMBH49<br>3/03/2020<br>EM2003567<br>EM2003567004 | WORMBH49<br>27/10/2020<br>EM2019000<br>EM2019000001 | WORMBH49<br>18/05/2021<br>EM2109232<br>EM2109232001 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OP Pesticides | Chlorfenvinphos | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Chlorpyrifos | µg/L | 2 | | | | | 0.01 | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Chlorpyrifos-methyl | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Diazinon | µg/L | 2 | | | | | 0.01 | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Dichlorvos | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Dimethoate | µg/L | 2 | | | | | 0.15 | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Ethion | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Fenthion | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Malathion | µg/L | 2 | | | | | 0.05 | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Pirimphos-ethyl | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Prothiofos | ug/l | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| Chlorinated Hydrocarbons | 1,1,1,2-tetrachloroethane | µg/L | 5 | | | | | | - | <5 | - | <5 | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | 1,1,1-trichloroethane | µg/L | 5 | | | | | 270 | - | <5 | - | <5 | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | 1,1,2,2-tetrachloroethane | µg/L | 5 | | | | | 400 | - | <5 | - | <5 | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | 1,1,2-trichloroethane | µg/L | 5 | | | | | 6500 | - | <5 | - | <5 | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | 1,1-dichloroethene | µg/L | 5 | | | | | 700 | - | <5 | - | <5 | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | 1,1-dichloropropene | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | 1,2,4-trichlorobenzene | µg/L | 2 | | | | | 170 | - | <2 | - | <5 | <2 | - | <2 | - | <5 | <2 | - | <5 | <5 | - | <2 | <5 | - | <5 | <5 |
| | 1,2-dibromo-3-chloropropane | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | 1,2-dichlorobenzene | µg/L | 2 | 1 | | | | 160 | - | <2 | - | <5 | <2 | - | <2 | - | <5 | <2 | - | <5 | <5 | - | <2 | <5 | - | <5 | <5 |
| | 1,2-dichloroethane | µg/L | 5 | | | | | 1900 | - | <5 | - | <5 | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | 1,2-dichloropropane | µg/L | 5 | | | | | 1100 | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | 1,3-dichloropropane | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | 1,4-dichlorobenzene | µg/L | 2 | 0.3 | | | | 60 | - | <2 | - | <5 | <2 | - | <2 | - | <5 | <2 | - | <5 | <5 | - | <2 | <5 | - | <5 | <5 |
| | 2,2-dichloropropane | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | 2-chloronaphthalene | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | 2-chlorotoluene | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | 4-chlorotoluene | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | Bromobenzene | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | Carbon tetrachloride | µg/L | 5 | | | | | 240 | - | <5 | - | <5 | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | Chlorobenzene | µg/L | 5 | 10 | | | | 55 | - | <5 | - | <5 | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | Chloroform | µg/L | 5 | | | | | 770 | - | <5 | - | <5 | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | Chloromethane | µg/L | 50 | | | | | | - | <50 | - | - | <50 | - | <50 | - | - | <50 | - | - | - | - | <50 | - | - | - | - |
| | cis-1,2-dichloroethene | µg/L | 5 | | | | | | - | <5 | - | <5 | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | Methylene chloride | µg/L | 5 | | | | | 4000 | - | - | - | <5 | - | - | - | - | <5 | - | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | Hexachlorobutadiene | µg/L | 2 | | | | | | - | <2 | - | <5 | <2 | - | <2 | - | <5 | <2 | - | <5 | <5 | - | <2 | <5 | - | <5 | <5 |
| | Vinyl chloride | ug/l | 50 | | | | | 100 | - | <50 | - | <50 | <50 | - | <50 | - | <50 | <50 | - | <50 | <50 | - | <50 | <50 | - | <50 | <50 |
| Explosives | 1,3,5-Trinitrobenzene | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | 2,4-Dinitrotoluene | µg/L | 4 | | | | | 65 | - | <4 | - | - | <4 | - | <4 | - | - | <4 | - | - | - | - | <4 | - | - | - | - |
| | 2,6-dinitrotoluene | µg/L | 4 | | | | | | - | <4 | - | - | <4 | - | <4 | - | - | <4 | - | - | - | - | <4 | - | - | - | - |
| | Nitrobenzene | ug/l | 2 | | | | | 550 | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| Halogenated Hydrocarbons | Bromomethane | µg/L | 50 | | | | | | - | <50 | - | - | <50 | - | <50 | - | - | <50 | - | - | - | - | <50 | - | - | - | - |
| | Dichlorodifluoromethane | ug/l | 50 | | | | | | - | <50 | - | - | <50 | - | <50 | - | - | <50 | - | - | - | - | <50 | - | - | - | - |
| Herbicides | Dinoseb | µg/L | 50 | | | | | | - | - | - | <50 | - | - | - | - | <50 | - | - | <50 | <50 | - | - | <50 | - | <50 | <50 |
| | Pronamide | ug/l | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| Nitroaromatics and Ketones | 2-Picoline | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | 4-aminobiphenyl | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Acetophenone | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | N-Nitrosodiphenyl & Diphenylamine | µg/L | 4 | | | | | | - | <4 | - | - | <4 | - | <4 | - | - | <4 | - | - | - | - | <4 | - | - | - | - |
| | Pentachloronitrobenzene | ug/l | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| Solvents | 2-hexanone (MBK) | µg/L | 50 | | | | | | - | <50 | - | - | <50 | - | <50 | - | - | <50 | - | - | - | - | <50 | - | - | - | - |
| | Carbon disulfide | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | Isophorone | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Vinyl acetate | ug/l | 50 | | | | | | - | <50 | - | - | <50 | - | <50 | - | - | <50 | - | - | - | - | <50 | - | - | - | - |
| PCBs | PCBs (Total) | ug/l | 1 | | | | | | - | <1 | - | <1 | <1 | - | <1 | - | <1 | <1 | - | <1 | <1 | - | <1 | <1 | - | <1 | <1 |
| Phthalates | Bis(2-ethylhexyl) phthalate | µg/L | 10 | | | | | | - | <10 | - | - | <10 | - | <10 | - | - | <10 | - | - | - | - | <10 | - | - | - | - |
| | Butyl benzyl phthalate | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Diethylphthalate | µg/L | 2 | | | | | 1000 | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Dimethyl phthalate | µg/L | 2 | | | | | 3700 | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Di-n-butyl phthalate | µg/L | 2 | | | | | 26 | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Di-n-octyl phthalate | ug/l | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| Surfactants | Anionic Surfactants as MBAS | ug/l | 50 | | | | | | - | <50 | - | <100 | - | - | <100 | - | - | - | - | <100 | - | - | <50 | <100 | - | <100 | - |
| MAH | 1,2,4-trimethylbenzene | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | 1,3,5-trimethylbenzene | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | Isopropylbenzene | µg/L | 5 | | | | | 30 | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | Styrene | µg/L | 5 | 4 | | | | | - | <5 | - | <5 | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | n-butylbenzene | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | n-propylbenzene | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | sec-butylbenzene | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | tert-butylbenzene | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | p-isopropyltoluene | ug/l | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| SVOCs | 1-naphthylamine | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | 2-(acetylamino) fluorene | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | 2-nitroaniline | µg/L | 4 | | | | | | - | <4 | - | - | <4 | - | <4 | - | - | <4 | - | - | - | - | <4 | - | - | - | - |
| | 3,3-Dichlorobenzidine | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | 3-nitroaniline | µg/L | 4 | | | | | | - | <4 | - | - | <4 | - | <4 | - | - | <4 | - | - | - | - | <4 | - | - | - | - |
| | 4-(dimethylamino) azobenzene | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | 4-bromophenyl phenyl ether | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | 4-chloroaniline | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | 4-chlorophenyl phenyl ether | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | 4-nitroaniline | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | 4-Nitroquinoline-N-oxide | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | 5-nitro-o-toluidine | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Aniline | µg/L | 2 | | | | | 250 | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Azobenzene | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Bis(2-chloroethoxy) methane | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Bis(2-chloroethyl)ether | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Carbazole | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Chlorobenzilate | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Dibenzofuran | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Hexachlorocyclopentadiene | µg/L | 10 | | | | | | - | <10 | - | - | <10 | - | <10 | - | - | <10 | - | - | - | - | <10 | - | - | - | - |
| | Hexachloroethane | µg/L | 2 | | | | | 360 | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Hexachloropropene | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Methapyrilene | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | N-nitrosodiethylamine | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | N-nitrosodi-n-butylamine | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | N-nitrosodi-n-propylamine | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | N-Nitrosomethylethylamine | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | N-nitrosomorpholine | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | N-nitrosopiperidine | µg/L | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | N-nitrosopyrrolidine | µg/L | 4 | | | | | | - | <4 | - | - | <4 | - | <4 | - | - | <4 | - | - | - | - | <4 | - | - | - | - |
| | Pentachlorobenzene | µg/L | 2 | | | | | 2 | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | Phenacetin | ug/l | 2 | | | | | | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| VOCs | 1,1-dichloroethane | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | 1,2,3-trichlorobenzene | µg/L | 5 | | | | | 10 | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | 1,2,3-trichloropropane | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | 1,2-dibromoethane | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | 1,3-dichlorobenzene | µg/L | 2 | 20 | | | | 260 | - | <2 | - | - | <2 | - | <2 | - | - | <2 | - | - | - | - | <2 | - | - | - | - |
| | 2-butanone (MEK) | µg/L | 50 | | | | | | - | <50 | - | - | <50 | - | <50 | - | - | <50 | - | - | - | - | <50 | - | - | - | - |
| | 4-methyl-2-pentanone (MIBK) | µg/L | 50 | | | | | | - | <50 | - | - | <50 | - | <50 | - | - | <50 | - | - | - | - | <50 | - | - | - | - |
| | Bromodichloromethane | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | Bromoform | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | Chlorodibromomethane | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | Chloroethane | µg/L | 50 | | | | | | - | <50 | - | - | <50 | - | <50 | - | - | <50 | - | - | - | - | <50 | - | - | - | - |
| | cis-1,3-dichloropropene | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | cis-1,4-Dichloro-2-butene | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | Dibromomethane | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | Iodomethane | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | Pentachloroethane | µg/L | 5 | | | | | 80 | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | Trichloroethene | µg/L | 5 | | | | | 330 | - | <5 | - | <5 | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | Tetrachloroethene | µg/L | 5 | | | | | 70 | - | <5 | - | <5 | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | trans-1,3-dichloropropene | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | trans-1,2-dichloroethene | µg/L | 5 | | | | | | - | <5 | - | <5 | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 | - | <5 | <5 |
| | trans-1,4-Dichloro-2-butene | µg/L | 5 | | | | | | - | <5 | - | - | <5 | - | <5 | - | - | <5 | - | - | - | - | <5 | - | - | - | - |
| | Trichlorofluoromethane | ug/l | 50 | | | | | | - | <50 | - | - | <50 | - | <50 | - | - | <50 | - | - | - | - | <50 | - | - | - | - |
| PFAS - Perfluoroalkyl Carboxylic Acids | Perfluorobutanoic acid (PFBA) | µg/L | 0.01 | | | | | | - | - | <0.01 | - | - | - | - | <0.01 | - | - | - | - | - | - | - | - | - | - | - |
| | Perfluoropentanoic acid (PFPeA) | µg/L | 0.002 | | | | | | - | - | <0.002 | - | - | - | - | <0.002 | - | - | - | - | - | - | - | - | - | - | - |
| | Perfluorohexanoic acid (PFHxA) | µg/L | 0.002 | | | | | | - | - | <0.002 | - | - | - | - | <0.002 | - | - | - | - | - | - | - | - | - | - | - |
| | Perfluoroheptanoic acid (PFHpA) | µg/L | 0.002 | | | | | | - | - | <0.002 | - | - | - | - | <0.002 | - | - | - | - | - | - | - | - | - | - | - |
| | Perfluorooctanoic acid (PFOA) | µg/L | 0.002 | | | | | | - | - | <0.002 | - | - | - | - | <0.002 | - | - | - | - | - | - | - | - | - | - | - |
| | Perfluorononanoic acid (PFNA) | µg/L | 0.002 | | | | | | - | - | <0.002 | - | - | - | - | <0.002 | - | - | - | - | - | - | - | - | - | - | - |
| | Perfluorodecanoic acid (PFDA) | µg/L | 0.002 | | | | | | - | - | <0.002 | - | - | - | - | <0.002 | - | - | - | - | - | - | - | - | - | - | - |
| | Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.002 | | | | | | - | - | <0.002 | - | - | - | - | <0.002 | - | - | - | - | - | - | - | - | - | - | - |
| | Perfluorododecanoic acid (PFDoDA) | µg/L | 0.002 | | | | | | - | - | <0.002 | - | - | - | - | <0.002 | - | - | - | - | - | - | - | - | - | - | - |
| | Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.002 | | | | | | - | - | <0.002 | - | - | - | - | <0.002 | - | - | - | - | - | - | - | - | - | - | - |
| | Perfluorotetradecanoic acid (PFTeDA) | ug/l | 0.005 | | | | | | - | - | <0.005 | - | - | - | - | <0.005 | - | - | - | - | - | - | - | - | - | - | - |
| PFAS - Perfluoroalkyl Sulfonic Acids | Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.002 | | | | | | - | - | <0.002 | - | - | - | - | <0.002 | - | - | - | - | - | - | - | - | - | - | - |
| | Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.002 | | | | | | - | - | <0.002 | - | - | - | - | <0.002 | - | - | - | - | - | - | - | - | - | - | - |
| | Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.002 | | | | | | - | - | <0.002 | - | - | - | - | <0.002 | - | - | - | - | - | - | - | - | - | - | - |
| | Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.002 | | | | | | - | - | <0.002 | - | - | - | - | <0.002 | - | - | - | - | - | - | - | - | - | - | - |
| | Perfluorooctane sulfonic acid (PFOS) | µg/L | 0.002 | | | | | | - | - | <0.002 | - | - | - | - | <0.002 | - | - | - | - | - | - | - | - | - | - | - |
| | Perfluorodecanesulfonic acid (PFDS) | ug/l | 0.002 | | | | | | - | - | <0.002 | - | - | - | - | <0.002 | - | - | - | - | - | - | - | - | - | - | - |
| PFAS - Perfluoroalkyl Sulfonamide | Perfluorooctane sulfonamide (FOSA) | µg/L | 0.002 | | | | | | - | - | <0.002 | - | - | - | - | <0.002 | - | - | - | - | - | - | - | - | - | - | - |
| | N-Methyl perfluorooctane sulfonamide (MeFOSA) | µg/L | 0.005 | | | | | | - | - | <0.005 | - | - | - | - | <0.005 | - | - | - | - | - | - | - | - | - | - | - |
| | N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.005 | | | | | | - | - | <0.005 | - | - | - | - | <0.005 | - | - | - | - | - | - | - | - | - | - | - |
| | N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | µg/L | 0.002 | | | | | | - | - | <0.002 | - | - | - | - | <0.002 | - | - | - | - | - | - | - | - | - | - | - |
| | N-Methyl perfluorooctane sulfonamidoethanol (MEFOSE) | µg/L | 0.005 | | | | | | - | - | <0.005 | - | - | - | - | <0.005 | - | - | - | - | - | - | - | - | - | - | - |
| | N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.005 | | | | | | - | - | <0.005 | - | - | - | - | <0.005 | - | - | - | - | - | - | - | - | - | - | - |
| | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | ug/l | 0.002 | | | | | | - | - | <0.002 | - | - | - | - | <0.002 | - | - | - | - | - | - | - | - | - | - | - |
| PFAS - Fluorotelomer Sulfonic Acids | 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.005 | | | | | | - | - | <0.005 | - | - | - | - | <0.005 | - | - | - | - | - | - | - | - | - | - | - |
| | 6:2 Fluorotelomer Sulfonate (6:2 FTS) | µg/L | 0.005 | | | | | | - | - | <0.008 | - | - | - | - | <0.005 | - | - | - | - | - | - | - | - | - | - | - |
| | 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.005 | | | | | | - | - | <0.005 | - | - | - | - | <0.005 | - | - | - | - | - | - | - | - | - | - | - |
| | 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | ug/l | 0.005 | | | | | | - | - | <0.005 | - | - | - | - | <0.005 | - | - | - | - | - | - | - | - | - | - | - |
| PFAS - Sums | Sum of PFHxS and PFOS | µg/L | 0.002 | | | | | | - | - | <0.002 | - | - | - | - | <0.002 | - | - | - | - | - | - | - | - | - | - | - |
| | PFAS (Sum of Total) | µg/L | 0.002 | | | | | | - | - | <0.002 | - | - | - | - | <0.002 | - | - | - | - | - | - | - | - | - | - | - |
| | PFAS (Sum of Total)(WA DER List) | ug/l | 0.002 | | | | | | - | - | <0.002 | - | - | - | - | <0.002 | - | - | - | - | - | - | - | - | - | - | - |

# Appendix F

## Certified laboratory analytical reports

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **EM2014137** | Page | : 1 of 10 |
| Client | : **GHD PTY LTD** | Laboratory | : Environmental Division Melbourne |
| Contact | : MR ALAN WILSON | Contact | : Shirley LeCornu |
| Address | : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001 | Address | : 4 Westall Rd Springvale VIC Australia 3171 |
| Telephone | : 03 8687 8494 | Telephone | : +6138549 9630 |
| Project | : 12529997 | Date Samples Received | : 14-Aug-2020 09:15 |
| Order number | : ---- | Date Analysis Commenced | : 15-Aug-2020 |
| C-O-C number | : ---- | Issue Date | : 20-Aug-2020 13:51 |
| Sampler | : MM | | |
| Site | : ---- | | |
| Quote number | : EN/005/17 (Victoria Primary Quote) | | |
| No. of samples received | : 7 | | |
| No. of samples analysed | : 5 | | |

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This 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* |
|---|---|---|
| Dilani Fernando | Senior Inorganic Chemist | Melbourne Inorganics, Springvale, VIC |
| Nancy Wang | 2IC Organic Chemist | Melbourne Inorganics, Springvale, VIC |
| Nancy Wang | 2IC Organic Chemist | Melbourne Organics, Springvale, VIC |
| Xing Lin | Senior Organic Chemist | Melbourne Organics, Springvale, VIC |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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

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

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

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

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

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

- EG048G: EM2014107 #18, poor matrix spike recovery for hexavalent chromium due to sample matrix. confirmed by re-analysis.
- 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, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP074-UT: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EG035T: EM2014107 #13 Poor matrix spike recovery for total mercury due to sample matrix. Confirmed by re-extraction and re-analysis.
- EG020-F : EM2013977 #1 Poor matrix spike recovery for dissolved metal due to sample matrix. Confirmed by re-digestion and re-analysis.
- Sample BH04 was filtered through a 0.45um filter prior to the dissolved metals analysis.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Client sample ID | BH01_0.1 | BH01_0.5 | BH11_0.1 | BH11_0.5 | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 10-Aug-2020 00:00 | 10-Aug-2020 00:00 | 13-Aug-2020 00:00 | 13-Aug-2020 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | EM2014137-001 | EM2014137-002 | EM2014137-003 | EM2014137-004 | -------- |
| | | | | Result | Result | Result | Result | ---- |
| **EA001: pH in soil using 0.01M CaCl extract** | | | | | | | | |
| pH (CaCl2) | ---- | 0.1 | pH Unit | **5.2** | **7.7** | **4.6** | **5.6** | ---- |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 1.0 | % | **32.4** | **31.7** | **23.5** | **25.6** | ---- |
| **EG005(ED093)T: Total Metals by ICP-AES** | | | | | | | | |
| Arsenic | 7440-38-2 | 5 | mg/kg | **6** | <5 | <5 | <5 | ---- |
| Cadmium | 7440-43-9 | 1 | mg/kg | <1 | <1 | <1 | <1 | ---- |
| Copper | 7440-50-8 | 5 | mg/kg | **14** | **10** | **15** | **23** | ---- |
| Lead | 7439-92-1 | 5 | mg/kg | **19** | **11** | **12** | **10** | ---- |
| Molybdenum | 7439-98-7 | 2 | mg/kg | <2 | <2 | <2 | <2 | ---- |
| Nickel | 7440-02-0 | 2 | mg/kg | **24** | **45** | **30** | **40** | ---- |
| Selenium | 7782-49-2 | 5 | mg/kg | <5 | <5 | <5 | <5 | ---- |
| Silver | 7440-22-4 | 2 | mg/kg | <2 | <2 | <2 | <2 | ---- |
| Tin | 7440-31-5 | 5 | mg/kg | <5 | <5 | <5 | <5 | ---- |
| Zinc | 7440-66-6 | 5 | mg/kg | **21** | **17** | **13** | **19** | ---- |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | |
| Mercury | 7439-97-6 | 0.1 | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | ---- |
| **EG048: Hexavalent Chromium (Alkaline Digest)** | | | | | | | | |
| Hexavalent Chromium | 18540-29-9 | 0.5 | mg/kg | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| **EK026SF: Total CN by Segmented Flow Analyser** | | | | | | | | |
| Total Cyanide | 57-12-5 | 1 | mg/kg | <1 | <1 | <1 | <1 | ---- |
| **EK040T: Fluoride Total** | | | | | | | | |
| Fluoride | 16984-48-8 | 40 | mg/kg | **180** | **210** | **140** | **190** | ---- |
| **EP066: Polychlorinated Biphenyls (PCB)** | | | | | | | | |
| Total Polychlorinated biphenyls | ---- | 0.1 | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | ---- |
| **EP074A: Monocyclic Aromatic Hydrocarbons** | | | | | | | | |
| Benzene | 71-43-2 | 0.2 | mg/kg | <0.2 | <0.2 | <0.2 | <0.2 | ---- |
| Toluene | 108-88-3 | 0.5 | mg/kg | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| Ethylbenzene | 100-41-4 | 0.5 | mg/kg | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| meta- & para-Xylene | 108-38-3 106-42-3 | 0.5 | mg/kg | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| Styrene | 100-42-5 | 0.5 | mg/kg | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| ortho-Xylene | 95-47-6 | 0.5 | mg/kg | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| ^ Sum of monocyclic aromatic hydrocarbons | ---- | 0.2 | mg/kg | <0.2 | <0.2 | <0.2 | <0.2 | ---- |
| ^ Total Xylenes | ---- | 0.5 | mg/kg | <0.5 | <0.5 | <0.5 | <0.5 | ---- |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | Client sample ID | BH01_0.1 | BH01_0.5 | BH11_0.1 | BH11_0.5 | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 10-Aug-2020 00:00 | 10-Aug-2020 00:00 | 13-Aug-2020 00:00 | 13-Aug-2020 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | EM2014137-001 | EM2014137-002 | EM2014137-003 | EM2014137-004 | -------- |
| | | | | Result | Result | Result | Result | ---- |
| **EP074H: Naphthalene** | | | | | | | | |
| Naphthalene | 91-20-3 | 1 | mg/kg | <1 | <1 | <1 | <1 | ---- |
| **EP074I: Volatile Halogenated Compounds** | | | | | | | | |
| Vinyl chloride | 75-01-4 | 0.02 | mg/kg | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| 1.1-Dichloroethene | 75-35-4 | 0.01 | mg/kg | <0.01 | <0.01 | <0.01 | <0.01 | ---- |
| Methylene chloride | 75-09-2 | 0.4 | mg/kg | <0.4 | <0.4 | <0.4 | <0.4 | ---- |
| trans-1.2-Dichloroethene | 156-60-5 | 0.02 | mg/kg | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| cis-1.2-Dichloroethene | 156-59-2 | 0.01 | mg/kg | <0.01 | <0.01 | <0.01 | <0.01 | ---- |
| Chloroform | 67-66-3 | 0.02 | mg/kg | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| 1.1.1-Trichloroethane | 71-55-6 | 0.01 | mg/kg | <0.01 | <0.01 | <0.01 | <0.01 | ---- |
| Carbon Tetrachloride | 56-23-5 | 0.01 | mg/kg | <0.01 | <0.01 | <0.01 | <0.01 | ---- |
| 1.2-Dichloroethane | 107-06-2 | 0.02 | mg/kg | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| Trichloroethene | 79-01-6 | 0.02 | mg/kg | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| 1.1.2-Trichloroethane | 79-00-5 | 0.04 | mg/kg | <0.04 | <0.04 | <0.04 | <0.04 | ---- |
| Tetrachloroethene | 127-18-4 | 0.02 | mg/kg | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| 1.1.1.2-Tetrachloroethane | 630-20-6 | 0.01 | mg/kg | <0.01 | <0.01 | <0.01 | <0.01 | ---- |
| 1.1.2.2-Tetrachloroethane | 79-34-5 | 0.02 | mg/kg | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| Hexachlorobutadiene | 87-68-3 | 0.02 | mg/kg | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| Chlorobenzene | 108-90-7 | 0.02 | mg/kg | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| 1.4-Dichlorobenzene | 106-46-7 | 0.02 | mg/kg | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| 1.2-Dichlorobenzene | 95-50-1 | 0.02 | mg/kg | <0.02 | <0.02 | <0.02 | <0.02 | ---- |
| 1.2.4-Trichlorobenzene | 120-82-1 | 0.01 | mg/kg | <0.01 | <0.01 | <0.01 | <0.01 | ---- |
| ^ Sum of volatile chlorinated hydrocarbons | ---- | 0.01 | mg/kg | <0.01 | <0.01 | <0.01 | <0.01 | ---- |
| ^ Sum of other chlorinated hydrocarbons | ---- | 0.01 | mg/kg | <0.01 | <0.01 | <0.01 | <0.01 | ---- |
| **EP075A: Phenolic Compounds (Halogenated)** | | | | | | | | |
| 2-Chlorophenol | 95-57-8 | 0.03 | mg/kg | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| 2.4-Dichlorophenol | 120-83-2 | 0.03 | mg/kg | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| 2.6-Dichlorophenol | 87-65-0 | 0.03 | mg/kg | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| 4-Chloro-3-methylphenol | 59-50-7 | 0.03 | mg/kg | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| 2.4.5-Trichlorophenol | 95-95-4 | 0.05 | mg/kg | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| 2.4.6-Trichlorophenol | 88-06-2 | 0.05 | mg/kg | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| 2.3.5.6-Tetrachlorophenol | 935-95-5 | 0.03 | mg/kg | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| 2.3.4.5 & 2.3.4.6-Tetrachlorophenol | 4901-51-3/58-90-2 | 0.05 | mg/kg | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| Pentachlorophenol | 87-86-5 | 0.2 | mg/kg | <0.2 | <0.2 | <0.2 | <0.2 | ---- |
| ^ Sum of Phenols (halogenated) | ---- | 0.03 | mg/kg | <0.03 | <0.03 | <0.03 | <0.03 | ---- |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | | Client sample ID | BH01_0.1 | BH01_0.5 | BH11_0.1 | BH11_0.5 | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Aug-2020 00:00 | 10-Aug-2020 00:00 | 13-Aug-2020 00:00 | 13-Aug-2020 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014137-001 | EM2014137-002 | EM2014137-003 | EM2014137-004 | -------- |
| | | | | | Result | Result | Result | Result | ---- |
| **EP075A: Phenolic Compounds (Halogenated) - Continued** | | | | | | | | | |
| **EP075A: Phenolic Compounds (Non-halogenated)** | | | | | | | | | |
| **Phenol** | 108-95-2 | 1 | mg/kg | | <1 | <1 | <1 | <1 | ---- |
| **2-Methylphenol** | 95-48-7 | 1 | mg/kg | | <1 | <1 | <1 | <1 | ---- |
| **3- & 4-Methylphenol** | 1319-77-3 | 1 | mg/kg | | <1 | <1 | <1 | <1 | ---- |
| **2-Nitrophenol** | 88-75-5 | 1 | mg/kg | | <1 | <1 | <1 | <1 | ---- |
| **2.4-Dimethylphenol** | 105-67-9 | 1 | mg/kg | | <1 | <1 | <1 | <1 | ---- |
| **2.4-Dinitrophenol** | 51-28-5 | 5 | mg/kg | | <5 | <5 | <5 | <5 | ---- |
| **4-Nitrophenol** | 100-02-7 | 5 | mg/kg | | <5 | <5 | <5 | <5 | ---- |
| **2-Methyl-4.6-dinitrophenol** | 8071-51-0 | 5 | mg/kg | | <5 | <5 | <5 | <5 | ---- |
| **Dinoseb** | 88-85-7 | 5 | mg/kg | | <5 | <5 | <5 | <5 | ---- |
| **2-Cyclohexyl-4.6-Dinitrophenol** | 131-89-5 | 5 | mg/kg | | <5 | <5 | <5 | <5 | ---- |
| **^ Sum of Phenols (non-halogenated)** | ---- | 1 | mg/kg | | <1 | <1 | <1 | <1 | ---- |
| **EP075B: Polynuclear Aromatic Hydrocarbons** | | | | | | | | | |
| **Naphthalene** | 91-20-3 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| **Acenaphthene** | 83-32-9 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| **Acenaphthylene** | 208-96-8 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| **Fluorene** | 86-73-7 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| **Phenanthrene** | 85-01-8 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| **Anthracene** | 120-12-7 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| **Fluoranthene** | 206-44-0 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| **Pyrene** | 129-00-0 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| **Benz(a)anthracene** | 56-55-3 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| **Chrysene** | 218-01-9 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| **Benzo(b+j) & Benzo(k)fluoranthene** | 205-99-2 207-08-9 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | ---- |
| **Benzo(a)pyrene** | 50-32-8 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| **Indeno(1.2.3.cd)pyrene** | 193-39-5 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| **Dibenz(a.h)anthracene** | 53-70-3 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| **Benzo(g.h.i)perylene** | 191-24-2 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| **^ Sum of polycyclic aromatic hydrocarbons** | ---- | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| **^ Benzo(a)pyrene TEQ (zero)** | ---- | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| **^ Benzo(a)pyrene TEQ (half LOR)** | ---- | 0.5 | mg/kg | | **0.6** | **0.6** | **0.6** | **0.6** | ---- |
| **^ Benzo(a)pyrene TEQ (LOR)** | ---- | 0.5 | mg/kg | | **1.2** | **1.2** | **1.2** | **1.2** | ---- |
| **EP075I: Organochlorine Pesticides** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | | Client sample ID | BH01_0.1 | BH01_0.5 | BH11_0.1 | BH11_0.5 | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Aug-2020 00:00 | 10-Aug-2020 00:00 | 13-Aug-2020 00:00 | 13-Aug-2020 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014137-001 | EM2014137-002 | EM2014137-003 | EM2014137-004 | -------- |
| | | | | | Result | Result | Result | Result | ---- |
| **EP075(I): Organochlorine Pesticides - Continued** | | | | | | | | | |
| alpha-BHC | 319-84-6 | 0.03 | mg/kg | | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| Hexachlorobenzene (HCB) | 118-74-1 | 0.03 | mg/kg | | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| beta-BHC | 319-85-7 | 0.03 | mg/kg | | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| gamma-BHC | 58-89-9 | 0.03 | mg/kg | | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| delta-BHC | 319-86-8 | 0.03 | mg/kg | | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| Heptachlor | 76-44-8 | 0.03 | mg/kg | | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| Aldrin | 309-00-2 | 0.03 | mg/kg | | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| Heptachlor epoxide | 1024-57-3 | 0.03 | mg/kg | | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| cis-Chlordane | 5103-71-9 | 0.03 | mg/kg | | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| trans-Chlordane | 5103-74-2 | 0.03 | mg/kg | | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| Endosulfan 1 | 959-98-8 | 0.03 | mg/kg | | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| 4.4`-DDE | 72-55-9 | 0.05 | mg/kg | | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| Dieldrin | 60-57-1 | 0.03 | mg/kg | | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| Endrin aldehyde | 7421-93-4 | 0.03 | mg/kg | | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| Endrin | 72-20-8 | 0.03 | mg/kg | | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| Endosulfan 2 | 33213-65-9 | 0.03 | mg/kg | | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| 4.4`-DDD | 72-54-8 | 0.05 | mg/kg | | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| Endosulfan sulfate | 1031-07-8 | 0.03 | mg/kg | | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| 4.4`-DDT | 50-29-3 | 0.05 | mg/kg | | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| Methoxychlor | 72-43-5 | 0.03 | mg/kg | | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| ^ Sum of organochlorine pesticides | ---- | 0.03 | mg/kg | | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| ^ Sum of Aldrin + Dieldrin | 309-00-2/60-57-1 | 0.03 | mg/kg | | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| ^ Sum of DDD + DDE + DDT | 72-54-8/72-55-9/50-2 | 0.05 | mg/kg | | <0.05 | <0.05 | <0.05 | <0.05 | ---- |
| ^ Chlordane | 57-74-9 | 0.03 | mg/kg | | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| ^ Sum of other organochlorine pesticides | ---- | 0.03 | mg/kg | | <0.03 | <0.03 | <0.03 | <0.03 | ---- |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | | |
| C6 - C9 Fraction | ---- | 10 | mg/kg | | <10 | <10 | <10 | <10 | ---- |
| C10 - C14 Fraction | ---- | 50 | mg/kg | | <50 | <50 | <50 | <50 | ---- |
| C6 - C10 Fraction | C6_C10 | 10 | mg/kg | | <10 | <10 | <10 | <10 | ---- |
| C15 - C28 Fraction | ---- | 100 | mg/kg | | <100 | <100 | <100 | <100 | ---- |
| C29 - C36 Fraction | ---- | 100 | mg/kg | | <100 | <100 | <100 | <100 | ---- |
| ^ C10 - C36 Fraction (sum) | ---- | 50 | mg/kg | | <50 | <50 | <50 | <50 | ---- |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | | | | |
| >C10 - C16 Fraction | ---- | 50 | mg/kg | | <50 | <50 | <50 | <50 | ---- |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | | Client sample ID | BH01_0.1 | BH01_0.5 | BH11_0.1 | BH11_0.5 | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Aug-2020 00:00 | 10-Aug-2020 00:00 | 13-Aug-2020 00:00 | 13-Aug-2020 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014137-001 | EM2014137-002 | EM2014137-003 | EM2014137-004 | -------- |
| | | | | | Result | Result | Result | Result | ---- |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued** | | | | | | | | | |
| >C16 - C34 Fraction | ---- | 100 | mg/kg | | <100 | <100 | <100 | <100 | ---- |
| >C34 - C40 Fraction | ---- | 100 | mg/kg | | <100 | <100 | <100 | <100 | ---- |
| ^ >C10 - C40 Fraction (sum) | ---- | 50 | mg/kg | | <50 | <50 | <50 | <50 | ---- |
| >C10 - C16 Fraction minus Naphthalene (F2) | ---- | 50 | mg/kg | | <50 | <50 | <50 | <50 | ---- |
| C6 - C10 Fraction minus BTEX (F1) | C6_C10-BTEX | 10 | mg/kg | | <10 | <10 | <10 | <10 | ---- |
| **EP066S: PCB Surrogate** | | | | | | | | | |
| Decachlorobiphenyl | 2051-24-3 | 0.1 | % | | 108 | 102 | 97.0 | 101 | ---- |
| **EP074S: VOC Surrogates (Ultra-Trace)** | | | | | | | | | |
| 1.2-Dichloroethane-D4 | 17060-07-0 | 0.1 | % | | 78.6 | 71.6 | 81.3 | 86.8 | ---- |
| Toluene-D8 | 2037-26-5 | 0.1 | % | | 74.2 | 68.0 | 78.8 | 80.6 | ---- |
| 4-Bromofluorobenzene | 460-00-4 | 0.1 | % | | 84.5 | 79.1 | 90.6 | 95.1 | ---- |
| **EP075S: Acid Extractable Surrogates (Waste Classification)** | | | | | | | | | |
| Phenol-d6 | 13127-88-3 | 0.025 | % | | 95.8 | 88.5 | 96.9 | 98.2 | ---- |
| 2-Chlorophenol-D4 | 93951-73-6 | 0.025 | % | | 88.2 | 81.8 | 88.3 | 92.9 | ---- |
| 2.4.6-Tribromophenol | 118-79-6 | 0.025 | % | | 97.7 | 86.9 | 98.8 | 102 | ---- |
| **EP075T: Base/Neutral Extractable Surrogates (Waste Classification)** | | | | | | | | | |
| Nitrobenzene-D5 | 4165-60-0 | 0.025 | % | | 89.5 | 82.8 | 92.3 | 98.1 | ---- |
| 1.2-Dichlorobenzene-D4 | 2199-69-1 | 0.025 | % | | 86.4 | 77.4 | 87.4 | 91.0 | ---- |
| 2-Fluorobiphenyl | 321-60-8 | 0.025 | % | | 100 | 93.0 | 102 | 106 | ---- |
| Anthracene-d10 | 1719-06-8 | 0.025 | % | | 91.5 | 86.4 | 94.0 | 97.8 | ---- |
| 4-Terphenyl-d14 | 1718-51-0 | 0.025 | % | | 88.6 | 82.1 | 89.9 | 93.8 | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | BH04 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 13-Aug-2020 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014137-007 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **EA005P: pH by PC Titrator** | | | | | | | | | |
| **pH Value** | ---- | 0.01 | pH Unit | | **7.86** | ---- | ---- | ---- | ---- |
| **EA010P: Conductivity by PC Titrator** | | | | | | | | | |
| **Electrical Conductivity @ 25°C** | ---- | 1 | µS/cm | | **4840** | ---- | ---- | ---- | ---- |
| **EA016: Calculated TDS (from Electrical Conductivity)** | | | | | | | | | |
| **Total Dissolved Solids (Calc.)** | ---- | 1 | mg/L | | **3150** | ---- | ---- | ---- | ---- |
| **ED037P: Alkalinity by PC Titrator** | | | | | | | | | |
| **Hydroxide Alkalinity as CaCO3** | DMO-210-001 | 1 | mg/L | | <1 | ---- | ---- | ---- | ---- |
| **Carbonate Alkalinity as CaCO3** | 3812-32-6 | 1 | mg/L | | <1 | ---- | ---- | ---- | ---- |
| **Bicarbonate Alkalinity as CaCO3** | 71-52-3 | 1 | mg/L | | **916** | ---- | ---- | ---- | ---- |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | | **916** | ---- | ---- | ---- | ---- |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | | **7** | ---- | ---- | ---- | ---- |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | | **1190** | ---- | ---- | ---- | ---- |
| **ED093F: Dissolved Major Cations** | | | | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | | **88** | ---- | ---- | ---- | ---- |
| **Magnesium** | 7439-95-4 | 1 | mg/L | | **178** | ---- | ---- | ---- | ---- |
| **Sodium** | 7440-23-5 | 1 | mg/L | | **587** | ---- | ---- | ---- | ---- |
| **Potassium** | 7440-09-7 | 1 | mg/L | | **32** | ---- | ---- | ---- | ---- |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | | |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | | **0.004** | ---- | ---- | ---- | ---- |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | ---- | ---- | ---- | ---- |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | | **0.001** | ---- | ---- | ---- | ---- |
| **Copper** | 7440-50-8 | 0.001 | mg/L | | **0.001** | ---- | ---- | ---- | ---- |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | | **0.009** | ---- | ---- | ---- | ---- |
| **Lead** | 7439-92-1 | 0.001 | mg/L | | <0.001 | ---- | ---- | ---- | ---- |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | | **0.010** | ---- | ---- | ---- | ---- |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | ---- | ---- | ---- | ---- |
| **EK055G: Ammonia as N by Discrete Analyser** | | | | | | | | | |
| **Ammonia as N** | 7664-41-7 | 0.01 | mg/L | | **1.40** | ---- | ---- | ---- | ---- |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | | | | |
| **Nitrite as N** | 14797-65-0 | 0.01 | mg/L | | <0.01 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | BH04 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 13-Aug-2020 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014137-007 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **EK058G: Nitrate as N by Discrete Analyser** | | | | | | | | | |
| Nitrate as N | 14797-55-8 | 0.01 | mg/L | | **0.19** | ---- | ---- | ---- | ---- |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | | |
| Nitrite + Nitrate as N | ---- | 0.01 | mg/L | | **0.19** | ---- | ---- | ---- | ---- |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | | |
| Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | | **1.4** | ---- | ---- | ---- | ---- |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | | |
| ^ Total Nitrogen as N | ---- | 0.1 | mg/L | | **1.6** | ---- | ---- | ---- | ---- |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | | |
| Total Phosphorus as P | ---- | 0.01 | mg/L | | **0.04** | ---- | ---- | ---- | ---- |
| **EN055: Ionic Balance** | | | | | | | | | |
| ø Total Anions | ---- | 0.01 | meq/L | | **52.0** | ---- | ---- | ---- | ---- |
| ø Total Cations | ---- | 0.01 | meq/L | | **45.4** | ---- | ---- | ---- | ---- |
| ø Ionic Balance | ---- | 0.01 | % | | **6.80** | ---- | ---- | ---- | ---- |

## Surrogate Control Limits

Sub-Matrix: **SOIL**

| Compound | CAS Number | Recovery Limits (%) Low | High |
|---|---|---|---|
| **EP066S: PCB Surrogate** | | | |
| **Decachlorobiphenyl** | 2051-24-3 | 41 | 122 |
| **EP074S: VOC Surrogates (Ultra-Trace)** | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 59 | 119 |
| **Toluene-D8** | 2037-26-5 | 55 | 117 |
| **4-Bromofluorobenzene** | 460-00-4 | 59 | 123 |
| **EP075S: Acid Extractable Surrogates (Waste Classification)** | | | |
| **Phenol-d6** | 13127-88-3 | 28 | 134 |
| **2-Chlorophenol-D4** | 93951-73-6 | 27 | 123 |
| **2.4.6-Tribromophenol** | 118-79-6 | 25 | 149 |
| **EP075T: Base/Neutral Extractable Surrogates (Waste Classification)** | | | |
| **Nitrobenzene-D5** | 4165-60-0 | 29 | 125 |
| **1.2-Dichlorobenzene-D4** | 2199-69-1 | 31 | 117 |
| **2-Fluorobiphenyl** | 321-60-8 | 44 | 136 |
| **Anthracene-d10** | 1719-06-8 | 53 | 133 |
| **4-Terphenyl-d14** | 1718-51-0 | 59 | 141 |

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **EM2014371** | Page | : 1 of 13 |
| Client | : **GHD PTY LTD** | Laboratory | : Environmental Division Melbourne |
| Contact | : ALAN WILSON | Contact | : Shirley LeCornu |
| Address | : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001 | Address | : 4 Westall Rd Springvale VIC Australia 3171 |
| Telephone | : ---- | Telephone | : +6138549 9630 |
| Project | : 12529997/08 | Date Samples Received | : 19-Aug-2020 16:00 |
| Order number | : ---- | Date Analysis Commenced | : 20-Aug-2020 |
| C-O-C number | : ---- | Issue Date | : 27-Aug-2020 16:23 |
| Sampler | : MM | | |
| Site | : ---- | | |
| Quote number | : ME/458/20 | | |
| No. of samples received | : 3 | | |
| No. of samples analysed | : 3 | | |

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Ankit Joshi | Inorganic Chemist | Sydney Inorganics, Smithfield, NSW |
| Dilani Fernando | Senior Inorganic Chemist | Melbourne Inorganics, Springvale, VIC |
| Nancy Wang | 2IC Organic Chemist | Melbourne Organics, Springvale, VIC |
| Nikki Stepniewski | Senior Inorganic Instrument Chemist | Melbourne Inorganics, Springvale, VIC |
| Samantha Smith | Laboratory Coordinator | WRG Subcontracting, Springvale, VIC |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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

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

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

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

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

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

- EA005-P: EM2014450 #10 Poor duplicate precision for pH due to sample heterogeneity. Confirmed by re-preparation and re-analysis.
- EA010-P: Electrical Conductivity @ 25°C was analysed by manual method (EA010).
- EP075 (SIM): Where reported, 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.
- EP075: Where reported, 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.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- MBAS (EP050) is calculated as LAS, molecular weight 348 g/mol.
- EA015H: EM2014371 #2: TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- The analytical BOD run containing samples from this work order recovered the certified reference standard within acceptable criteria but the dilution water blank was elevated above 0.2 mg/L.
- EP075: Where reported, 'Sum of PAH' is the sum of the USEPA 16 priority PAHs
- E.coli & Total Coliforms by MPN (MM514) is conducted by ALS Scoresby NATA accreditation no. 992, site no. 989.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

## Analytical Results

| Sub-Matrix: GROUNDWATER (Matrix: WATER) | | | | Client sample ID | BH14 | BH12 | BH23A | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 18-Aug-2020 00:00 | 18-Aug-2020 00:00 | 19-Aug-2020 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014371-001 | EM2014371-002 | EM2014371-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **EA005P: pH by PC Titrator** | | | | | | | | | |
| pH Value | ---- | 0.01 | pH Unit | | **7.76** | **7.64** | **7.41** | ---- | ---- |
| **EA010P: Conductivity by PC Titrator** | | | | | | | | | |
| Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | | **2410** | **3900** | **7190** | ---- | ---- |
| **EA015: Total Dissolved Solids dried at 180 ± 5 °C** | | | | | | | | | |
| Total Dissolved Solids @180°C | ---- | 10 | mg/L | | **1300** | **3790** | **3560** | ---- | ---- |
| **EA025: Total Suspended Solids dried at 104 ± 2°C** | | | | | | | | | |
| Suspended Solids (SS) | ---- | 5 | mg/L | | **25** | **15** | **12** | ---- | ---- |
| **ED037P: Alkalinity by PC Titrator** | | | | | | | | | |
| Hydroxide Alkalinity as CaCO3 | DMO-210-001 | 1 | mg/L | | <1 | <1 | <1 | ---- | ---- |
| Carbonate Alkalinity as CaCO3 | 3812-32-6 | 1 | mg/L | | <1 | <1 | <1 | ---- | ---- |
| Bicarbonate Alkalinity as CaCO3 | 71-52-3 | 1 | mg/L | | **489** | **357** | **469** | ---- | ---- |
| Total Alkalinity as CaCO3 | ---- | 1 | mg/L | | **489** | **357** | **469** | ---- | ---- |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | | |
| Sulfate as SO4 - Turbidimetric | 14808-79-8 | 1 | mg/L | | **88** | **123** | **386** | ---- | ---- |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | | | |
| Chloride | 16887-00-6 | 1 | mg/L | | **457** | **1090** | **1920** | ---- | ---- |
| **ED093F: Dissolved Major Cations** | | | | | | | | | |
| Calcium | 7440-70-2 | 1 | mg/L | | **32** | **71** | **137** | ---- | ---- |
| Magnesium | 7439-95-4 | 1 | mg/L | | **66** | **195** | **238** | ---- | ---- |
| Sodium | 7440-23-5 | 1 | mg/L | | **315** | **333** | **926** | ---- | ---- |
| Potassium | 7440-09-7 | 1 | mg/L | | **9** | **13** | **32** | ---- | ---- |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | | |
| Arsenic | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | ---- | ---- |
| Cadmium | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | ---- | ---- |
| Chromium | 7440-47-3 | 0.001 | mg/L | | **0.001** | <0.001 | <0.001 | ---- | ---- |
| Copper | 7440-50-8 | 0.001 | mg/L | | **0.016** | **0.012** | **0.022** | ---- | ---- |
| Nickel | 7440-02-0 | 0.001 | mg/L | | **0.012** | **0.008** | **0.023** | ---- | ---- |
| Lead | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | ---- | ---- |
| Zinc | 7440-66-6 | 0.005 | mg/L | | **0.078** | **0.041** | **0.087** | ---- | ---- |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | | |
| Mercury | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | ---- | ---- |
| **EK055G: Ammonia as N by Discrete Analyser** | | | | | | | | | |
| Ammonia as N | 7664-41-7 | 0.01 | mg/L | | **0.03** | **0.02** | **0.90** | ---- | ---- |

## Analytical Results

| Sub-Matrix: GROUNDWATER (Matrix: WATER) | | | | Client sample ID | BH14 | BH12 | BH23A | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 18-Aug-2020 00:00 | 18-Aug-2020 00:00 | 19-Aug-2020 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014371-001 | EM2014371-002 | EM2014371-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | | | | |
| Nitrite as N | 14797-65-0 | 0.01 | mg/L | | **0.01** | <0.01 | <0.01 | ---- | ---- |
| **EK058G: Nitrate as N by Discrete Analyser** | | | | | | | | | |
| Nitrate as N | 14797-55-8 | 0.01 | mg/L | | **1.04** | **0.72** | <0.01 | ---- | ---- |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | | |
| Nitrite + Nitrate as N | ---- | 0.01 | mg/L | | **1.05** | **0.72** | <0.01 | ---- | ---- |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | | |
| Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | | **0.2** | **0.2** | **0.9** | ---- | ---- |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | | |
| ^ Total Nitrogen as N | ---- | 0.1 | mg/L | | **1.2** | **0.9** | **0.9** | ---- | ---- |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | | |
| Total Phosphorus as P | ---- | 0.01 | mg/L | | **0.23** | **0.14** | **0.02** | ---- | ---- |
| **EN055: Ionic Balance** | | | | | | | | | |
| ø Total Anions | ---- | 0.01 | meq/L | | **24.5** | **40.4** | **71.6** | ---- | ---- |
| ø Total Cations | ---- | 0.01 | meq/L | | **21.0** | **34.4** | **67.5** | ---- | ---- |
| ø Ionic Balance | ---- | 0.01 | % | | **7.77** | **8.06** | **2.91** | ---- | ---- |
| **EP020: Oil and Grease (O&G)** | | | | | | | | | |
| Oil & Grease | ---- | 5 | mg/L | | <5 | <5 | <5 | ---- | ---- |
| **EP026SP: Chemical Oxygen Demand (Spectrophotometric)** | | | | | | | | | |
| Chemical Oxygen Demand | ---- | 10 | mg/L | | **14** | **16** | **24** | ---- | ---- |
| **EP030: Biochemical Oxygen Demand (BOD)** | | | | | | | | | |
| Biochemical Oxygen Demand | ---- | 2 | mg/L | | <2 | <2 | <2 | ---- | ---- |
| **EP050: Anionic Surfactants as MBAS** | | | | | | | | | |
| Anionic Surfactants as MBAS | ---- | 0.1 | mg/L | | <0.1 | <0.1 | <0.1 | ---- | ---- |
| **EP066: Polychlorinated Biphenyls (PCB)** | | | | | | | | | |
| ^ Total Polychlorinated biphenyls | ---- | 1 | µg/L | | <1 | <1 | <1 | ---- | ---- |
| **EP068A: Organochlorine Pesticides (OC)** | | | | | | | | | |
| alpha-BHC | 319-84-6 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Hexachlorobenzene (HCB) | 118-74-1 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| beta-BHC | 319-85-7 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| gamma-BHC | 58-89-9 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| delta-BHC | 319-86-8 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Heptachlor | 76-44-8 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Aldrin | 309-00-2 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |

## Analytical Results

| Sub-Matrix: GROUNDWATER (Matrix: WATER) | | | | Client sample ID | BH14 | BH12 | BH23A | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 18-Aug-2020 00:00 | 18-Aug-2020 00:00 | 19-Aug-2020 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014371-001 | EM2014371-002 | EM2014371-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **EP068A: Organochlorine Pesticides (OC) - Continued** | | | | | | | | | |
| Heptachlor epoxide | 1024-57-3 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| trans-Chlordane | 5103-74-2 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| alpha-Endosulfan | 959-98-8 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| cis-Chlordane | 5103-71-9 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Dieldrin | 60-57-1 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| 4.4`-DDE | 72-55-9 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Endrin | 72-20-8 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| beta-Endosulfan | 33213-65-9 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| 4.4`-DDD | 72-54-8 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Endrin aldehyde | 7421-93-4 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Endosulfan sulfate | 1031-07-8 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| 4.4`-DDT | 50-29-3 | 2.0 | µg/L | | <2.0 | <2.0 | <2.0 | ---- | ---- |
| Endrin ketone | 53494-70-5 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Methoxychlor | 72-43-5 | 2.0 | µg/L | | <2.0 | <2.0 | <2.0 | ---- | ---- |
| ^ Total Chlordane (sum) | ---- | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| ^ Sum of DDD + DDE + DDT | 72-54-8/72-55-9/50-2 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| ^ Sum of Aldrin + Dieldrin | 309-00-2/60-57-1 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| **EP074A: Monocyclic Aromatic Hydrocarbons** | | | | | | | | | |
| Styrene | 100-42-5 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| Isopropylbenzene | 98-82-8 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| n-Propylbenzene | 103-65-1 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.3.5-Trimethylbenzene | 108-67-8 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| sec-Butylbenzene | 135-98-8 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.2.4-Trimethylbenzene | 95-63-6 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| tert-Butylbenzene | 98-06-6 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| p-Isopropyltoluene | 99-87-6 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| n-Butylbenzene | 104-51-8 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **EP074B: Oxygenated Compounds** | | | | | | | | | |
| Vinyl Acetate | 108-05-4 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| 2-Butanone (MEK) | 78-93-3 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| 4-Methyl-2-pentanone (MIBK) | 108-10-1 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| 2-Hexanone (MBK) | 591-78-6 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| **EP074C: Sulfonated Compounds** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: GROUNDWATER (Matrix: WATER) | | | | Client sample ID | BH14 | BH12 | BH23A | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 18-Aug-2020 00:00 | 18-Aug-2020 00:00 | 19-Aug-2020 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014371-001 | EM2014371-002 | EM2014371-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **EP074C: Sulfonated Compounds - Continued** | | | | | | | | | |
| **Carbon disulfide** | 75-15-0 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **EP074D: Fumigants** | | | | | | | | | |
| **2.2-Dichloropropane** | 594-20-7 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **1.2-Dichloropropane** | 78-87-5 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **cis-1.3-Dichloropropylene** | 10061-01-5 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **trans-1.3-Dichloropropylene** | 10061-02-6 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **1.2-Dibromoethane (EDB)** | 106-93-4 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **EP074E: Halogenated Aliphatic Compounds** | | | | | | | | | |
| **Dichlorodifluoromethane** | 75-71-8 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| **Chloromethane** | 74-87-3 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| **Vinyl chloride** | 75-01-4 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| **Bromomethane** | 74-83-9 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| **Chloroethane** | 75-00-3 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| **Trichlorofluoromethane** | 75-69-4 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| **1.1-Dichloroethene** | 75-35-4 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **Iodomethane** | 74-88-4 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **trans-1.2-Dichloroethene** | 156-60-5 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **1.1-Dichloroethane** | 75-34-3 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **cis-1.2-Dichloroethene** | 156-59-2 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **1.1.1-Trichloroethane** | 71-55-6 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **1.1-Dichloropropylene** | 563-58-6 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **Carbon Tetrachloride** | 56-23-5 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **1.2-Dichloroethane** | 107-06-2 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **Trichloroethene** | 79-01-6 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **Dibromomethane** | 74-95-3 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **1.1.2-Trichloroethane** | 79-00-5 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **1.3-Dichloropropane** | 142-28-9 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **Tetrachloroethene** | 127-18-4 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **1.1.1.2-Tetrachloroethane** | 630-20-6 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **trans-1.4-Dichloro-2-butene** | 110-57-6 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **cis-1.4-Dichloro-2-butene** | 1476-11-5 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **1.1.2.2-Tetrachloroethane** | 79-34-5 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **1.2.3-Trichloropropane** | 96-18-4 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **Pentachloroethane** | 76-01-7 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |

## Analytical Results

| Sub-Matrix: GROUNDWATER (Matrix: WATER) | | | | Client sample ID | BH14 | BH12 | BH23A | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 18-Aug-2020 00:00 | 18-Aug-2020 00:00 | 19-Aug-2020 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014371-001 | EM2014371-002 | EM2014371-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **EP074E: Halogenated Aliphatic Compounds - Continued** | | | | | | | | | |
| 1.2-Dibromo-3-chloropropane | 96-12-8 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **EP074F: Halogenated Aromatic Compounds** | | | | | | | | | |
| Chlorobenzene | 108-90-7 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| Bromobenzene | 108-86-1 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 2-Chlorotoluene | 95-49-8 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 4-Chlorotoluene | 106-43-4 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.2.3-Trichlorobenzene | 87-61-6 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **EP074G: Trihalomethanes** | | | | | | | | | |
| Chloroform | 67-66-3 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| Bromodichloromethane | 75-27-4 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| Dibromochloromethane | 124-48-1 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| Bromoform | 75-25-2 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **EP075A: Phenolic Compounds** | | | | | | | | | |
| Phenol | 108-95-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2-Chlorophenol | 95-57-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2-Methylphenol | 95-48-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 3- & 4-Methylphenol | 1319-77-3 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| 2-Nitrophenol | 88-75-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2.4-Dimethylphenol | 105-67-9 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2.4-Dichlorophenol | 120-83-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2.6-Dichlorophenol | 87-65-0 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 4-Chloro-3-methylphenol | 59-50-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2.4.6-Trichlorophenol | 88-06-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2.4.5-Trichlorophenol | 95-95-4 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Pentachlorophenol | 87-86-5 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| **EP075B: Polynuclear Aromatic Hydrocarbons** | | | | | | | | | |
| Naphthalene | 91-20-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2-Methylnaphthalene | 91-57-6 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2-Chloronaphthalene | 91-58-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Acenaphthylene | 208-96-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Acenaphthene | 83-32-9 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Fluorene | 86-73-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Phenanthrene | 85-01-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Anthracene | 120-12-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |

## Analytical Results

| Sub-Matrix: GROUNDWATER (Matrix: WATER) | | | | Client sample ID | BH14 | BH12 | BH23A | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 18-Aug-2020 00:00 | 18-Aug-2020 00:00 | 19-Aug-2020 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014371-001 | EM2014371-002 | EM2014371-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **EP075B: Polynuclear Aromatic Hydrocarbons - Continued** | | | | | | | | | |
| Fluoranthene | 206-44-0 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Pyrene | 129-00-0 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| N-2-Fluorenyl Acetamide | 53-96-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Benz(a)anthracene | 56-55-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Chrysene | 218-01-9 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Benzo(b+j) & Benzo(k)fluoranthene | 205-99-2 207-08-9 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| 7.12-Dimethylbenz(a)anthracene | 57-97-6 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Benzo(a)pyrene | 50-32-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 3-Methylcholanthrene | 56-49-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Indeno(1.2.3.cd)pyrene | 193-39-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Dibenz(a.h)anthracene | 53-70-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Benzo(g.h.i)perylene | 191-24-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| ^ Sum of PAHs | ---- | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| ^ Benzo(a)pyrene TEQ (zero) | ---- | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **EP075C: Phthalate Esters** | | | | | | | | | |
| Dimethyl phthalate | 131-11-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Diethyl phthalate | 84-66-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Di-n-butyl phthalate | 84-74-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Butyl benzyl phthalate | 85-68-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| bis(2-ethylhexyl) phthalate | 117-81-7 | 10 | µg/L | | <10 | <10 | <10 | ---- | ---- |
| Di-n-octylphthalate | 117-84-0 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **EP075D: Nitrosamines** | | | | | | | | | |
| N-Nitrosomethylethylamine | 10595-95-6 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| N-Nitrosodiethylamine | 55-18-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| N-Nitrosopyrrolidine | 930-55-2 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| N-Nitrosomorpholine | 59-89-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| N-Nitrosodi-n-propylamine | 621-64-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| N-Nitrosopiperidine | 100-75-4 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| N-Nitrosodibutylamine | 924-16-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| N-Nitrosodiphenyl & Diphenylamine | 86-30-6 122-39-4 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| Methapyrilene | 91-80-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **EP075E: Nitroaromatics and Ketones** | | | | | | | | | |
| 2-Picoline | 109-06-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |

## Analytical Results

| Sub-Matrix: GROUNDWATER (Matrix: WATER) | | | | Client sample ID | BH14 | BH12 | BH23A | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 18-Aug-2020 00:00 | 18-Aug-2020 00:00 | 19-Aug-2020 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014371-001 | EM2014371-002 | EM2014371-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **EP075E: Nitroaromatics and Ketones - Continued** | | | | | | | | | |
| **Acetophenone** | 98-86-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **Nitrobenzene** | 98-95-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **Isophorone** | 78-59-1 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **2.6-Dinitrotoluene** | 606-20-2 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| **2.4-Dinitrotoluene** | 121-14-2 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| **1-Naphthylamine** | 134-32-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **4-Nitroquinoline-N-oxide** | 56-57-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **5-Nitro-o-toluidine** | 99-55-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **Azobenzene** | 103-33-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **1.3.5-Trinitrobenzene** | 99-35-4 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **Phenacetin** | 62-44-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **4-Aminobiphenyl** | 92-67-1 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **Pentachloronitrobenzene** | 82-68-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **Pronamide** | 23950-58-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **Dimethylaminoazobenzene** | 60-11-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **Chlorobenzilate** | 510-15-6 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **EP075F: Haloethers** | | | | | | | | | |
| **Bis(2-chloroethyl) ether** | 111-44-4 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **Bis(2-chloroethoxy) methane** | 111-91-1 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **4-Chlorophenyl phenyl ether** | 7005-72-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **4-Bromophenyl phenyl ether** | 101-55-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **EP075G: Chlorinated Hydrocarbons** | | | | | | | | | |
| **1.3-Dichlorobenzene** | 541-73-1 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **1.4-Dichlorobenzene** | 106-46-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **1.2-Dichlorobenzene** | 95-50-1 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **Hexachloroethane** | 67-72-1 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **1.2.4-Trichlorobenzene** | 120-82-1 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **Hexachloropropylene** | 1888-71-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **Hexachlorobutadiene** | 87-68-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **Hexachlorocyclopentadiene** | 77-47-4 | 10 | µg/L | | <10 | <10 | <10 | ---- | ---- |
| **Pentachlorobenzene** | 608-93-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **Hexachlorobenzene (HCB)** | 118-74-1 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| **EP075H: Anilines and Benzidines** | | | | | | | | | |
| **Aniline** | 62-53-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |

## Analytical Results

| Sub-Matrix: GROUNDWATER (Matrix: WATER) | | | | Client sample ID | BH14 | BH12 | BH23A | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 18-Aug-2020 00:00 | 18-Aug-2020 00:00 | 19-Aug-2020 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014371-001 | EM2014371-002 | EM2014371-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **EP075H: Anilines and Benzidines - Continued** | | | | | | | | | |
| 4-Chloroaniline | 106-47-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2-Nitroaniline | 88-74-4 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| 3-Nitroaniline | 99-09-2 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| Dibenzofuran | 132-64-9 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 4-Nitroaniline | 100-01-6 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Carbazole | 86-74-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 3.3`-Dichlorobenzidine | 91-94-1 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **EP075I: Organochlorine Pesticides** | | | | | | | | | |
| alpha-BHC | 319-84-6 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| beta-BHC | 319-85-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| gamma-BHC | 58-89-9 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| delta-BHC | 319-86-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Heptachlor | 76-44-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Aldrin | 309-00-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Heptachlor epoxide | 1024-57-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| alpha-Endosulfan | 959-98-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 4.4`-DDE | 72-55-9 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Dieldrin | 60-57-1 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Endrin | 72-20-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| beta-Endosulfan | 33213-65-9 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 4.4`-DDD | 72-54-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Endosulfan sulfate | 1031-07-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 4.4`-DDT | 50-29-3 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| ^ Sum of Aldrin + Dieldrin | 309-00-2/60-57-1 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| ^ Sum of DDD + DDE + DDT | 72-54-8/72-55-9/50-2 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| **EP075J: Organophosphorus Pesticides** | | | | | | | | | |
| Dichlorvos | 62-73-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Dimethoate | 60-51-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Diazinon | 333-41-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Chlorpyrifos-methyl | 5598-13-0 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Malathion | 121-75-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Fenthion | 55-38-9 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Chlorpyrifos | 2921-88-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Pirimphos-ethyl | 23505-41-1 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |

## Analytical Results

| Sub-Matrix: GROUNDWATER (Matrix: WATER) | | | | Client sample ID | BH14 | BH12 | BH23A | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 18-Aug-2020 00:00 | 18-Aug-2020 00:00 | 19-Aug-2020 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014371-001 | EM2014371-002 | EM2014371-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **EP075J: Organophosphorus Pesticides - Continued** | | | | | | | | | |
| **Chlorfenvinphos** | 470-90-6 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **Prothiofos** | 34643-46-4 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **Ethion** | 563-12-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | | |
| **C6 - C9 Fraction** | ---- | 20 | µg/L | | <20 | <20 | <20 | ---- | ---- |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | | | | |
| **C6 - C10 Fraction** | C6_C10 | 20 | µg/L | | <20 | <20 | <20 | ---- | ---- |
| ^ **C6 - C10 Fraction minus BTEX (F1)** | C6_C10-BTEX | 20 | µg/L | | <20 | <20 | <20 | ---- | ---- |
| **>C10 - C16 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| ^ **>C10 - C16 Fraction minus Naphthalene (F2)** | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| **EP080: BTEXN** | | | | | | | | | |
| **Benzene** | 71-43-2 | 1 | µg/L | | <1 | <1 | <1 | ---- | ---- |
| **Toluene** | 108-88-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **Ethylbenzene** | 100-41-4 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **meta- & para-Xylene** | 108-38-3 106-42-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **ortho-Xylene** | 95-47-6 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| ^ **Total Xylenes** | ---- | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| ^ **Sum of BTEX** | ---- | 1 | µg/L | | <1 | <1 | <1 | ---- | ---- |
| **Naphthalene** | 91-20-3 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **MM514: E.coli & Total Coliforms MPN by Colilert** | | | | | | | | | |
| **Escherichia coli (Colilert)** | ---- | 1 | orgs/100mL | | **0** | **0** | **0** | ---- | ---- |
| **EP074S: VOC Surrogates** | | | | | | | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 5 | % | | **112** | **113** | **112** | ---- | ---- |
| **Toluene-D8** | 2037-26-5 | 5 | % | | **107** | **109** | **107** | ---- | ---- |
| **4-Bromofluorobenzene** | 460-00-4 | 5 | % | | **109** | **112** | **113** | ---- | ---- |

## Analytical Results

| Sub-Matrix: GROUNDWATER (Matrix: WATER) | | | | Client sample ID | BH14 | BH12 | BH23A | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 18-Aug-2020 00:00 | 18-Aug-2020 00:00 | 19-Aug-2020 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014371-001 | EM2014371-002 | EM2014371-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **EP075S: Acid Extractable Surrogates** | | | | | | | | | |
| 2-Fluorophenol | 367-12-4 | 2 | % | | 55.8 | 70.2 | 72.1 | ---- | ---- |
| Phenol-d6 | 13127-88-3 | 2 | % | | 27.6 | 35.0 | 34.6 | ---- | ---- |
| 2-Chlorophenol-D4 | 93951-73-6 | 2 | % | | 62.6 | 74.0 | 76.0 | ---- | ---- |
| 2.4.6-Tribromophenol | 118-79-6 | 2 | % | | 53.6 | 63.0 | 61.3 | ---- | ---- |
| **EP075T: Base/Neutral Extractable Surrogates** | | | | | | | | | |
| Nitrobenzene-D5 | 4165-60-0 | 2 | % | | 67.5 | 81.2 | 81.6 | ---- | ---- |
| 1.2-Dichlorobenzene-D4 | 2199-69-1 | 2 | % | | 56.0 | 68.0 | 69.2 | ---- | ---- |
| 2-Fluorobiphenyl | 321-60-8 | 2 | % | | 66.4 | 80.0 | 80.5 | ---- | ---- |
| Anthracene-d10 | 1719-06-8 | 2 | % | | 75.5 | 93.1 | 94.0 | ---- | ---- |
| 4-Terphenyl-d14 | 1718-51-0 | 2 | % | | 68.8 | 86.9 | 89.4 | ---- | ---- |
| **EP080S: TPH(V)/BTEX Surrogates** | | | | | | | | | |
| 1.2-Dichloroethane-D4 | 17060-07-0 | 2 | % | | 99.7 | 101 | 100.0 | ---- | ---- |
| Toluene-D8 | 2037-26-5 | 2 | % | | 96.3 | 97.8 | 96.8 | ---- | ---- |
| 4-Bromofluorobenzene | 460-00-4 | 2 | % | | 115 | 110 | 112 | ---- | ---- |

## Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**

| Compound | CAS Number | Recovery Limits (%) Low | High |
|---|---|---|---|
| **EP074S: VOC Surrogates** | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 72 | 132 |
| **Toluene-D8** | 2037-26-5 | 77 | 132 |
| **4-Bromofluorobenzene** | 460-00-4 | 67 | 131 |
| **EP075S: Acid Extractable Surrogates** | | | |
| **2-Fluorophenol** | 367-12-4 | 10 | 75 |
| **Phenol-d6** | 13127-88-3 | 10 | 65 |
| **2-Chlorophenol-D4** | 93951-73-6 | 21 | 103 |
| **2.4.6-Tribromophenol** | 118-79-6 | 22 | 120 |
| **EP075T: Base/Neutral Extractable Surrogates** | | | |
| **Nitrobenzene-D5** | 4165-60-0 | 24 | 116 |
| **1.2-Dichlorobenzene-D4** | 2199-69-1 | 23 | 99 |
| **2-Fluorobiphenyl** | 321-60-8 | 32 | 114 |
| **Anthracene-d10** | 1719-06-8 | 47 | 119 |
| **4-Terphenyl-d14** | 1718-51-0 | 44 | 124 |
| **EP080S: TPH(V)/BTEX Surrogates** | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 73 | 129 |
| **Toluene-D8** | 2037-26-5 | 70 | 125 |
| **4-Bromofluorobenzene** | 460-00-4 | 71 | 129 |

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **EM2014440** | Page | : 1 of 13 |
| Client | : **GHD PTY LTD** | Laboratory | : Environmental Division Melbourne |
| Contact | : ALAN WILSON | Contact | : Shirley LeCornu |
| Address | : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001 | Address | : 4 Westall Rd Springvale VIC Australia 3171 |
| Telephone | : ---- | Telephone | : +6138549 9630 |
| Project | : 12529997/08 | Date Samples Received | : 20-Aug-2020 15:30 |
| Order number | : ---- | Date Analysis Commenced | : 20-Aug-2020 |
| C-O-C number | : ---- | Issue Date | : 27-Aug-2020 15:06 |
| Sampler | : MATTHEW MOORE | | |
| Site | : ---- | | |
| Quote number | : ME/458/20 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This 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 |
| Bronwyn Sheen | Assistant Laboratory Manager | Melbourne Organics, Springvale, VIC |
| Dilani Fernando | Senior Inorganic Chemist | Melbourne Inorganics, Springvale, VIC |
| Nancy Wang | 2IC Organic Chemist | Melbourne Organics, Springvale, VIC |
| Nikki Stepniewski | Senior Inorganic Instrument Chemist | Melbourne Inorganics, Springvale, VIC |
| Nikki Stepniewski | Senior Inorganic Instrument Chemist | WRG Subcontracting, Springvale, VIC |
| Xing Lin | Senior Organic Chemist | Melbourne Organics, Springvale, VIC |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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

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

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

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

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

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

- EK040P: EM2014512 #2 Poor matrix spike recovery for Fluoride due to sample matrix. Confirmed by re-preparation and re-analysis.
- EG050G-F: EM2014440 #1 Hexavalent chromium results may be biased high compared to Dissolved Chromium filtered as sample were not field filtered prior to sample preservation.
- EA010-P: Electrical Conductivity @ 25°C was analysed by manual method (EA010).
- EP075 (SIM): Where reported, 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.
- EP075: Where reported, 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.
- 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.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- The analytical BOD run containing samples from this work order recovered the certified reference standard within acceptable criteria but the dilution water blank was elevated above 0.2 mg/L.
- EP075: Where reported, 'Sum of PAH' is the sum of the USEPA 16 priority PAHs
- E.coli & Total Coliforms by MPN (MM514) is conducted by ALS Scoresby NATA accreditation no. 992, site no. 989.
- MBAS (W-MBAS )is conducted by ALS Scoresby NATA accreditation no. 992, site no. 989.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

## Analytical Results

| Sub-Matrix: GROUNDWATER (Matrix: WATER) | | | | Client sample ID | BH32 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 20-Aug-2020 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014440-001 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **EA005P: pH by PC Titrator** | | | | | | | | | |
| pH Value | ---- | 0.01 | pH Unit | | **7.73** | ---- | ---- | ---- | ---- |
| **EA010P: Conductivity by PC Titrator** | | | | | | | | | |
| Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | | **12500** | ---- | ---- | ---- | ---- |
| **EA015: Total Dissolved Solids dried at 180 ± 5 °C** | | | | | | | | | |
| Total Dissolved Solids @180°C | ---- | 10 | mg/L | | **7340** | ---- | ---- | ---- | ---- |
| **EA025: Total Suspended Solids dried at 104 ± 2°C** | | | | | | | | | |
| Suspended Solids (SS) | ---- | 5 | mg/L | | **21** | ---- | ---- | ---- | ---- |
| **ED037P: Alkalinity by PC Titrator** | | | | | | | | | |
| Hydroxide Alkalinity as CaCO3 | DMO-210-001 | 1 | mg/L | | <1 | ---- | ---- | ---- | ---- |
| Carbonate Alkalinity as CaCO3 | 3812-32-6 | 1 | mg/L | | <1 | ---- | ---- | ---- | ---- |
| Bicarbonate Alkalinity as CaCO3 | 71-52-3 | 1 | mg/L | | **388** | ---- | ---- | ---- | ---- |
| Total Alkalinity as CaCO3 | ---- | 1 | mg/L | | **388** | ---- | ---- | ---- | ---- |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | | |
| Sulfate as SO4 - Turbidimetric | 14808-79-8 | 1 | mg/L | | **641** | ---- | ---- | ---- | ---- |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | | | |
| Chloride | 16887-00-6 | 1 | mg/L | | **4090** | ---- | ---- | ---- | ---- |
| **ED093F: Dissolved Major Cations** | | | | | | | | | |
| Calcium | 7440-70-2 | 1 | mg/L | | **135** | ---- | ---- | ---- | ---- |
| Magnesium | 7439-95-4 | 1 | mg/L | | **321** | ---- | ---- | ---- | ---- |
| Sodium | 7440-23-5 | 1 | mg/L | | **1980** | ---- | ---- | ---- | ---- |
| Potassium | 7440-09-7 | 1 | mg/L | | **15** | ---- | ---- | ---- | ---- |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | | |
| Arsenic | 7440-38-2 | 0.001 | mg/L | | <0.001 | ---- | ---- | ---- | ---- |
| Cadmium | 7440-43-9 | 0.0001 | mg/L | | **0.0002** | ---- | ---- | ---- | ---- |
| Copper | 7440-50-8 | 0.001 | mg/L | | **0.102** | ---- | ---- | ---- | ---- |
| Chromium | 7440-47-3 | 0.001 | mg/L | | <0.001 | ---- | ---- | ---- | ---- |
| Nickel | 7440-02-0 | 0.001 | mg/L | | **0.015** | ---- | ---- | ---- | ---- |
| Lead | 7439-92-1 | 0.001 | mg/L | | **0.002** | ---- | ---- | ---- | ---- |
| Zinc | 7440-66-6 | 0.005 | mg/L | | **0.129** | ---- | ---- | ---- | ---- |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | | |
| Mercury | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | ---- | ---- | ---- | ---- |
| **EK055G: Ammonia as N by Discrete Analyser** | | | | | | | | | |
| Ammonia as N | 7664-41-7 | 0.01 | mg/L | | **0.03** | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: GROUNDWATER (Matrix: WATER) | | | | Client sample ID | BH32 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 20-Aug-2020 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014440-001 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | | | | |
| Nitrite as N | 14797-65-0 | 0.01 | mg/L | | <0.01 | ---- | ---- | ---- | ---- |
| **EK058G: Nitrate as N by Discrete Analyser** | | | | | | | | | |
| Nitrate as N | 14797-55-8 | 0.01 | mg/L | | **0.08** | ---- | ---- | ---- | ---- |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | | |
| Nitrite + Nitrate as N | ---- | 0.01 | mg/L | | **0.08** | ---- | ---- | ---- | ---- |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | | |
| Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | | <0.1 | ---- | ---- | ---- | ---- |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | | |
| ^ Total Nitrogen as N | ---- | 0.1 | mg/L | | <0.1 | ---- | ---- | ---- | ---- |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | | |
| Total Phosphorus as P | ---- | 0.01 | mg/L | | **0.03** | ---- | ---- | ---- | ---- |
| **EN055: Ionic Balance** | | | | | | | | | |
| ø Total Anions | ---- | 0.01 | meq/L | | **136** | ---- | ---- | ---- | ---- |
| ø Total Cations | ---- | 0.01 | meq/L | | **120** | ---- | ---- | ---- | ---- |
| ø Ionic Balance | ---- | 0.01 | % | | **6.56** | ---- | ---- | ---- | ---- |
| **EP020: Oil and Grease (O&G)** | | | | | | | | | |
| Oil & Grease | ---- | 5 | mg/L | | <5 | ---- | ---- | ---- | ---- |
| **EP026SP: Chemical Oxygen Demand (Spectrophotometric)** | | | | | | | | | |
| Chemical Oxygen Demand | ---- | 10 | mg/L | | **41** | ---- | ---- | ---- | ---- |
| **EP030: Biochemical Oxygen Demand (BOD)** | | | | | | | | | |
| Biochemical Oxygen Demand | ---- | 2 | mg/L | | <2 | ---- | ---- | ---- | ---- |
| **EP066: Polychlorinated Biphenyls (PCB)** | | | | | | | | | |
| ^ Total Polychlorinated biphenyls | ---- | 1 | µg/L | | <1 | ---- | ---- | ---- | ---- |
| **EP068A: Organochlorine Pesticides (OC)** | | | | | | | | | |
| alpha-BHC | 319-84-6 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| Hexachlorobenzene (HCB) | 118-74-1 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| beta-BHC | 319-85-7 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| gamma-BHC | 58-89-9 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| delta-BHC | 319-86-8 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| Heptachlor | 76-44-8 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| Aldrin | 309-00-2 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| Heptachlor epoxide | 1024-57-3 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| trans-Chlordane | 5103-74-2 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: GROUNDWATER (Matrix: WATER) | | | | Client sample ID | BH32 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 20-Aug-2020 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014440-001 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **EP068A: Organochlorine Pesticides (OC) - Continued** | | | | | | | | | |
| alpha-Endosulfan | 959-98-8 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| cis-Chlordane | 5103-71-9 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| Dieldrin | 60-57-1 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| 4.4`-DDE | 72-55-9 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| Endrin | 72-20-8 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| beta-Endosulfan | 33213-65-9 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| 4.4`-DDD | 72-54-8 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| Endrin aldehyde | 7421-93-4 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| Endosulfan sulfate | 1031-07-8 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| 4.4`-DDT | 50-29-3 | 2.0 | µg/L | | <2.0 | ---- | ---- | ---- | ---- |
| Endrin ketone | 53494-70-5 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| Methoxychlor | 72-43-5 | 2.0 | µg/L | | <2.0 | ---- | ---- | ---- | ---- |
| ^ Total Chlordane (sum) | ---- | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| ^ Sum of DDD + DDE + DDT | 72-54-8/72-55-9/50-2 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| ^ Sum of Aldrin + Dieldrin | 309-00-2/60-57-1 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| **EP074A: Monocyclic Aromatic Hydrocarbons** | | | | | | | | | |
| Styrene | 100-42-5 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| Isopropylbenzene | 98-82-8 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| n-Propylbenzene | 103-65-1 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| 1.3.5-Trimethylbenzene | 108-67-8 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| sec-Butylbenzene | 135-98-8 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| 1.2.4-Trimethylbenzene | 95-63-6 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| tert-Butylbenzene | 98-06-6 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| p-Isopropyltoluene | 99-87-6 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| n-Butylbenzene | 104-51-8 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| **EP074B: Oxygenated Compounds** | | | | | | | | | |
| Vinyl Acetate | 108-05-4 | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| 2-Butanone (MEK) | 78-93-3 | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| 4-Methyl-2-pentanone (MIBK) | 108-10-1 | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| 2-Hexanone (MBK) | 591-78-6 | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| **EP074C: Sulfonated Compounds** | | | | | | | | | |
| Carbon disulfide | 75-15-0 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| **EP074D: Fumigants** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: GROUNDWATER (Matrix: WATER) | | | | Client sample ID | BH32 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 20-Aug-2020 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014440-001 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **EP074D: Fumigants - Continued** | | | | | | | | | |
| 2.2-Dichloropropane | 594-20-7 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| 1.2-Dichloropropane | 78-87-5 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| cis-1.3-Dichloropropylene | 10061-01-5 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| trans-1.3-Dichloropropylene | 10061-02-6 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| 1.2-Dibromoethane (EDB) | 106-93-4 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| **EP074E: Halogenated Aliphatic Compounds** | | | | | | | | | |
| Dichlorodifluoromethane | 75-71-8 | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| Chloromethane | 74-87-3 | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| Vinyl chloride | 75-01-4 | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| Bromomethane | 74-83-9 | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| Chloroethane | 75-00-3 | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| Trichlorofluoromethane | 75-69-4 | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| 1.1-Dichloroethene | 75-35-4 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| Iodomethane | 74-88-4 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| Methylene chloride | 75-09-2 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| trans-1.2-Dichloroethene | 156-60-5 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| 1.1-Dichloroethane | 75-34-3 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| cis-1.2-Dichloroethene | 156-59-2 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| 1.1.1-Trichloroethane | 71-55-6 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| 1.1-Dichloropropylene | 563-58-6 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| Carbon Tetrachloride | 56-23-5 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| 1.2-Dichloroethane | 107-06-2 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| Trichloroethene | 79-01-6 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| Dibromomethane | 74-95-3 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| 1.1.2-Trichloroethane | 79-00-5 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| 1.3-Dichloropropane | 142-28-9 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| Tetrachloroethene | 127-18-4 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| 1.1.1.2-Tetrachloroethane | 630-20-6 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| trans-1.4-Dichloro-2-butene | 110-57-6 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| cis-1.4-Dichloro-2-butene | 1476-11-5 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| 1.1.2.2-Tetrachloroethane | 79-34-5 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| 1.2.3-Trichloropropane | 96-18-4 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| Pentachloroethane | 76-01-7 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| 1.2-Dibromo-3-chloropropane | 96-12-8 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| Hexachlorobutadiene | 87-68-3 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: GROUNDWATER (Matrix: WATER) | | | | Client sample ID | BH32 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 20-Aug-2020 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014440-001 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **EP074F: Halogenated Aromatic Compounds** | | | | | | | | | |
| Chlorobenzene | 108-90-7 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| Bromobenzene | 108-86-1 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| 2-Chlorotoluene | 95-49-8 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| 4-Chlorotoluene | 106-43-4 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| 1.4-Dichlorobenzene | 106-46-7 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| 1.2-Dichlorobenzene | 95-50-1 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| 1.2.4-Trichlorobenzene | 120-82-1 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| 1.2.3-Trichlorobenzene | 87-61-6 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| **EP074G: Trihalomethanes** | | | | | | | | | |
| Chloroform | 67-66-3 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| Bromodichloromethane | 75-27-4 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| Dibromochloromethane | 124-48-1 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| Bromoform | 75-25-2 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| **EP075A: Phenolic Compounds** | | | | | | | | | |
| Phenol | 108-95-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2-Chlorophenol | 95-57-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2-Methylphenol | 95-48-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 3- & 4-Methylphenol | 1319-77-3 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| 2-Nitrophenol | 88-75-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2.4-Dimethylphenol | 105-67-9 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2.4-Dichlorophenol | 120-83-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2.6-Dichlorophenol | 87-65-0 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 4-Chloro-3-methylphenol | 59-50-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2.4.6-Trichlorophenol | 88-06-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2.4.5-Trichlorophenol | 95-95-4 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Pentachlorophenol | 87-86-5 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| **EP075B: Polynuclear Aromatic Hydrocarbons** | | | | | | | | | |
| Naphthalene | 91-20-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2-Methylnaphthalene | 91-57-6 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2-Chloronaphthalene | 91-58-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Acenaphthylene | 208-96-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Acenaphthene | 83-32-9 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Fluorene | 86-73-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Phenanthrene | 85-01-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: GROUNDWATER (Matrix: WATER) | | | | Client sample ID | BH32 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 20-Aug-2020 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014440-001 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **EP075B: Polynuclear Aromatic Hydrocarbons - Continued** | | | | | | | | | |
| **Anthracene** | 120-12-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Fluoranthene** | 206-44-0 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Pyrene** | 129-00-0 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **N-2-Fluorenyl Acetamide** | 53-96-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Benz(a)anthracene** | 56-55-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Chrysene** | 218-01-9 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Benzo(b+j) & Benzo(k)fluoranthene** | 205-99-2 207-08-9 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| **7.12-Dimethylbenz(a)anthracene** | 57-97-6 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Benzo(a)pyrene** | 50-32-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **3-Methylcholanthrene** | 56-49-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Indeno(1.2.3.cd)pyrene** | 193-39-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Dibenz(a.h)anthracene** | 53-70-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Benzo(g.h.i)perylene** | 191-24-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| ^ **Sum of PAHs** | ---- | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| ^ **Benzo(a)pyrene TEQ (zero)** | ---- | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **EP075C: Phthalate Esters** | | | | | | | | | |
| **Dimethyl phthalate** | 131-11-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Diethyl phthalate** | 84-66-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Di-n-butyl phthalate** | 84-74-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Butyl benzyl phthalate** | 85-68-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **bis(2-ethylhexyl) phthalate** | 117-81-7 | 10 | µg/L | | <10 | ---- | ---- | ---- | ---- |
| **Di-n-octylphthalate** | 117-84-0 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **EP075D: Nitrosamines** | | | | | | | | | |
| **N-Nitrosomethylethylamine** | 10595-95-6 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **N-Nitrosodiethylamine** | 55-18-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **N-Nitrosopyrrolidine** | 930-55-2 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| **N-Nitrosomorpholine** | 59-89-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **N-Nitrosodi-n-propylamine** | 621-64-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **N-Nitrosopiperidine** | 100-75-4 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **N-Nitrosodibutylamine** | 924-16-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **N-Nitrosodiphenyl & Diphenylamine** | 86-30-6 122-39-4 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| **Methapyrilene** | 91-80-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **EP075E: Nitroaromatics and Ketones** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: GROUNDWATER (Matrix: WATER) | | | | Client sample ID | BH32 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 20-Aug-2020 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014440-001 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **EP075E: Nitroaromatics and Ketones - Continued** | | | | | | | | | |
| 2-Picoline | 109-06-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Acetophenone | 98-86-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Nitrobenzene | 98-95-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Isophorone | 78-59-1 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2.6-Dinitrotoluene | 606-20-2 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| 2.4-Dinitrotoluene | 121-14-2 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| 1-Naphthylamine | 134-32-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 4-Nitroquinoline-N-oxide | 56-57-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 5-Nitro-o-toluidine | 99-55-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Azobenzene | 103-33-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 1.3.5-Trinitrobenzene | 99-35-4 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Phenacetin | 62-44-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 4-Aminobiphenyl | 92-67-1 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Pentachloronitrobenzene | 82-68-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Pronamide | 23950-58-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Dimethylaminoazobenzene | 60-11-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Chlorobenzilate | 510-15-6 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **EP075F: Haloethers** | | | | | | | | | |
| Bis(2-chloroethyl) ether | 111-44-4 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Bis(2-chloroethoxy) methane | 111-91-1 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 4-Chlorophenyl phenyl ether | 7005-72-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 4-Bromophenyl phenyl ether | 101-55-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **EP075G: Chlorinated Hydrocarbons** | | | | | | | | | |
| 1.3-Dichlorobenzene | 541-73-1 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 1.4-Dichlorobenzene | 106-46-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 1.2-Dichlorobenzene | 95-50-1 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Hexachloroethane | 67-72-1 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 1.2.4-Trichlorobenzene | 120-82-1 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Hexachloropropylene | 1888-71-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Hexachlorobutadiene | 87-68-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Hexachlorocyclopentadiene | 77-47-4 | 10 | µg/L | | <10 | ---- | ---- | ---- | ---- |
| Pentachlorobenzene | 608-93-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Hexachlorobenzene (HCB) | 118-74-1 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| **EP075H: Anilines and Benzidines** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: GROUNDWATER (Matrix: WATER) | | | | Client sample ID | BH32 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 20-Aug-2020 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014440-001 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **EP075H: Anilines and Benzidines - Continued** | | | | | | | | | |
| **Aniline** | 62-53-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **4-Chloroaniline** | 106-47-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **2-Nitroaniline** | 88-74-4 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| **3-Nitroaniline** | 99-09-2 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| **Dibenzofuran** | 132-64-9 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **4-Nitroaniline** | 100-01-6 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Carbazole** | 86-74-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **3.3`-Dichlorobenzidine** | 91-94-1 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **EP075I: Organochlorine Pesticides** | | | | | | | | | |
| **alpha-BHC** | 319-84-6 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **beta-BHC** | 319-85-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **gamma-BHC** | 58-89-9 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **delta-BHC** | 319-86-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Heptachlor** | 76-44-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Aldrin** | 309-00-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Heptachlor epoxide** | 1024-57-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **alpha-Endosulfan** | 959-98-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **4.4`-DDE** | 72-55-9 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Dieldrin** | 60-57-1 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Endrin** | 72-20-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **beta-Endosulfan** | 33213-65-9 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **4.4`-DDD** | 72-54-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Endosulfan sulfate** | 1031-07-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **4.4`-DDT** | 50-29-3 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| ^ **Sum of Aldrin + Dieldrin** | 309-00-2/60-57-1 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| ^ **Sum of DDD + DDE + DDT** | 72-54-8/72-55-9/50-29-3 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| **EP075J: Organophosphorus Pesticides** | | | | | | | | | |
| **Dichlorvos** | 62-73-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Dimethoate** | 60-51-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Diazinon** | 333-41-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Chlorpyrifos-methyl** | 5598-13-0 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Malathion** | 121-75-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Fenthion** | 55-38-9 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Chlorpyrifos** | 2921-88-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: GROUNDWATER (Matrix: WATER) | | | | Client sample ID | BH32 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 20-Aug-2020 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014440-001 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **EP075J: Organophosphorus Pesticides - Continued** | | | | | | | | | |
| **Pirimphos-ethyl** | 23505-41-1 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Chlorfenvinphos** | 470-90-6 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Prothiofos** | 34643-46-4 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Ethion** | 563-12-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | | |
| **C6 - C9 Fraction** | ---- | 20 | µg/L | | <20 | ---- | ---- | ---- | ---- |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | | | | |
| **C6 - C10 Fraction** | C6_C10 | 20 | µg/L | | <20 | ---- | ---- | ---- | ---- |
| ^ **C6 - C10 Fraction minus BTEX (F1)** | C6_C10-BTEX | 20 | µg/L | | <20 | ---- | ---- | ---- | ---- |
| **>C10 - C16 Fraction** | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| ^ **>C10 - C16 Fraction minus Naphthalene (F2)** | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| **EP080: BTEXN** | | | | | | | | | |
| **Benzene** | 71-43-2 | 1 | µg/L | | <1 | ---- | ---- | ---- | ---- |
| **Toluene** | 108-88-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Ethylbenzene** | 100-41-4 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **meta- & para-Xylene** | 108-38-3 106-42-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **ortho-Xylene** | 95-47-6 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| ^ **Total Xylenes** | ---- | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| ^ **Sum of BTEX** | ---- | 1 | µg/L | | <1 | ---- | ---- | ---- | ---- |
| **Naphthalene** | 91-20-3 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| **MM514: E.coli & Total Coliforms MPN by Colilert** | | | | | | | | | |
| **Escherichia coli (Colilert)** | ---- | 1 | orgs/100mL | | **0** | ---- | ---- | ---- | ---- |
| **Subcontracted Analysis: MBAS** | | | | | | | | | |
| **Anionic Surfactants as MBAS** | ---- | 0.05 | mg/L | | <0.05 | ---- | ---- | ---- | ---- |
| **EP066S: PCB Surrogate** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: GROUNDWATER (Matrix: WATER) | | | | Client sample ID | BH32 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 20-Aug-2020 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014440-001 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **EP066S: PCB Surrogate - Continued** | | | | | | | | | |
| Decachlorobiphenyl | 2051-24-3 | 1 | % | | 59.0 | ---- | ---- | ---- | ---- |
| **EP068S: Organochlorine Pesticide Surrogate** | | | | | | | | | |
| Dibromo-DDE | 21655-73-2 | 0.5 | % | | 90.4 | ---- | ---- | ---- | ---- |
| **EP068T: Organophosphorus Pesticide Surrogate** | | | | | | | | | |
| DEF | 78-48-8 | 0.5 | % | | 74.0 | ---- | ---- | ---- | ---- |
| **EP074S: VOC Surrogates** | | | | | | | | | |
| 1.2-Dichloroethane-D4 | 17060-07-0 | 5 | % | | 95.0 | ---- | ---- | ---- | ---- |
| Toluene-D8 | 2037-26-5 | 5 | % | | 85.3 | ---- | ---- | ---- | ---- |
| 4-Bromofluorobenzene | 460-00-4 | 5 | % | | 96.1 | ---- | ---- | ---- | ---- |
| **EP075(SIM)S: Phenolic Compound Surrogates** | | | | | | | | | |
| Phenol-d6 | 13127-88-3 | 1.0 | % | | 26.9 | ---- | ---- | ---- | ---- |
| 2-Chlorophenol-D4 | 93951-73-6 | 1.0 | % | | 56.2 | ---- | ---- | ---- | ---- |
| 2.4.6-Tribromophenol | 118-79-6 | 1.0 | % | | 68.6 | ---- | ---- | ---- | ---- |
| **EP075(SIM)T: PAH Surrogates** | | | | | | | | | |
| 2-Fluorobiphenyl | 321-60-8 | 1.0 | % | | 64.9 | ---- | ---- | ---- | ---- |
| Anthracene-d10 | 1719-06-8 | 1.0 | % | | 78.3 | ---- | ---- | ---- | ---- |
| 4-Terphenyl-d14 | 1718-51-0 | 1.0 | % | | 75.6 | ---- | ---- | ---- | ---- |
| **EP075S: Acid Extractable Surrogates** | | | | | | | | | |
| 2-Fluorophenol | 367-12-4 | 2 | % | | 37.5 | ---- | ---- | ---- | ---- |
| Phenol-d6 | 13127-88-3 | 2 | % | | 24.3 | ---- | ---- | ---- | ---- |
| 2-Chlorophenol-D4 | 93951-73-6 | 2 | % | | 55.3 | ---- | ---- | ---- | ---- |
| 2.4.6-Tribromophenol | 118-79-6 | 2 | % | | 62.6 | ---- | ---- | ---- | ---- |
| **EP075T: Base/Neutral Extractable Surrogates** | | | | | | | | | |
| Nitrobenzene-D5 | 4165-60-0 | 2 | % | | 64.2 | ---- | ---- | ---- | ---- |
| 1.2-Dichlorobenzene-D4 | 2199-69-1 | 2 | % | | 60.5 | ---- | ---- | ---- | ---- |
| 2-Fluorobiphenyl | 321-60-8 | 2 | % | | 70.1 | ---- | ---- | ---- | ---- |
| Anthracene-d10 | 1719-06-8 | 2 | % | | 81.8 | ---- | ---- | ---- | ---- |
| 4-Terphenyl-d14 | 1718-51-0 | 2 | % | | 80.1 | ---- | ---- | ---- | ---- |
| **EP080S: TPH(V)/BTEX Surrogates** | | | | | | | | | |
| 1.2-Dichloroethane-D4 | 17060-07-0 | 2 | % | | 101 | ---- | ---- | ---- | ---- |
| Toluene-D8 | 2037-26-5 | 2 | % | | 95.1 | ---- | ---- | ---- | ---- |
| 4-Bromofluorobenzene | 460-00-4 | 2 | % | | 114 | ---- | ---- | ---- | ---- |

## Surrogate Control Limits

Sub-Matrix: **GROUNDWATER**

| Compound | CAS Number | Recovery Limits (%) Low | High |
|---|---|---|---|
| **EP066S: PCB Surrogate** | | | |
| Decachlorobiphenyl | 2051-24-3 | 41 | 125 |
| **EP068S: Organochlorine Pesticide Surrogate** | | | |
| Dibromo-DDE | 21655-73-2 | 49 | 117 |
| **EP068T: Organophosphorus Pesticide Surrogate** | | | |
| DEF | 78-48-8 | 51 | 127 |
| **EP074S: VOC Surrogates** | | | |
| 1.2-Dichloroethane-D4 | 17060-07-0 | 72 | 132 |
| Toluene-D8 | 2037-26-5 | 77 | 132 |
| 4-Bromofluorobenzene | 460-00-4 | 67 | 131 |
| **EP075(SIM)S: Phenolic Compound Surrogates** | | | |
| Phenol-d6 | 13127-88-3 | 10 | 46 |
| 2-Chlorophenol-D4 | 93951-73-6 | 23 | 104 |
| 2.4.6-Tribromophenol | 118-79-6 | 28 | 130 |
| **EP075(SIM)T: PAH Surrogates** | | | |
| 2-Fluorobiphenyl | 321-60-8 | 36 | 114 |
| Anthracene-d10 | 1719-06-8 | 51 | 119 |
| 4-Terphenyl-d14 | 1718-51-0 | 49 | 127 |
| **EP075S: Acid Extractable Surrogates** | | | |
| 2-Fluorophenol | 367-12-4 | 10 | 75 |
| Phenol-d6 | 13127-88-3 | 10 | 65 |
| 2-Chlorophenol-D4 | 93951-73-6 | 21 | 103 |
| 2.4.6-Tribromophenol | 118-79-6 | 22 | 120 |
| **EP075T: Base/Neutral Extractable Surrogates** | | | |
| Nitrobenzene-D5 | 4165-60-0 | 24 | 116 |
| 1.2-Dichlorobenzene-D4 | 2199-69-1 | 23 | 99 |
| 2-Fluorobiphenyl | 321-60-8 | 32 | 114 |
| Anthracene-d10 | 1719-06-8 | 47 | 119 |
| 4-Terphenyl-d14 | 1718-51-0 | 44 | 124 |
| **EP080S: TPH(V)/BTEX Surrogates** | | | |
| 1.2-Dichloroethane-D4 | 17060-07-0 | 73 | 129 |
| Toluene-D8 | 2037-26-5 | 70 | 125 |
| 4-Bromofluorobenzene | 460-00-4 | 71 | 129 |

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **EM2014726** | Page | : 1 of 4 |
| Client | : **GHD PTY LTD** | Laboratory | : Environmental Division Melbourne |
| Contact | : MR ALAN D WILSON | Contact | : Shirley LeCornu |
| Address | : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001 | Address | : 4 Westall Rd Springvale VIC Australia 3171 |
| Telephone | : +61 03 8687 8000 | Telephone | : +6138549 9630 |
| Project | : 12529997 | Date Samples Received | : 26-Aug-2020 16:15 |
| Order number | : ---- | Date Analysis Commenced | : 26-Aug-2020 |
| C-O-C number | : ---- | Issue Date | : 31-Aug-2020 11:32 |
| Sampler | : MM | | |
| Site | : ---- | | |
| Quote number | : ME/458/20 | | |
| 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

**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* |
|---|---|---|
| Arenie Vijayaratnam | Non-Metals Team Leader | Melbourne Inorganics, Springvale, VIC |
| Nikki Stepniewski | Senior Inorganic Instrument Chemist | Melbourne Inorganics, Springvale, VIC |
| Tom Maloney | Laboratory Manager | Melbourne Inorganics, Springvale, VIC |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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

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

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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.

- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | BH11 | BH16 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 26-Aug-2020 00:00 | 26-Aug-2020 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014726-001 | EM2014726-002 | -------- | -------- | -------- |
| | | | | | Result | Result | ---- | ---- | ---- |
| **EA005P: pH by PC Titrator** | | | | | | | | | |
| **pH Value** | ---- | 0.01 | pH Unit | | **7.54** | **7.05** | ---- | ---- | ---- |
| **EA010P: Conductivity by PC Titrator** | | | | | | | | | |
| **Electrical Conductivity @ 25°C** | ---- | 1 | µS/cm | | **3830** | **2000** | ---- | ---- | ---- |
| **EA015: Total Dissolved Solids dried at 180 ± 5 °C** | | | | | | | | | |
| **Total Dissolved Solids @180°C** | ---- | 10 | mg/L | | **1920** | **1180** | ---- | ---- | ---- |
| **ED037P: Alkalinity by PC Titrator** | | | | | | | | | |
| **Hydroxide Alkalinity as CaCO3** | DMO-210-001 | 1 | mg/L | | <1 | <1 | ---- | ---- | ---- |
| **Carbonate Alkalinity as CaCO3** | 3812-32-6 | 1 | mg/L | | <1 | <1 | ---- | ---- | ---- |
| **Bicarbonate Alkalinity as CaCO3** | 71-52-3 | 1 | mg/L | | **314** | **384** | ---- | ---- | ---- |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | | **314** | **384** | ---- | ---- | ---- |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | | **232** | **193** | ---- | ---- | ---- |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | | **974** | **354** | ---- | ---- | ---- |
| **ED093F: Dissolved Major Cations** | | | | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | | **63** | **92** | ---- | ---- | ---- |
| **Magnesium** | 7439-95-4 | 1 | mg/L | | **99** | **77** | ---- | ---- | ---- |
| **Sodium** | 7440-23-5 | 1 | mg/L | | **521** | **195** | ---- | ---- | ---- |
| **Potassium** | 7440-09-7 | 1 | mg/L | | **8** | **4** | ---- | ---- | ---- |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | | |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 | ---- | ---- | ---- |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 | ---- | ---- | ---- |
| **Chromium** | 7440-47-3 | 0.001 | mg/L | | **0.008** | <0.001 | ---- | ---- | ---- |
| **Copper** | 7440-50-8 | 0.001 | mg/L | | <0.001 | **0.015** | ---- | ---- | ---- |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | | <0.001 | **0.024** | ---- | ---- | ---- |
| **Lead** | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | ---- | ---- | ---- |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | | <0.005 | **0.053** | ---- | ---- | ---- |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | ---- | ---- | ---- |
| **EK055G: Ammonia as N by Discrete Analyser** | | | | | | | | | |
| **Ammonia as N** | 7664-41-7 | 0.01 | mg/L | | **0.08** | <0.01 | ---- | ---- | ---- |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | | | | |
| **Nitrite as N** | 14797-65-0 | 0.01 | mg/L | | **0.02** | <0.01 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | BH11 | BH16 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 26-Aug-2020 00:00 | 26-Aug-2020 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2014726-001 | EM2014726-002 | -------- | -------- | -------- |
| | | | | | Result | Result | ---- | ---- | ---- |
| **EK058G: Nitrate as N by Discrete Analyser** | | | | | | | | | |
| Nitrate as N | 14797-55-8 | 0.01 | mg/L | | 1.44 | 0.01 | ---- | ---- | ---- |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | | |
| Nitrite + Nitrate as N | ---- | 0.01 | mg/L | | 1.46 | 0.01 | ---- | ---- | ---- |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | | |
| Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | | 0.3 | 0.2 | ---- | ---- | ---- |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | | |
| ^ Total Nitrogen as N | ---- | 0.1 | mg/L | | 1.8 | 0.2 | ---- | ---- | ---- |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | | |
| Total Phosphorus as P | ---- | 0.01 | mg/L | | <0.01 | 1.13 | ---- | ---- | ---- |
| **EN055: Ionic Balance** | | | | | | | | | |
| ø Total Anions | ---- | 0.01 | meq/L | | 38.6 | 21.7 | ---- | ---- | ---- |
| ø Total Cations | ---- | 0.01 | meq/L | | 34.2 | 19.5 | ---- | ---- | ---- |
| ø Ionic Balance | ---- | 0.01 | % | | 6.08 | 5.25 | ---- | ---- | ---- |

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **EM2015608** | Page | : 1 of 13 |
| Client | : **GHD PTY LTD** | Laboratory | : Environmental Division Melbourne |
| Contact | : MR ALAN D WILSON | Contact | : Shirley LeCornu |
| Address | : LEVEL 8, 180 LONSDALE ST<br>MELBOURNE VIC, AUSTRALIA 3001 | Address | : 4 Westall Rd Springvale VIC Australia 3171 |
| Telephone | : +61 03 8687 8000 | Telephone | : +6138549 9630 |
| Project | : 12529997 | Date Samples Received | : 10-Sep-2020 16:30 |
| Order number | : ---- | Date Analysis Commenced | : 10-Sep-2020 |
| C-O-C number | : ---- | Issue Date | : 16-Sep-2020 11:12 |
| Sampler | : MM | | |
| Site | : ---- | | |
| Quote number | : ME/458/20 | | |
| No. of samples received | : 5 | | |
| No. of samples analysed | : 5 | | |

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. 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* |
|---|---|---|
| Dilani Fernando | Senior Inorganic Chemist | Melbourne Inorganics, Springvale, VIC |
| Nanthini Coilparampil | Laboratory Manager - Inorganics | Sydney Inorganics, Smithfield, NSW |
| Samantha Smith | Laboratory Coordinator | WRG Subcontracting, Springvale, VIC |
| Xing Lin | Senior Organic Chemist | Melbourne Organics, Springvale, VIC |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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

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

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

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

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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.

- EA010-P: Electrical Conductivity @ 25°C was analysed by manual method (EA010).
- EP075: Where reported, 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.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP026SP: EM2015608 #1 Sample required dilution prior to analysis of COD due to matrix interference. LOR has been raised accordingly.
- EP030: The DO depletion for EM2015608 #1 is less than 2mg/L, this indicates that the sample has been over diluted and the BOD is less than 8 mg/L. The BOD result reported was estimated from the lowest dilution
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- EP075: Where reported, 'Sum of PAH' is the sum of the USEPA 16 priority PAHs
- E.coli & Total Coliforms by MPN (MM514) is conducted by ALS Scoresby NATA accreditation no. 992, site no. 989.
- MBAS (W-MBAS )is conducted by ALS Scoresby NATA accreditation no. 992, site no. 989.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | BH22 | BH09 | QC01 | QC03 | QC04 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2015608-001 | EM2015608-002 | EM2015608-003 | EM2015608-004 | EM2015608-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EA005P: pH by PC Titrator** | | | | | | | | | |
| pH Value | ---- | 0.01 | pH Unit | | **6.93** | **7.12** | **7.14** | **6.47** | ---- |
| **EA010P: Conductivity by PC Titrator** | | | | | | | | | |
| Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | | **7040** | **10300** | **10300** | **1** | ---- |
| **EA015: Total Dissolved Solids dried at 180 ± 5 °C** | | | | | | | | | |
| Total Dissolved Solids @180°C | ---- | 10 | mg/L | | **3960** | **5300** | **5280** | <10 | ---- |
| **EA025: Total Suspended Solids dried at 104 ± 2°C** | | | | | | | | | |
| Suspended Solids (SS) | ---- | 5 | mg/L | | **30** | ---- | ---- | ---- | ---- |
| **ED037P: Alkalinity by PC Titrator** | | | | | | | | | |
| Hydroxide Alkalinity as CaCO3 | DMO-210-001 | 1 | mg/L | | <1 | <1 | <1 | <1 | ---- |
| Carbonate Alkalinity as CaCO3 | 3812-32-6 | 1 | mg/L | | <1 | <1 | <1 | <1 | ---- |
| Bicarbonate Alkalinity as CaCO3 | 71-52-3 | 1 | mg/L | | **348** | **478** | **480** | **2** | ---- |
| Total Alkalinity as CaCO3 | ---- | 1 | mg/L | | **348** | **478** | **480** | **2** | ---- |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | | |
| Sulfate as SO4 - Turbidimetric | 14808-79-8 | 1 | mg/L | | **508** | **312** | **310** | <1 | ---- |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | | | |
| Chloride | 16887-00-6 | 1 | mg/L | | **1950** | **3440** | **3430** | <1 | ---- |
| **ED093F: Dissolved Major Cations** | | | | | | | | | |
| Calcium | 7440-70-2 | 1 | mg/L | | **124** | **87** | **86** | <1 | ---- |
| Magnesium | 7439-95-4 | 1 | mg/L | | **253** | **413** | **406** | <1 | ---- |
| Sodium | 7440-23-5 | 1 | mg/L | | **930** | **1340** | **1320** | <1 | ---- |
| Potassium | 7440-09-7 | 1 | mg/L | | **24** | **11** | **11** | <1 | ---- |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | | |
| Arsenic | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | ---- | ---- |
| Cadmium | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | ---- | ---- |
| Chromium | 7440-47-3 | 0.001 | mg/L | | <0.001 | **0.003** | **0.003** | ---- | ---- |
| Copper | 7440-50-8 | 0.001 | mg/L | | **0.020** | **0.014** | **0.012** | ---- | ---- |
| Nickel | 7440-02-0 | 0.001 | mg/L | | **0.031** | **0.011** | **0.009** | ---- | ---- |
| Lead | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | ---- | ---- |
| Zinc | 7440-66-6 | 0.005 | mg/L | | **0.086** | **0.042** | **0.036** | ---- | ---- |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| Arsenic | 7440-38-2 | 0.001 | mg/L | | ---- | ---- | ---- | <0.001 | ---- |
| Cadmium | 7440-43-9 | 0.0001 | mg/L | | ---- | ---- | ---- | <0.0001 | ---- |
| Chromium | 7440-47-3 | 0.001 | mg/L | | ---- | ---- | ---- | <0.001 | ---- |
| Copper | 7440-50-8 | 0.001 | mg/L | | ---- | ---- | ---- | <0.001 | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | BH22 | BH09 | QC01 | QC03 | QC04 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2015608-001 | EM2015608-002 | EM2015608-003 | EM2015608-004 | EM2015608-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EG020T: Total Metals by ICP-MS - Continued** | | | | | | | | | |
| Nickel | 7440-02-0 | 0.001 | mg/L | | ---- | ---- | ---- | <0.001 | ---- |
| Lead | 7439-92-1 | 0.001 | mg/L | | ---- | ---- | ---- | <0.001 | ---- |
| Zinc | 7440-66-6 | 0.005 | mg/L | | ---- | ---- | ---- | <0.005 | ---- |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | | |
| Mercury | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | ---- | ---- |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| Mercury | 7439-97-6 | 0.0001 | mg/L | | ---- | ---- | ---- | <0.0001 | ---- |
| **EK055G: Ammonia as N by Discrete Analyser** | | | | | | | | | |
| Ammonia as N | 7664-41-7 | 0.01 | mg/L | | **0.42** | **0.02** | **0.02** | <0.01 | ---- |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | | | | |
| Nitrite as N | 14797-65-0 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | <0.01 | ---- |
| **EK058G: Nitrate as N by Discrete Analyser** | | | | | | | | | |
| Nitrate as N | 14797-55-8 | 0.01 | mg/L | | <0.01 | **0.92** | **0.93** | <0.01 | ---- |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | | |
| Nitrite + Nitrate as N | ---- | 0.01 | mg/L | | <0.01 | **0.92** | **0.93** | <0.01 | ---- |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | | |
| Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | | **0.4** | **0.2** | **0.3** | <0.1 | ---- |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | | |
| ^ Total Nitrogen as N | ---- | 0.1 | mg/L | | **0.4** | **1.1** | **1.2** | <0.1 | ---- |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | | |
| Total Phosphorus as P | ---- | 0.01 | mg/L | | **0.01** | **0.39** | **0.37** | <0.01 | ---- |
| **EN055: Ionic Balance** | | | | | | | | | |
| ø Total Anions | ---- | 0.01 | meq/L | | **72.5** | **113** | **113** | **0.04** | ---- |
| ø Total Cations | ---- | 0.01 | meq/L | | **68.1** | **96.9** | **95.4** | <0.01 | ---- |
| ø Ionic Balance | ---- | 0.01 | % | | **3.17** | **7.71** | **8.36** | ---- | ---- |
| **EP020: Oil and Grease (O&G)** | | | | | | | | | |
| Oil & Grease | ---- | 5 | mg/L | | <5 | ---- | ---- | ---- | ---- |
| **EP026SP: Chemical Oxygen Demand (Spectrophotometric)** | | | | | | | | | |
| Chemical Oxygen Demand | ---- | 10 | mg/L | | <50 | ---- | ---- | ---- | ---- |
| **EP030: Biochemical Oxygen Demand (BOD)** | | | | | | | | | |
| Biochemical Oxygen Demand | ---- | 2 | mg/L | | <8 | ---- | ---- | ---- | ---- |
| **EP066: Polychlorinated Biphenyls (PCB)** | | | | | | | | | |
| ^ Total Polychlorinated biphenyls | ---- | 1 | µg/L | | <1 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | BH22 | BH09 | QC01 | QC03 | QC04 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2015608-001 | EM2015608-002 | EM2015608-003 | EM2015608-004 | EM2015608-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP074A: Monocyclic Aromatic Hydrocarbons** | | | | | | | | | |
| Benzene | 71-43-2 | 1 | µg/L | | ---- | ---- | ---- | ---- | <1 |
| Toluene | 108-88-3 | 2 | µg/L | | ---- | ---- | ---- | ---- | <2 |
| Ethylbenzene | 100-41-4 | 2 | µg/L | | ---- | ---- | ---- | ---- | <2 |
| meta- & para-Xylene | 108-38-3 106-42-3 | 2 | µg/L | | ---- | ---- | ---- | ---- | <2 |
| Styrene | 100-42-5 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| ortho-Xylene | 95-47-6 | 2 | µg/L | | ---- | ---- | ---- | ---- | <2 |
| Isopropylbenzene | 98-82-8 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| n-Propylbenzene | 103-65-1 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| 1.3.5-Trimethylbenzene | 108-67-8 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| sec-Butylbenzene | 135-98-8 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| 1.2.4-Trimethylbenzene | 95-63-6 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| tert-Butylbenzene | 98-06-6 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| p-Isopropyltoluene | 99-87-6 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| n-Butylbenzene | 104-51-8 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| **EP074B: Oxygenated Compounds** | | | | | | | | | |
| Vinyl Acetate | 108-05-4 | 50 | µg/L | | <50 | ---- | ---- | ---- | <50 |
| 2-Butanone (MEK) | 78-93-3 | 50 | µg/L | | <50 | ---- | ---- | ---- | <50 |
| 4-Methyl-2-pentanone (MIBK) | 108-10-1 | 50 | µg/L | | <50 | ---- | ---- | ---- | <50 |
| 2-Hexanone (MBK) | 591-78-6 | 50 | µg/L | | <50 | ---- | ---- | ---- | <50 |
| **EP074C: Sulfonated Compounds** | | | | | | | | | |
| Carbon disulfide | 75-15-0 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| **EP074D: Fumigants** | | | | | | | | | |
| 2.2-Dichloropropane | 594-20-7 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| 1.2-Dichloropropane | 78-87-5 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| cis-1.3-Dichloropropylene | 10061-01-5 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| trans-1.3-Dichloropropylene | 10061-02-6 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| 1.2-Dibromoethane (EDB) | 106-93-4 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| **EP074E: Halogenated Aliphatic Compounds** | | | | | | | | | |
| Dichlorodifluoromethane | 75-71-8 | 50 | µg/L | | <50 | ---- | ---- | ---- | <50 |
| Chloromethane | 74-87-3 | 50 | µg/L | | <50 | ---- | ---- | ---- | <50 |
| Vinyl chloride | 75-01-4 | 50 | µg/L | | <50 | ---- | ---- | ---- | <50 |
| Bromomethane | 74-83-9 | 50 | µg/L | | <50 | ---- | ---- | ---- | <50 |
| Chloroethane | 75-00-3 | 50 | µg/L | | <50 | ---- | ---- | ---- | <50 |
| Trichlorofluoromethane | 75-69-4 | 50 | µg/L | | <50 | ---- | ---- | ---- | <50 |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | BH22 | BH09 | QC01 | QC03 | QC04 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2015608-001 | EM2015608-002 | EM2015608-003 | EM2015608-004 | EM2015608-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP074E: Halogenated Aliphatic Compounds - Continued** | | | | | | | | | |
| 1.1-Dichloroethene | 75-35-4 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| Iodomethane | 74-88-4 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| trans-1.2-Dichloroethene | 156-60-5 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| 1.1-Dichloroethane | 75-34-3 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| cis-1.2-Dichloroethene | 156-59-2 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| 1.1.1-Trichloroethane | 71-55-6 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| 1.1-Dichloropropylene | 563-58-6 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| Carbon Tetrachloride | 56-23-5 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| 1.2-Dichloroethane | 107-06-2 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| Trichloroethene | 79-01-6 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| Dibromomethane | 74-95-3 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| 1.1.2-Trichloroethane | 79-00-5 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| 1.3-Dichloropropane | 142-28-9 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| Tetrachloroethene | 127-18-4 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| 1.1.1.2-Tetrachloroethane | 630-20-6 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| trans-1.4-Dichloro-2-butene | 110-57-6 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| cis-1.4-Dichloro-2-butene | 1476-11-5 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| 1.1.2.2-Tetrachloroethane | 79-34-5 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| 1.2.3-Trichloropropane | 96-18-4 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| Pentachloroethane | 76-01-7 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| 1.2-Dibromo-3-chloropropane | 96-12-8 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| Hexachlorobutadiene | 87-68-3 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| **EP074F: Halogenated Aromatic Compounds** | | | | | | | | | |
| Chlorobenzene | 108-90-7 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| Bromobenzene | 108-86-1 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| 2-Chlorotoluene | 95-49-8 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| 4-Chlorotoluene | 106-43-4 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| 1.3-Dichlorobenzene | 541-73-1 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| 1.4-Dichlorobenzene | 106-46-7 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| 1.2-Dichlorobenzene | 95-50-1 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| 1.2.4-Trichlorobenzene | 120-82-1 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| 1.2.3-Trichlorobenzene | 87-61-6 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| **EP074G: Trihalomethanes** | | | | | | | | | |
| Chloroform | 67-66-3 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | BH22 | BH09 | QC01 | QC03 | QC04 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2015608-001 | EM2015608-002 | EM2015608-003 | EM2015608-004 | EM2015608-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP074G: Trihalomethanes - Continued** | | | | | | | | | |
| Bromodichloromethane | 75-27-4 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| Dibromochloromethane | 124-48-1 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| Bromoform | 75-25-2 | 5 | µg/L | | <5 | ---- | ---- | ---- | <5 |
| **EP074H: Naphthalene** | | | | | | | | | |
| Naphthalene | 91-20-3 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| **EP075A: Phenolic Compounds** | | | | | | | | | |
| Phenol | 108-95-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2-Chlorophenol | 95-57-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2-Methylphenol | 95-48-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 3- & 4-Methylphenol | 1319-77-3 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| 2-Nitrophenol | 88-75-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2.4-Dimethylphenol | 105-67-9 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2.4-Dichlorophenol | 120-83-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2.6-Dichlorophenol | 87-65-0 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 4-Chloro-3-methylphenol | 59-50-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2.4.6-Trichlorophenol | 88-06-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2.4.5-Trichlorophenol | 95-95-4 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Pentachlorophenol | 87-86-5 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| **EP075B: Polynuclear Aromatic Hydrocarbons** | | | | | | | | | |
| Naphthalene | 91-20-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2-Methylnaphthalene | 91-57-6 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2-Chloronaphthalene | 91-58-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Acenaphthylene | 208-96-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Acenaphthene | 83-32-9 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Fluorene | 86-73-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Phenanthrene | 85-01-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Anthracene | 120-12-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Fluoranthene | 206-44-0 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Pyrene | 129-00-0 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| N-2-Fluorenyl Acetamide | 53-96-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Benz(a)anthracene | 56-55-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Chrysene | 218-01-9 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Benzo(b+j) & Benzo(k)fluoranthene | 205-99-2 207-08-9 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | BH22 | BH09 | QC01 | QC03 | QC04 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2015608-001 | EM2015608-002 | EM2015608-003 | EM2015608-004 | EM2015608-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP075B: Polynuclear Aromatic Hydrocarbons - Continued** | | | | | | | | | |
| 7.12-Dimethylbenz(a)anthracene | 57-97-6 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Benzo(a)pyrene | 50-32-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 3-Methylcholanthrene | 56-49-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Indeno(1.2.3.cd)pyrene | 193-39-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Dibenz(a.h)anthracene | 53-70-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Benzo(g.h.i)perylene | 191-24-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| ^ Sum of PAHs | ---- | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| ^ Benzo(a)pyrene TEQ (zero) | ---- | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **EP075C: Phthalate Esters** | | | | | | | | | |
| Dimethyl phthalate | 131-11-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Diethyl phthalate | 84-66-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Di-n-butyl phthalate | 84-74-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Butyl benzyl phthalate | 85-68-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| bis(2-ethylhexyl) phthalate | 117-81-7 | 10 | µg/L | | <10 | ---- | ---- | ---- | ---- |
| Di-n-octylphthalate | 117-84-0 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **EP075D: Nitrosamines** | | | | | | | | | |
| N-Nitrosomethylethylamine | 10595-95-6 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| N-Nitrosodiethylamine | 55-18-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| N-Nitrosopyrrolidine | 930-55-2 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| N-Nitrosomorpholine | 59-89-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| N-Nitrosodi-n-propylamine | 621-64-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| N-Nitrosopiperidine | 100-75-4 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| N-Nitrosodibutylamine | 924-16-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| N-Nitrosodiphenyl & Diphenylamine | 86-30-6 122-39-4 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| Methapyrilene | 91-80-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **EP075E: Nitroaromatics and Ketones** | | | | | | | | | |
| 2-Picoline | 109-06-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Acetophenone | 98-86-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Nitrobenzene | 98-95-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Isophorone | 78-59-1 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2.6-Dinitrotoluene | 606-20-2 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| 2.4-Dinitrotoluene | 121-14-2 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| 1-Naphthylamine | 134-32-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | BH22 | BH09 | QC01 | QC03 | QC04 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2015608-001 | EM2015608-002 | EM2015608-003 | EM2015608-004 | EM2015608-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP075E: Nitroaromatics and Ketones - Continued** | | | | | | | | | |
| 4-Nitroquinoline-N-oxide | 56-57-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 5-Nitro-o-toluidine | 99-55-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Azobenzene | 103-33-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 1.3.5-Trinitrobenzene | 99-35-4 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Phenacetin | 62-44-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 4-Aminobiphenyl | 92-67-1 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Pentachloronitrobenzene | 82-68-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Pronamide | 23950-58-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Dimethylaminoazobenzene | 60-11-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Chlorobenzilate | 510-15-6 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **EP075F: Haloethers** | | | | | | | | | |
| Bis(2-chloroethyl) ether | 111-44-4 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Bis(2-chloroethoxy) methane | 111-91-1 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 4-Chlorophenyl phenyl ether | 7005-72-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 4-Bromophenyl phenyl ether | 101-55-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **EP075G: Chlorinated Hydrocarbons** | | | | | | | | | |
| 1.3-Dichlorobenzene | 541-73-1 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 1.4-Dichlorobenzene | 106-46-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 1.2-Dichlorobenzene | 95-50-1 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Hexachloroethane | 67-72-1 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 1.2.4-Trichlorobenzene | 120-82-1 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Hexachloropropylene | 1888-71-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Hexachlorobutadiene | 87-68-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Hexachlorocyclopentadiene | 77-47-4 | 10 | µg/L | | <10 | ---- | ---- | ---- | ---- |
| Pentachlorobenzene | 608-93-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Hexachlorobenzene (HCB) | 118-74-1 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| **EP075H: Anilines and Benzidines** | | | | | | | | | |
| Aniline | 62-53-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 4-Chloroaniline | 106-47-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2-Nitroaniline | 88-74-4 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| 3-Nitroaniline | 99-09-2 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| Dibenzofuran | 132-64-9 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 4-Nitroaniline | 100-01-6 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Carbazole | 86-74-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | BH22 | BH09 | QC01 | QC03 | QC04 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2015608-001 | EM2015608-002 | EM2015608-003 | EM2015608-004 | EM2015608-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP075H: Anilines and Benzidines - Continued** | | | | | | | | | |
| 3.3`-Dichlorobenzidine | 91-94-1 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **EP075I: Organochlorine Pesticides** | | | | | | | | | |
| alpha-BHC | 319-84-6 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| beta-BHC | 319-85-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| gamma-BHC | 58-89-9 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| delta-BHC | 319-86-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Heptachlor | 76-44-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Aldrin | 309-00-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Heptachlor epoxide | 1024-57-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| alpha-Endosulfan | 959-98-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 4.4`-DDE | 72-55-9 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Dieldrin | 60-57-1 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Endrin | 72-20-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| beta-Endosulfan | 33213-65-9 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 4.4`-DDD | 72-54-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Endosulfan sulfate | 1031-07-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 4.4`-DDT | 50-29-3 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| ^ Sum of Aldrin + Dieldrin | 309-00-2/60-57-1 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| ^ Sum of DDD + DDE + DDT | 72-54-8/72-55-9/50-2 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| **EP075J: Organophosphorus Pesticides** | | | | | | | | | |
| Dichlorvos | 62-73-7 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Dimethoate | 60-51-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Diazinon | 333-41-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Chlorpyrifos-methyl | 5598-13-0 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Malathion | 121-75-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Fenthion | 55-38-9 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Chlorpyrifos | 2921-88-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Pirimphos-ethyl | 23505-41-1 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Chlorfenvinphos | 470-90-6 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Prothiofos | 34643-46-4 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Ethion | 563-12-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | | |
| C6 - C9 Fraction | ---- | 20 | µg/L | | <20 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | BH22 | BH09 | QC01 | QC03 | QC04 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2015608-001 | EM2015608-002 | EM2015608-003 | EM2015608-004 | EM2015608-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP080/071: Total Petroleum Hydrocarbons - Continued** | | | | | | | | | |
| C10 - C14 Fraction | ---- | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| C15 - C28 Fraction | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| C29 - C36 Fraction | ---- | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| ^ C10 - C36 Fraction (sum) | ---- | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | | | | |
| C6 - C10 Fraction | C6_C10 | 20 | µg/L | | <20 | ---- | ---- | ---- | ---- |
| ^ C6 - C10 Fraction minus BTEX (F1) | C6_C10-BTEX | 20 | µg/L | | <20 | ---- | ---- | ---- | ---- |
| >C10 - C16 Fraction | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| >C16 - C34 Fraction | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| >C34 - C40 Fraction | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| ^ >C10 - C40 Fraction (sum) | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| ^ >C10 - C16 Fraction minus Naphthalene (F2) | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| **EP080: BTEXN** | | | | | | | | | |
| Benzene | 71-43-2 | 1 | µg/L | | <1 | ---- | ---- | ---- | ---- |
| Toluene | 108-88-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Ethylbenzene | 100-41-4 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| meta- & para-Xylene | 108-38-3 106-42-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| ortho-Xylene | 95-47-6 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| ^ Total Xylenes | ---- | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| ^ Sum of BTEX | ---- | 1 | µg/L | | <1 | ---- | ---- | ---- | ---- |
| Naphthalene | 91-20-3 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| **MM514: E.coli & Total Coliforms MPN by Colilert** | | | | | | | | | |
| Escherichia coli (Colilert) | ---- | 1 | orgs/100mL | | **0** | ---- | ---- | ---- | ---- |
| **Subcontracted Analysis: MBAS** | | | | | | | | | |
| Anionic Surfactants as MBAS | ---- | 0.05 | mg/L | | <0.05 | ---- | ---- | ---- | ---- |
| **EP066S: PCB Surrogate** | | | | | | | | | |
| Decachlorobiphenyl | 2051-24-3 | 1 | % | | **78.0** | ---- | ---- | ---- | ---- |
| **EP074S: VOC Surrogates** | | | | | | | | | |
| 1.2-Dichloroethane-D4 | 17060-07-0 | 5 | % | | **98.9** | ---- | ---- | ---- | **104** |
| Toluene-D8 | 2037-26-5 | 5 | % | | **96.6** | ---- | ---- | ---- | **99.7** |
| 4-Bromofluorobenzene | 460-00-4 | 5 | % | | **99.7** | ---- | ---- | ---- | **105** |
| **EP075S: Acid Extractable Surrogates** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | BH22 | BH09 | QC01 | QC03 | QC04 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 10-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 | 09-Sep-2020 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2015608-001 | EM2015608-002 | EM2015608-003 | EM2015608-004 | EM2015608-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP075S: Acid Extractable Surrogates - Continued** | | | | | | | | | |
| 2-Fluorophenol | 367-12-4 | 2 | % | | 13.7 | ---- | ---- | ---- | ---- |
| Phenol-d6 | 13127-88-3 | 2 | % | | 12.1 | ---- | ---- | ---- | ---- |
| 2-Chlorophenol-D4 | 93951-73-6 | 2 | % | | 42.0 | ---- | ---- | ---- | ---- |
| 2.4.6-Tribromophenol | 118-79-6 | 2 | % | | 69.5 | ---- | ---- | ---- | ---- |
| **EP075T: Base/Neutral Extractable Surrogates** | | | | | | | | | |
| Nitrobenzene-D5 | 4165-60-0 | 2 | % | | 80.6 | ---- | ---- | ---- | ---- |
| 1.2-Dichlorobenzene-D4 | 2199-69-1 | 2 | % | | 61.1 | ---- | ---- | ---- | ---- |
| 2-Fluorobiphenyl | 321-60-8 | 2 | % | | 65.7 | ---- | ---- | ---- | ---- |
| Anthracene-d10 | 1719-06-8 | 2 | % | | 83.9 | ---- | ---- | ---- | ---- |
| 4-Terphenyl-d14 | 1718-51-0 | 2 | % | | 79.8 | ---- | ---- | ---- | ---- |
| **EP080S: TPH(V)/BTEX Surrogates** | | | | | | | | | |
| 1.2-Dichloroethane-D4 | 17060-07-0 | 2 | % | | 98.2 | ---- | ---- | ---- | ---- |
| Toluene-D8 | 2037-26-5 | 2 | % | | 101 | ---- | ---- | ---- | ---- |
| 4-Bromofluorobenzene | 460-00-4 | 2 | % | | 122 | ---- | ---- | ---- | ---- |

## Surrogate Control Limits

Sub-Matrix: **WATER**

| Compound | CAS Number | Recovery Limits (%) Low | High |
|---|---|---|---|
| **EP066S: PCB Surrogate** | | | |
| **Decachlorobiphenyl** | 2051-24-3 | 41 | 125 |
| **EP074S: VOC Surrogates** | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 72 | 132 |
| **Toluene-D8** | 2037-26-5 | 77 | 132 |
| **4-Bromofluorobenzene** | 460-00-4 | 67 | 131 |
| **EP075S: Acid Extractable Surrogates** | | | |
| **2-Fluorophenol** | 367-12-4 | 10 | 75 |
| **Phenol-d6** | 13127-88-3 | 10 | 65 |
| **2-Chlorophenol-D4** | 93951-73-6 | 21 | 103 |
| **2.4.6-Tribromophenol** | 118-79-6 | 22 | 120 |
| **EP075T: Base/Neutral Extractable Surrogates** | | | |
| **Nitrobenzene-D5** | 4165-60-0 | 24 | 116 |
| **1.2-Dichlorobenzene-D4** | 2199-69-1 | 23 | 99 |
| **2-Fluorobiphenyl** | 321-60-8 | 32 | 114 |
| **Anthracene-d10** | 1719-06-8 | 47 | 119 |
| **4-Terphenyl-d14** | 1718-51-0 | 44 | 124 |
| **EP080S: TPH(V)/BTEX Surrogates** | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 73 | 129 |
| **Toluene-D8** | 2037-26-5 | 70 | 125 |
| **4-Bromofluorobenzene** | 460-00-4 | 71 | 129 |

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **EM2019000** | Page | : 1 of 9 |
| Client | : **GHD PTY LTD** | Laboratory | : Environmental Division Melbourne |
| Contact | : MR ALAN WILSON | Contact | : Shirley LeCornu |
| Address | : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001 | Address | : 4 Westall Rd Springvale VIC Australia 3171 |
| Telephone | : +61 08 8111 6600 | Telephone | : +6138549 9630 |
| Project | : 12529997/08 | Date Samples Received | : 28-Oct-2020 17:55 |
| Order number | : 12529997/08 | Date Analysis Commenced | : 28-Oct-2020 |
| C-O-C number | : ---- | Issue Date | : 04-Nov-2020 20:55 |
| Sampler | : ADW | | |
| Site | : | | |
| Quote number | : EN/005/17 (Victoria Primary Quote) | | |
| 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 |
| Dilani Fernando | Senior Inorganic Chemist | Melbourne Inorganics, Springvale, VIC |
| Nancy Wang | 2IC Organic Chemist | Melbourne Organics, Springvale, VIC |
| Samantha Smith | Laboratory Coordinator | WRG Subcontracting, Springvale, VIC |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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

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

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

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

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

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

- EG050G-F: EM2019000 #1 and 2 Hexavalent chromium results may be biased high compared to Dissolved Chromium filtered as sample were not field filtered prior to sample preservation.
- BOD analysis has been performed as a 6 day test. Scrutinise results accordingly.
- EP075 (SIM): Where reported, 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.
- 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.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EG035F: EM2019030 #6 Poor matrix spike recovery for dissolved mercury due to sample matrix. Confirmed by re-extraction and re-analysis.
- MBAS (EP050) is calculated as LAS, molecular weight 348 g/mol.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- E.coli & Total Coliforms by MPN (MM514) is conducted by ALS Scoresby NATA accreditation no. 992, site no. 989.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Client sample ID | WORMBH49 | WORMBH27 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 27-Oct-2020 00:00 | 28-Oct-2020 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | EM2019000-001 | EM2019000-002 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EA005P: pH by PC Titrator** | | | | | | | | |
| pH Value | ---- | 0.01 | pH Unit | **7.97** | **8.54** | ---- | ---- | ---- |
| **EA010P: Conductivity by PC Titrator** | | | | | | | | |
| Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | **2380** | **2410** | ---- | ---- | ---- |
| **EA016: Calculated TDS (from Electrical Conductivity)** | | | | | | | | |
| Total Dissolved Solids (Calc.) | ---- | 1 | mg/L | **1550** | **1570** | ---- | ---- | ---- |
| **EA025: Total Suspended Solids dried at 104 ± 2°C** | | | | | | | | |
| Suspended Solids (SS) | ---- | 5 | mg/L | <5 | **66** | ---- | ---- | ---- |
| **ED037P: Alkalinity by PC Titrator** | | | | | | | | |
| Hydroxide Alkalinity as CaCO3 | DMO-210-001 | 1 | mg/L | <1 | <1 | ---- | ---- | ---- |
| Carbonate Alkalinity as CaCO3 | 3812-32-6 | 1 | mg/L | <1 | **17** | ---- | ---- | ---- |
| Bicarbonate Alkalinity as CaCO3 | 71-52-3 | 1 | mg/L | **247** | **265** | ---- | ---- | ---- |
| Total Alkalinity as CaCO3 | ---- | 1 | mg/L | **247** | **282** | ---- | ---- | ---- |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | |
| Sulfate as SO4 - Turbidimetric | 14808-79-8 | 1 | mg/L | **78** | **64** | ---- | ---- | ---- |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | | |
| Chloride | 16887-00-6 | 1 | mg/L | **620** | **601** | ---- | ---- | ---- |
| **ED093F: Dissolved Major Cations** | | | | | | | | |
| Calcium | 7440-70-2 | 1 | mg/L | **15** | **12** | ---- | ---- | ---- |
| Magnesium | 7439-95-4 | 1 | mg/L | **66** | **40** | ---- | ---- | ---- |
| Sodium | 7440-23-5 | 1 | mg/L | **346** | **371** | ---- | ---- | ---- |
| Potassium | 7440-09-7 | 1 | mg/L | **22** | **28** | ---- | ---- | ---- |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | |
| Silver | 7440-22-4 | 0.001 | mg/L | <0.001 | <0.001 | ---- | ---- | ---- |
| Arsenic | 7440-38-2 | 0.001 | mg/L | **0.002** | **0.002** | ---- | ---- | ---- |
| Cadmium | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | ---- | ---- | ---- |
| Copper | 7440-50-8 | 0.001 | mg/L | <0.001 | **0.010** | ---- | ---- | ---- |
| Molybdenum | 7439-98-7 | 0.001 | mg/L | **0.032** | **0.023** | ---- | ---- | ---- |
| Nickel | 7440-02-0 | 0.001 | mg/L | **0.009** | **0.006** | ---- | ---- | ---- |
| Lead | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | ---- | ---- | ---- |
| Selenium | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| Tin | 7440-31-5 | 0.001 | mg/L | **0.001** | <0.001 | ---- | ---- | ---- |
| Zinc | 7440-66-6 | 0.005 | mg/L | **0.025** | **0.012** | ---- | ---- | ---- |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | |
| Mercury | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | WORMBH49 | WORMBH27 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 27-Oct-2020 00:00 | 28-Oct-2020 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2019000-001 | EM2019000-002 | -------- | -------- | -------- |
| | | | | | Result | Result | ---- | ---- | ---- |
| **EG050F: Dissolved Hexavalent Chromium** | | | | | | | | | |
| Hexavalent Chromium | 18540-29-9 | 0.01 | mg/L | | <0.01 | <0.01 | ---- | ---- | ---- |
| **EK026SF: Total CN by Segmented Flow Analyser** | | | | | | | | | |
| Total Cyanide | 57-12-5 | 0.004 | mg/L | | <0.004 | <0.004 | ---- | ---- | ---- |
| **EK040P: Fluoride by PC Titrator** | | | | | | | | | |
| Fluoride | 16984-48-8 | 0.1 | mg/L | | **0.1** | **0.2** | ---- | ---- | ---- |
| **EK055G: Ammonia as N by Discrete Analyser** | | | | | | | | | |
| Ammonia as N | 7664-41-7 | 0.01 | mg/L | | **0.04** | **0.08** | ---- | ---- | ---- |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | | | | |
| Nitrite as N | 14797-65-0 | 0.01 | mg/L | | <0.01 | <0.01 | ---- | ---- | ---- |
| **EK058G: Nitrate as N by Discrete Analyser** | | | | | | | | | |
| Nitrate as N | 14797-55-8 | 0.01 | mg/L | | <0.01 | <0.01 | ---- | ---- | ---- |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | | |
| Nitrite + Nitrate as N | ---- | 0.01 | mg/L | | <0.01 | <0.01 | ---- | ---- | ---- |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | | |
| Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | | <0.1 | <0.1 | ---- | ---- | ---- |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | | |
| ^ Total Nitrogen as N | ---- | 0.1 | mg/L | | <0.1 | <0.1 | ---- | ---- | ---- |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | | |
| Total Phosphorus as P | ---- | 0.01 | mg/L | | **0.22** | **0.31** | ---- | ---- | ---- |
| **EN055: Ionic Balance** | | | | | | | | | |
| ø Total Anions | ---- | 0.01 | meq/L | | **24.0** | **23.9** | ---- | ---- | ---- |
| ø Total Cations | ---- | 0.01 | meq/L | | **21.8** | **20.7** | ---- | ---- | ---- |
| ø Ionic Balance | ---- | 0.01 | % | | **4.92** | **7.11** | ---- | ---- | ---- |
| **EP020: Oil and Grease (O&G)** | | | | | | | | | |
| Oil & Grease | ---- | 5 | mg/L | | <5 | <5 | ---- | ---- | ---- |
| **EP026SP: Chemical Oxygen Demand (Spectrophotometric)** | | | | | | | | | |
| Chemical Oxygen Demand | ---- | 10 | mg/L | | <10 | <10 | ---- | ---- | ---- |
| **EP030: Biochemical Oxygen Demand (BOD)** | | | | | | | | | |
| Biochemical Oxygen Demand | ---- | 2 | mg/L | | <2 | <2 | ---- | ---- | ---- |
| **EP050: Anionic Surfactants as MBAS** | | | | | | | | | |
| Anionic Surfactants as MBAS | ---- | 0.1 | mg/L | | <0.1 | <0.1 | ---- | ---- | ---- |
| **EP066: Polychlorinated Biphenyls (PCB)** | | | | | | | | | |
| ^ Total Polychlorinated biphenyls | ---- | 1 | µg/L | | <1 | <1 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | WORMBH49 | WORMBH27 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 27-Oct-2020 00:00 | 28-Oct-2020 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2019000-001 | EM2019000-002 | -------- | -------- | -------- |
| | | | | | Result | Result | ---- | ---- | ---- |
| **EP074A: Monocyclic Aromatic Hydrocarbons** | | | | | | | | | |
| Styrene | 100-42-5 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| **EP074E: Halogenated Aliphatic Compounds** | | | | | | | | | |
| Vinyl chloride | 75-01-4 | 50 | µg/L | | <50 | <50 | ---- | ---- | ---- |
| 1.1-Dichloroethene | 75-35-4 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| Methylene chloride | 75-09-2 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| trans-1.2-Dichloroethene | 156-60-5 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| cis-1.2-Dichloroethene | 156-59-2 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| 1.1.1-Trichloroethane | 71-55-6 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| Carbon Tetrachloride | 56-23-5 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| 1.2-Dichloroethane | 107-06-2 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| Trichloroethene | 79-01-6 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| 1.1.2-Trichloroethane | 79-00-5 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| Tetrachloroethene | 127-18-4 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| 1.1.1.2-Tetrachloroethane | 630-20-6 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| 1.1.2.2-Tetrachloroethane | 79-34-5 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| Hexachlorobutadiene | 87-68-3 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| **EP074F: Halogenated Aromatic Compounds** | | | | | | | | | |
| Chlorobenzene | 108-90-7 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| 1.4-Dichlorobenzene | 106-46-7 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| 1.2-Dichlorobenzene | 95-50-1 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| 1.2.4-Trichlorobenzene | 120-82-1 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| **EP074G: Trihalomethanes** | | | | | | | | | |
| Chloroform | 67-66-3 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| **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 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | WORMBH49 | WORMBH27 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 27-Oct-2020 00:00 | 28-Oct-2020 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2019000-001 | EM2019000-002 | -------- | -------- | -------- |
| | | | | | Result | Result | ---- | ---- | ---- |
| **EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued** | | | | | | | | | |
| 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 | ---- | ---- | ---- |
| 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 (Halogenated)** | | | | | | | | | |
| 2-Chlorophenol | 95-57-8 | 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 | 4 | µg/L | | <4 | <4 | ---- | ---- | ---- |
| 2.4.5-Trichlorophenol | 95-95-4 | 2 | µg/L | | <2 | <2 | ---- | ---- | ---- |
| 2.4.6-Trichlorophenol | 88-06-2 | 2 | µg/L | | <2 | <2 | ---- | ---- | ---- |
| 2.3.5.6-Tetrachlorophenol | 935-95-5 | 2 | µg/L | | <2 | <2 | ---- | ---- | ---- |
| 2.3.4.5 & 2.3.4.6-Tetrachlorophenol | 4901-51-3/58-90-2 | 2 | µg/L | | <2 | <2 | ---- | ---- | ---- |
| Pentachlorophenol | 87-86-5 | 2 | µg/L | | <2 | <2 | ---- | ---- | ---- |
| **EP075A: Phenolic Compounds (Non-halogenated)** | | | | | | | | | |
| Phenol | 108-95-2 | 4 | µg/L | | <4 | <4 | ---- | ---- | ---- |
| 2-Methylphenol | 95-48-7 | 4 | µg/L | | <4 | <4 | ---- | ---- | ---- |
| 3- & 4-Methylphenol | 1319-77-3 | 4 | µg/L | | <4 | <4 | ---- | ---- | ---- |
| 2-Nitrophenol | 88-75-5 | 4 | µg/L | | <4 | <4 | ---- | ---- | ---- |
| 2.4-Dimethylphenol | 105-67-9 | 4 | µg/L | | <4 | <4 | ---- | ---- | ---- |
| 2.4-Dinitrophenol | 51-28-5 | 100 | µg/L | | <100 | <100 | ---- | ---- | ---- |
| 4-Nitrophenol | 100-02-7 | 50 | µg/L | | <50 | <50 | ---- | ---- | ---- |
| 2-Methyl-4.6-dinitrophenol | 8071-51-0 | 50 | µg/L | | <50 | <50 | ---- | ---- | ---- |
| Dinoseb | 88-85-7 | 50 | µg/L | | <50 | <50 | ---- | ---- | ---- |
| 2-Cyclohexyl-4.6-Dinitrophenol | 131-89-5 | 50 | µg/L | | <50 | <50 | ---- | ---- | ---- |
| **EP075I: Organochlorine Pesticides** | | | | | | | | | |
| alpha-BHC | 319-84-6 | 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 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | WORMBH49 | WORMBH27 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 27-Oct-2020 00:00 | 28-Oct-2020 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2019000-001 | EM2019000-002 | -------- | -------- | -------- |
| | | | | | Result | Result | ---- | ---- | ---- |
| **EP075l: Organochlorine Pesticides - Continued** | | | | | | | | | |
| cis-Chlordane | 5103-71-9 | 0.5 | µg/L | | <0.5 | <0.5 | ---- | ---- | ---- |
| trans-Chlordane | 5103-74-2 | 0.5 | µg/L | | <0.5 | <0.5 | ---- | ---- | ---- |
| 4.4`-DDE | 72-55-9 | 0.5 | µg/L | | <0.5 | <0.5 | ---- | ---- | ---- |
| Dieldrin | 60-57-1 | 0.5 | µg/L | | <0.5 | <0.5 | ---- | ---- | ---- |
| 4.4`-DDD | 72-54-8 | 0.5 | µg/L | | <0.5 | <0.5 | ---- | ---- | ---- |
| 4.4`-DDT | 50-29-3 | 0.5 | µg/L | | <0.5 | <0.5 | ---- | ---- | ---- |
| **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 | ---- | ---- | ---- |
| **MM514: E.coli & Total Coliforms MPN by Colilert** | | | | | | | | | |
| Escherichia coli (Colilert) | ---- | 1 | orgs/100mL | | 0 | 0 | ---- | ---- | ---- |
| **EP066S: PCB Surrogate** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | WORMBH49 | WORMBH27 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 27-Oct-2020 00:00 | 28-Oct-2020 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2019000-001 | EM2019000-002 | -------- | -------- | -------- |
| | | | | | Result | Result | ---- | ---- | ---- |
| **EP066S: PCB Surrogate - Continued** | | | | | | | | | |
| **Decachlorobiphenyl** | 2051-24-3 | 1 | % | | **77.1** | **80.1** | ---- | ---- | ---- |
| **EP074S: VOC Surrogates** | | | | | | | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 5 | % | | **99.8** | **95.8** | ---- | ---- | ---- |
| **Toluene-D8** | 2037-26-5 | 5 | % | | **93.6** | **94.9** | ---- | ---- | ---- |
| **4-Bromofluorobenzene** | 460-00-4 | 5 | % | | **102** | **104** | ---- | ---- | ---- |
| **EP075(SIM)T: PAH Surrogates** | | | | | | | | | |
| **2-Fluorobiphenyl** | 321-60-8 | 1.0 | % | | **56.8** | **62.2** | ---- | ---- | ---- |
| **Anthracene-d10** | 1719-06-8 | 1.0 | % | | **81.2** | **85.3** | ---- | ---- | ---- |
| **4-Terphenyl-d14** | 1718-51-0 | 1.0 | % | | **75.1** | **78.5** | ---- | ---- | ---- |
| **EP075S: Acid Extractable Surrogates (Waste Classification)** | | | | | | | | | |
| **Phenol-d6** | 13127-88-3 | 0.25 | % | | **27.4** | **29.7** | ---- | ---- | ---- |
| **2-Chlorophenol-D4** | 93951-73-6 | 0.25 | % | | **72.3** | **71.7** | ---- | ---- | ---- |
| **2.4.6-Tribromophenol** | 118-79-6 | 0.25 | % | | **76.2** | **77.6** | ---- | ---- | ---- |
| **EP075T: Base/Neutral Extractable Surrogates (Waste Classification)** | | | | | | | | | |
| **Nitrobenzene-D5** | 4165-60-0 | 0.25 | % | | **85.7** | **87.2** | ---- | ---- | ---- |
| **1.2-Dichlorobenzene-D4** | 2199-69-1 | 0.25 | % | | **90.9** | **89.6** | ---- | ---- | ---- |
| **2-Fluorobiphenyl** | 321-60-8 | 0.25 | % | | **96.5** | **96.5** | ---- | ---- | ---- |
| **Anthracene-d10** | 1719-06-8 | 0.25 | % | | **91.8** | **94.5** | ---- | ---- | ---- |
| **4-Terphenyl-d14** | 1718-51-0 | 0.25 | % | | **104** | **108** | ---- | ---- | ---- |
| **EP080S: TPH(V)/BTEX Surrogates** | | | | | | | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 2 | % | | **98.4** | **94.7** | ---- | ---- | ---- |
| **Toluene-D8** | 2037-26-5 | 2 | % | | **102** | **103** | ---- | ---- | ---- |
| **4-Bromofluorobenzene** | 460-00-4 | 2 | % | | **108** | **112** | ---- | ---- | ---- |

## Surrogate Control Limits

Sub-Matrix: **WATER**

| Compound | CAS Number | Recovery Limits (%) Low | High |
|---|---|---|---|
| **EP066S: PCB Surrogate** | | | |
| **Decachlorobiphenyl** | 2051-24-3 | 41 | 125 |
| **EP074S: VOC Surrogates** | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 72 | 132 |
| **Toluene-D8** | 2037-26-5 | 77 | 132 |
| **4-Bromofluorobenzene** | 460-00-4 | 67 | 131 |
| **EP075(SIM)T: PAH Surrogates** | | | |
| **2-Fluorobiphenyl** | 321-60-8 | 36 | 114 |
| **Anthracene-d10** | 1719-06-8 | 51 | 119 |
| **4-Terphenyl-d14** | 1718-51-0 | 49 | 127 |
| **EP075S: Acid Extractable Surrogates (Waste Classification)** | | | |
| **Phenol-d6** | 13127-88-3 | 13 | 90 |
| **2-Chlorophenol-D4** | 93951-73-6 | 42 | 117 |
| **2.4.6-Tribromophenol** | 118-79-6 | 52 | 140 |
| **EP075T: Base/Neutral Extractable Surrogates (Waste Classification)** | | | |
| **Nitrobenzene-D5** | 4165-60-0 | 49 | 136 |
| **1.2-Dichlorobenzene-D4** | 2199-69-1 | 49 | 128 |
| **2-Fluorobiphenyl** | 321-60-8 | 57 | 137 |
| **Anthracene-d10** | 1719-06-8 | 67 | 137 |
| **4-Terphenyl-d14** | 1718-51-0 | 66 | 136 |
| **EP080S: TPH(V)/BTEX Surrogates** | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 73 | 129 |
| **Toluene-D8** | 2037-26-5 | 70 | 125 |
| **4-Bromofluorobenzene** | 460-00-4 | 71 | 129 |

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **EM2019188** | Page | : 1 of 13 |
| Client | : **GHD PTY LTD** | Laboratory | : Environmental Division Melbourne |
| Contact | : MR ALAN WILSON | Contact | : Shirley LeCornu |
| Address | : LEVEL 8, 180 LONSDALE ST<br>MELBOURNE VIC, AUSTRALIA 3001 | Address | : 4 Westall Rd Springvale VIC Australia 3171 |
| Telephone | : +61 08 8111 6600 | Telephone | : +6138549 9630 |
| Project | : 1252999708 | Date Samples Received | : 30-Oct-2020 15:40 |
| Order number | : 1252999708 | Date Analysis Commenced | : 30-Oct-2020 |
| C-O-C number | : ---- | Issue Date | : 05-Nov-2020 17:12 |
| Sampler | : ADW | | |
| Site | : ---- | | |
| Quote number | : EN/005/17 (Victoria Primary Quote) | | |
| No. of samples received | : 6 | | |
| No. of samples analysed | : 6 | | |

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. 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 |
| Dilani Fernando | Senior Inorganic Chemist | Melbourne Inorganics, Springvale, VIC |
| Samantha Smith | Laboratory Coordinator | WRG Subcontracting, Springvale, VIC |
| Xing Lin | Senior Organic Chemist | Melbourne Organics, Springvale, VIC |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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

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

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

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

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

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

- EP231X-LL: Particular sample (EM2019188-002), LOR has been raised for 6:2 FTS due to laboratory background level.
- EP231X-LL: Particular sample (EM2019188-003), LOR has been raised for PFHxS due to laboratory background level.
- EG050G-F: EM2019188 #5 Hexavalent chromium results may be biased high compared to Dissolved Chromium filtered as sample were not field filtered prior to sample preservation.
- EP026SP - EM2019188#5 ; sample required dilution prior to analyse due to matrix interfernces. LOR values have bee adjusted accoridingly.
- EA010-P: Electrical Conductivity @ 25°C was analysed by manual method (EA010).
- EP075 (SIM): Where reported, 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.
- 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.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EP030: The DO depletion for EM2019188 #5 is less than 2mg/L, this indicates that the sample has been over diluted and the BOD is less than 8 mg/L. The BOD result reported was estimated from the lowest dilution.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- E.coli & Total Coliforms by MPN (MM514) is conducted by ALS Scoresby NATA accreditation no. 992, site no. 989.
- MBAS (W-MBAS )is conducted by ALS Scoresby NATA accreditation no. 992, site no. 989.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Client sample ID | WORMBH23a | WORMBH22 | Deep Creek | Jacksons Ck | WORMBH15 |
|---|---|---|---|---|---|---|---|---|
| | | | Client sampling date / time | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 |
| Compound | CAS Number | LOR | Unit | EM2019188-001 | EM2019188-002 | EM2019188-003 | EM2019188-004 | EM2019188-005 |
| | | | | Result | Result | Result | Result | Result |
| **EA005P: pH by PC Titrator** | | | | | | | | |
| pH Value | ---- | 0.01 | pH Unit | 7.22 | 7.26 | 7.75 | 7.54 | 6.83 |
| **EA010P: Conductivity by PC Titrator** | | | | | | | | |
| Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | 7030 | 7350 | 731 | 540 | 8560 |
| **EA016: Calculated TDS (from Electrical Conductivity)** | | | | | | | | |
| Total Dissolved Solids (Calc.) | ---- | 1 | mg/L | 4570 | 4780 | 475 | 351 | 5560 |
| **EA025: Total Suspended Solids dried at 104 ± 2°C** | | | | | | | | |
| Suspended Solids (SS) | ---- | 5 | mg/L | ---- | ---- | ---- | ---- | 5 |
| **ED037P: Alkalinity by PC Titrator** | | | | | | | | |
| Hydroxide Alkalinity as CaCO3 | DMO-210-001 | 1 | mg/L | <1 | <1 | <1 | <1 | <1 |
| Carbonate Alkalinity as CaCO3 | 3812-32-6 | 1 | mg/L | <1 | <1 | <1 | <1 | <1 |
| Bicarbonate Alkalinity as CaCO3 | 71-52-3 | 1 | mg/L | 578 | 414 | 107 | 86 | 1660 |
| Total Alkalinity as CaCO3 | ---- | 1 | mg/L | 578 | 414 | 107 | 86 | 1660 |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | |
| Sulfate as SO4 - Turbidimetric | 14808-79-8 | 1 | mg/L | 403 | 563 | 8 | 22 | 11 |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | | |
| Chloride | 16887-00-6 | 1 | mg/L | 1660 | 1780 | 165 | 103 | 1900 |
| **ED093F: Dissolved Major Cations** | | | | | | | | |
| Calcium | 7440-70-2 | 1 | mg/L | 105 | 114 | 13 | 9 | 185 |
| Magnesium | 7439-95-4 | 1 | mg/L | 225 | 268 | 25 | 14 | 316 |
| Sodium | 7440-23-5 | 1 | mg/L | 935 | 1040 | 76 | 66 | 1100 |
| Potassium | 7440-09-7 | 1 | mg/L | 31 | 25 | 3 | 6 | 49 |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | |
| Arsenic | 7440-38-2 | 0.001 | mg/L | ---- | ---- | ---- | ---- | 0.001 |
| Cadmium | 7440-43-9 | 0.0001 | mg/L | ---- | ---- | ---- | ---- | 0.0001 |
| Chromium | 7440-47-3 | 0.001 | mg/L | ---- | ---- | ---- | ---- | <0.001 |
| Copper | 7440-50-8 | 0.001 | mg/L | ---- | ---- | ---- | ---- | 0.018 |
| Lead | 7439-92-1 | 0.001 | mg/L | ---- | ---- | ---- | ---- | <0.001 |
| Molybdenum | 7439-98-7 | 0.001 | mg/L | ---- | ---- | ---- | ---- | 0.002 |
| Nickel | 7440-02-0 | 0.001 | mg/L | ---- | ---- | ---- | ---- | 0.083 |
| Selenium | 7782-49-2 | 0.01 | mg/L | ---- | ---- | ---- | ---- | <0.01 |
| Silver | 7440-22-4 | 0.001 | mg/L | ---- | ---- | ---- | ---- | <0.001 |
| Tin | 7440-31-5 | 0.001 | mg/L | ---- | ---- | ---- | ---- | 0.001 |
| Zinc | 7440-66-6 | 0.005 | mg/L | ---- | ---- | ---- | ---- | 0.118 |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | WORMBH23a | WORMBH22 | Deep Creek | Jacksons Ck | WORMBH15 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2019188-001 | EM2019188-002 | EM2019188-003 | EM2019188-004 | EM2019188-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EG035F: Dissolved Mercury by FIMS - Continued** | | | | | | | | | |
| Mercury | 7439-97-6 | 0.0001 | mg/L | | ---- | ---- | ---- | ---- | <0.0001 |
| **EG050F: Dissolved Hexavalent Chromium** | | | | | | | | | |
| Hexavalent Chromium | 18540-29-9 | 0.01 | mg/L | | ---- | ---- | ---- | ---- | <0.01 |
| **EK040P: Fluoride by PC Titrator** | | | | | | | | | |
| Fluoride | 16984-48-8 | 0.1 | mg/L | | ---- | ---- | ---- | ---- | **0.4** |
| **EK055G: Ammonia as N by Discrete Analyser** | | | | | | | | | |
| Ammonia as N | 7664-41-7 | 0.01 | mg/L | | ---- | ---- | **0.01** | **0.03** | **1.87** |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | | | | |
| Nitrite as N | 14797-65-0 | 0.01 | mg/L | | ---- | ---- | <0.01 | <0.01 | <0.01 |
| **EK058G: Nitrate as N by Discrete Analyser** | | | | | | | | | |
| Nitrate as N | 14797-55-8 | 0.01 | mg/L | | ---- | ---- | **0.05** | **0.51** | <0.01 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | | |
| Nitrite + Nitrate as N | ---- | 0.01 | mg/L | | ---- | ---- | **0.05** | **0.51** | <0.01 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | | |
| Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | | ---- | ---- | **0.7** | **0.7** | **1.9** |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | | |
| ^ Total Nitrogen as N | ---- | 0.1 | mg/L | | ---- | ---- | **0.8** | **1.2** | **1.9** |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | | |
| Total Phosphorus as P | ---- | 0.01 | mg/L | | ---- | ---- | **0.07** | **0.11** | **0.09** |
| **EN055: Ionic Balance** | | | | | | | | | |
| ø Total Anions | ---- | 0.01 | meq/L | | **66.8** | **70.2** | **6.96** | **5.08** | **87.0** |
| ø Total Cations | ---- | 0.01 | meq/L | | **65.2** | **73.6** | **6.09** | **4.62** | **84.3** |
| ø Ionic Balance | ---- | 0.01 | % | | **1.17** | **2.38** | **6.67** | **4.70** | **1.55** |
| **EP020: Oil and Grease (O&G)** | | | | | | | | | |
| Oil & Grease | ---- | 5 | mg/L | | ---- | ---- | ---- | ---- | <5 |
| **EP026SP: Chemical Oxygen Demand (Spectrophotometric)** | | | | | | | | | |
| Chemical Oxygen Demand | ---- | 10 | mg/L | | ---- | ---- | ---- | ---- | <20 |
| **EP030: Biochemical Oxygen Demand (BOD)** | | | | | | | | | |
| Biochemical Oxygen Demand | ---- | 2 | mg/L | | ---- | ---- | ---- | ---- | <8 |
| **EP066: Polychlorinated Biphenyls (PCB)** | | | | | | | | | |
| ^ Total Polychlorinated biphenyls | ---- | 1 | µg/L | | ---- | ---- | ---- | ---- | <1 |
| **EP074A: Monocyclic Aromatic Hydrocarbons** | | | | | | | | | |
| Styrene | 100-42-5 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | WORMBH23a | WORMBH22 | Deep Creek | Jacksons Ck | WORMBH15 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2019188-001 | EM2019188-002 | EM2019188-003 | EM2019188-004 | EM2019188-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP074E: Halogenated Aliphatic Compounds** | | | | | | | | | |
| Vinyl chloride | 75-01-4 | 50 | µg/L | | ---- | ---- | ---- | ---- | <50 |
| 1.1-Dichloroethene | 75-35-4 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| Methylene chloride | 75-09-2 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| trans-1.2-Dichloroethene | 156-60-5 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| cis-1.2-Dichloroethene | 156-59-2 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| 1.1.1-Trichloroethane | 71-55-6 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| Carbon Tetrachloride | 56-23-5 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| 1.2-Dichloroethane | 107-06-2 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| Trichloroethene | 79-01-6 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| 1.1.2-Trichloroethane | 79-00-5 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| Tetrachloroethene | 127-18-4 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| 1.1.1.2-Tetrachloroethane | 630-20-6 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| 1.1.2.2-Tetrachloroethane | 79-34-5 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| Hexachlorobutadiene | 87-68-3 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| **EP074F: Halogenated Aromatic Compounds** | | | | | | | | | |
| Chlorobenzene | 108-90-7 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| 1.4-Dichlorobenzene | 106-46-7 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| 1.2-Dichlorobenzene | 95-50-1 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| 1.2.4-Trichlorobenzene | 120-82-1 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| **EP074G: Trihalomethanes** | | | | | | | | | |
| Chloroform | 67-66-3 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| **EP075(SIM)B: Polynuclear Aromatic Hydrocarbons** | | | | | | | | | |
| Naphthalene | 91-20-3 | 1.0 | µg/L | | ---- | ---- | ---- | ---- | <1.0 |
| Acenaphthylene | 208-96-8 | 1.0 | µg/L | | ---- | ---- | ---- | ---- | <1.0 |
| Acenaphthene | 83-32-9 | 1.0 | µg/L | | ---- | ---- | ---- | ---- | <1.0 |
| Fluorene | 86-73-7 | 1.0 | µg/L | | ---- | ---- | ---- | ---- | <1.0 |
| Phenanthrene | 85-01-8 | 1.0 | µg/L | | ---- | ---- | ---- | ---- | <1.0 |
| Anthracene | 120-12-7 | 1.0 | µg/L | | ---- | ---- | ---- | ---- | <1.0 |
| Fluoranthene | 206-44-0 | 1.0 | µg/L | | ---- | ---- | ---- | ---- | <1.0 |
| Pyrene | 129-00-0 | 1.0 | µg/L | | ---- | ---- | ---- | ---- | <1.0 |
| Benz(a)anthracene | 56-55-3 | 1.0 | µg/L | | ---- | ---- | ---- | ---- | <1.0 |
| Chrysene | 218-01-9 | 1.0 | µg/L | | ---- | ---- | ---- | ---- | <1.0 |
| Benzo(b+j)fluoranthene | 205-99-2 205-82-3 | 1.0 | µg/L | | ---- | ---- | ---- | ---- | <1.0 |
| Benzo(k)fluoranthene | 207-08-9 | 1.0 | µg/L | | ---- | ---- | ---- | ---- | <1.0 |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | WORMBH23a | WORMBH22 | Deep Creek | Jacksons Ck | WORMBH15 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2019188-001 | EM2019188-002 | EM2019188-003 | EM2019188-004 | EM2019188-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued** | | | | | | | | | |
| Benzo(a)pyrene | 50-32-8 | 0.5 | µg/L | | ---- | ---- | ---- | ---- | <0.5 |
| Indeno(1.2.3.cd)pyrene | 193-39-5 | 1.0 | µg/L | | ---- | ---- | ---- | ---- | <1.0 |
| Dibenz(a.h)anthracene | 53-70-3 | 1.0 | µg/L | | ---- | ---- | ---- | ---- | <1.0 |
| Benzo(g.h.i)perylene | 191-24-2 | 1.0 | µg/L | | ---- | ---- | ---- | ---- | <1.0 |
| ^ Sum of polycyclic aromatic hydrocarbons | ---- | 0.5 | µg/L | | ---- | ---- | ---- | ---- | <0.5 |
| ^ Benzo(a)pyrene TEQ (zero) | ---- | 0.5 | µg/L | | ---- | ---- | ---- | ---- | <0.5 |
| **EP075A: Phenolic Compounds (Halogenated)** | | | | | | | | | |
| 2-Chlorophenol | 95-57-8 | 2 | µg/L | | ---- | ---- | ---- | ---- | <2 |
| 2.4-Dichlorophenol | 120-83-2 | 2 | µg/L | | ---- | ---- | ---- | ---- | <2 |
| 2.6-Dichlorophenol | 87-65-0 | 2 | µg/L | | ---- | ---- | ---- | ---- | <2 |
| 4-Chloro-3-methylphenol | 59-50-7 | 4 | µg/L | | ---- | ---- | ---- | ---- | <4 |
| 2.4.5-Trichlorophenol | 95-95-4 | 2 | µg/L | | ---- | ---- | ---- | ---- | <2 |
| 2.4.6-Trichlorophenol | 88-06-2 | 2 | µg/L | | ---- | ---- | ---- | ---- | <2 |
| 2.3.5.6-Tetrachlorophenol | 935-95-5 | 2 | µg/L | | ---- | ---- | ---- | ---- | <2 |
| 2.3.4.5 & 2.3.4.6-Tetrachlorophenol | 4901-51-3/58-90-2 | 2 | µg/L | | ---- | ---- | ---- | ---- | <2 |
| Pentachlorophenol | 87-86-5 | 2 | µg/L | | ---- | ---- | ---- | ---- | <2 |
| Sum of Phenols (halogenated) | ---- | 2 | µg/L | | ---- | ---- | ---- | ---- | <2 |
| **EP075A: Phenolic Compounds (Non-halogenated)** | | | | | | | | | |
| Phenol | 108-95-2 | 4 | µg/L | | ---- | ---- | ---- | ---- | <4 |
| 2-Methylphenol | 95-48-7 | 4 | µg/L | | ---- | ---- | ---- | ---- | <4 |
| 3- & 4-Methylphenol | 1319-77-3 | 4 | µg/L | | ---- | ---- | ---- | ---- | <4 |
| 2-Nitrophenol | 88-75-5 | 4 | µg/L | | ---- | ---- | ---- | ---- | <4 |
| 2.4-Dimethylphenol | 105-67-9 | 4 | µg/L | | ---- | ---- | ---- | ---- | <4 |
| 2.4-Dinitrophenol | 51-28-5 | 100 | µg/L | | ---- | ---- | ---- | ---- | <100 |
| 4-Nitrophenol | 100-02-7 | 50 | µg/L | | ---- | ---- | ---- | ---- | <50 |
| 2-Methyl-4.6-dinitrophenol | 8071-51-0 | 50 | µg/L | | ---- | ---- | ---- | ---- | <50 |
| Dinoseb | 88-85-7 | 50 | µg/L | | ---- | ---- | ---- | ---- | <50 |
| 2-Cyclohexyl-4.6-Dinitrophenol | 131-89-5 | 50 | µg/L | | ---- | ---- | ---- | ---- | <50 |
| Sum of Phenols (non-halogenated) | ---- | 4 | µg/L | | ---- | ---- | ---- | ---- | <4 |
| **EP075I: Organochlorine Pesticides** | | | | | | | | | |
| alpha-BHC | 319-84-6 | 0.5 | µg/L | | ---- | ---- | ---- | ---- | <0.5 |
| Heptachlor | 76-44-8 | 0.5 | µg/L | | ---- | ---- | ---- | ---- | <0.5 |
| Aldrin | 309-00-2 | 0.5 | µg/L | | ---- | ---- | ---- | ---- | <0.5 |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | WORMBH23a | WORMBH22 | Deep Creek | Jacksons Ck | WORMBH15 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2019188-001 | EM2019188-002 | EM2019188-003 | EM2019188-004 | EM2019188-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP075l: Organochlorine Pesticides - Continued** | | | | | | | | | |
| cis-Chlordane | 5103-71-9 | 0.5 | µg/L | | ---- | ---- | ---- | ---- | <0.5 |
| trans-Chlordane | 5103-74-2 | 0.5 | µg/L | | ---- | ---- | ---- | ---- | <0.5 |
| 4.4`-DDE | 72-55-9 | 0.5 | µg/L | | ---- | ---- | ---- | ---- | <0.5 |
| Dieldrin | 60-57-1 | 0.5 | µg/L | | ---- | ---- | ---- | ---- | <0.5 |
| 4.4`-DDD | 72-54-8 | 0.5 | µg/L | | ---- | ---- | ---- | ---- | <0.5 |
| 4.4`-DDT | 50-29-3 | 0.5 | µg/L | | ---- | ---- | ---- | ---- | <0.5 |
| Sum of Aldrin + Dieldrin | 309-00-2/60-57-1 | 0.5 | µg/L | | ---- | ---- | ---- | ---- | <0.5 |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | | |
| C6 - C9 Fraction | ---- | 20 | µg/L | | ---- | ---- | ---- | ---- | <20 |
| C10 - C14 Fraction | ---- | 50 | µg/L | | ---- | ---- | ---- | ---- | <50 |
| C15 - C28 Fraction | ---- | 100 | µg/L | | ---- | ---- | ---- | ---- | <100 |
| C29 - C36 Fraction | ---- | 50 | µg/L | | ---- | ---- | ---- | ---- | <50 |
| ^ C10 - C36 Fraction (sum) | ---- | 50 | µg/L | | ---- | ---- | ---- | ---- | <50 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | | | | |
| C6 - C10 Fraction | C6_C10 | 20 | µg/L | | ---- | ---- | ---- | ---- | <20 |
| ^ C6 - C10 Fraction minus BTEX (F1) | C6_C10-BTEX | 20 | µg/L | | ---- | ---- | ---- | ---- | <20 |
| >C10 - C16 Fraction | ---- | 100 | µg/L | | ---- | ---- | ---- | ---- | <100 |
| >C16 - C34 Fraction | ---- | 100 | µg/L | | ---- | ---- | ---- | ---- | <100 |
| >C34 - C40 Fraction | ---- | 100 | µg/L | | ---- | ---- | ---- | ---- | <100 |
| ^ >C10 - C40 Fraction (sum) | ---- | 100 | µg/L | | ---- | ---- | ---- | ---- | <100 |
| ^ >C10 - C16 Fraction minus Naphthalene (F2) | ---- | 100 | µg/L | | ---- | ---- | ---- | ---- | <100 |
| **EP080: BTEXN** | | | | | | | | | |
| Benzene | 71-43-2 | 1 | µg/L | | ---- | ---- | ---- | ---- | <1 |
| Toluene | 108-88-3 | 2 | µg/L | | ---- | ---- | ---- | ---- | <2 |
| Ethylbenzene | 100-41-4 | 2 | µg/L | | ---- | ---- | ---- | ---- | <2 |
| meta- & para-Xylene | 108-38-3 106-42-3 | 2 | µg/L | | ---- | ---- | ---- | ---- | <2 |
| ortho-Xylene | 95-47-6 | 2 | µg/L | | ---- | ---- | ---- | ---- | <2 |
| ^ Total Xylenes | ---- | 2 | µg/L | | ---- | ---- | ---- | ---- | <2 |
| ^ Sum of BTEX | ---- | 1 | µg/L | | ---- | ---- | ---- | ---- | <1 |
| Naphthalene | 91-20-3 | 5 | µg/L | | ---- | ---- | ---- | ---- | <5 |
| **EP231A: Perfluoroalkyl Sulfonic Acids** | | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | 375-73-5 | 0.002 | µg/L | | <0.002 | <0.002 | <0.002 | **0.006** | <0.002 |

## Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

| Compound | CAS Number | LOR | Unit | Client sample ID | WORMBH23a | WORMBH22 | Deep Creek | Jacksons Ck | WORMBH15 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 |
| | | | | | EM2019188-001 | EM2019188-002 | EM2019188-003 | EM2019188-004 | EM2019188-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP231A: Perfluoroalkyl Sulfonic Acids - Continued** | | | | | | | | | |
| **Perfluoropentane sulfonic acid (PFPeS)** | 2706-91-4 | 0.002 | µg/L | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| **Perfluorohexane sulfonic acid (PFHxS)** | 355-46-4 | 0.002 | µg/L | | <0.002 | <0.002 | <0.003 | **0.003** | <0.002 |
| **Perfluoroheptane sulfonic acid (PFHpS)** | 375-92-8 | 0.002 | µg/L | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| **Perfluorooctane sulfonic acid (PFOS)** | 1763-23-1 | 0.002 | µg/L | | <0.002 | <0.002 | <0.002 | **0.004** | <0.002 |
| **Perfluorodecane sulfonic acid (PFDS)** | 335-77-3 | 0.002 | µg/L | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| **EP231B: Perfluoroalkyl Carboxylic Acids** | | | | | | | | | |
| **Perfluorobutanoic acid (PFBA)** | 375-22-4 | 0.01 | µg/L | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Perfluoropentanoic acid (PFPeA)** | 2706-90-3 | 0.002 | µg/L | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| **Perfluorohexanoic acid (PFHxA)** | 307-24-4 | 0.002 | µg/L | | <0.002 | <0.002 | <0.002 | **0.004** | <0.002 |
| **Perfluoroheptanoic acid (PFHpA)** | 375-85-9 | 0.002 | µg/L | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| **Perfluorooctanoic acid (PFOA)** | 335-67-1 | 0.002 | µg/L | | <0.002 | <0.002 | <0.002 | **0.003** | <0.002 |
| **Perfluorononanoic acid (PFNA)** | 375-95-1 | 0.002 | µg/L | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| **Perfluorodecanoic acid (PFDA)** | 335-76-2 | 0.002 | µg/L | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| **Perfluoroundecanoic acid (PFUnDA)** | 2058-94-8 | 0.002 | µg/L | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| **Perfluorododecanoic acid (PFDoDA)** | 307-55-1 | 0.002 | µg/L | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| **Perfluorotridecanoic acid (PFTrDA)** | 72629-94-8 | 0.002 | µg/L | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| **Perfluorotetradecanoic acid (PFTeDA)** | 376-06-7 | 0.005 | µg/L | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| **EP231C: Perfluoroalkyl Sulfonamides** | | | | | | | | | |
| **Perfluorooctane sulfonamide (FOSA)** | 754-91-6 | 0.002 | µg/L | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| **N-Methyl perfluorooctane sulfonamide (MeFOSA)** | 31506-32-8 | 0.005 | µg/L | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| **N-Ethyl perfluorooctane sulfonamide (EtFOSA)** | 4151-50-2 | 0.005 | µg/L | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| **N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)** | 24448-09-7 | 0.005 | µg/L | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | WORMBH23a | WORMBH22 | Deep Creek | Jacksons Ck | WORMBH15 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2019188-001 | EM2019188-002 | EM2019188-003 | EM2019188-004 | EM2019188-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP231C: Perfluoroalkyl Sulfonamides - Continued** | | | | | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | 1691-99-2 | 0.005 | µg/L | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | 2355-31-9 | 0.002 | µg/L | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 2991-50-6 | 0.002 | µg/L | | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 |
| **EP231D: (n:2) Fluorotelomer Sulfonic Acids** | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 757124-72-4 | 0.005 | µg/L | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 27619-97-2 | 0.005 | µg/L | | <0.005 | <0.008 | <0.005 | <0.005 | <0.005 |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | 39108-34-4 | 0.005 | µg/L | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0 | 0.005 | µg/L | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| **EP231P: PFAS Sums** | | | | | | | | | |
| Sum of PFAS | ---- | 0.002 | µg/L | | <0.002 | <0.002 | <0.002 | **0.020** | <0.002 |
| Sum of PFHxS and PFOS | 355-46-4/1763-23-1 | 0.002 | µg/L | | <0.002 | <0.002 | <0.002 | **0.007** | <0.002 |
| Sum of PFAS (WA DER List) | ---- | 0.002 | µg/L | | <0.002 | <0.002 | <0.002 | **0.020** | <0.002 |
| **MM514: E.coli & Total Coliforms MPN by Colilert** | | | | | | | | | |
| Escherichia coli (Colilert) | ---- | 1 | orgs/100mL | | ---- | ---- | ---- | ---- | **3** |
| **Subcontracted Analysis: MBAS** | | | | | | | | | |
| Anionic Surfactants as MBAS | ---- | 0.05 | mg/L | | ---- | ---- | ---- | ---- | <0.05 |
| **EP066S: PCB Surrogate** | | | | | | | | | |
| Decachlorobiphenyl | 2051-24-3 | 1 | % | | ---- | ---- | ---- | ---- | **66.7** |
| **EP074S: VOC Surrogates** | | | | | | | | | |
| 1.2-Dichloroethane-D4 | 17060-07-0 | 5 | % | | ---- | ---- | ---- | ---- | **107** |
| Toluene-D8 | 2037-26-5 | 5 | % | | ---- | ---- | ---- | ---- | **98.8** |
| 4-Bromofluorobenzene | 460-00-4 | 5 | % | | ---- | ---- | ---- | ---- | **108** |
| **EP075(SIM)S: Phenolic Compound Surrogates** | | | | | | | | | |
| Phenol-d6 | 13127-88-3 | 1.0 | % | | ---- | ---- | ---- | ---- | **30.6** |
| 2-Chlorophenol-D4 | 93951-73-6 | 1.0 | % | | ---- | ---- | ---- | ---- | **84.2** |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Client sample ID | WORMBH23a | WORMBH22 | Deep Creek | Jacksons Ck | WORMBH15 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 | 29-Oct-2020 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2019188-001 | EM2019188-002 | EM2019188-003 | EM2019188-004 | EM2019188-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP075(SIM)S: Phenolic Compound Surrogates - Continued** | | | | | | | | | |
| 2.4.6-Tribromophenol | 118-79-6 | 1.0 | % | | ---- | ---- | ---- | ---- | 98.8 |
| **EP075(SIM)T: PAH Surrogates** | | | | | | | | | |
| 2-Fluorobiphenyl | 321-60-8 | 1.0 | % | | ---- | ---- | ---- | ---- | 84.8 |
| Anthracene-d10 | 1719-06-8 | 1.0 | % | | ---- | ---- | ---- | ---- | 92.0 |
| 4-Terphenyl-d14 | 1718-51-0 | 1.0 | % | | ---- | ---- | ---- | ---- | 96.3 |
| **EP075S: Acid Extractable Surrogates (Waste Classification)** | | | | | | | | | |
| Phenol-d6 | 13127-88-3 | 0.25 | % | | ---- | ---- | ---- | ---- | 36.8 |
| 2-Chlorophenol-D4 | 93951-73-6 | 0.25 | % | | ---- | ---- | ---- | ---- | 86.7 |
| 2.4.6-Tribromophenol | 118-79-6 | 0.25 | % | | ---- | ---- | ---- | ---- | 93.3 |
| **EP075T: Base/Neutral Extractable Surrogates (Waste Classification)** | | | | | | | | | |
| Nitrobenzene-D5 | 4165-60-0 | 0.25 | % | | ---- | ---- | ---- | ---- | 98.1 |
| 1.2-Dichlorobenzene-D4 | 2199-69-1 | 0.25 | % | | ---- | ---- | ---- | ---- | 94.0 |
| 2-Fluorobiphenyl | 321-60-8 | 0.25 | % | | ---- | ---- | ---- | ---- | 103 |
| Anthracene-d10 | 1719-06-8 | 0.25 | % | | ---- | ---- | ---- | ---- | 102 |
| 4-Terphenyl-d14 | 1718-51-0 | 0.25 | % | | ---- | ---- | ---- | ---- | 120 |
| **EP080S: TPH(V)/BTEX Surrogates** | | | | | | | | | |
| 1.2-Dichloroethane-D4 | 17060-07-0 | 2 | % | | ---- | ---- | ---- | ---- | 107 |
| Toluene-D8 | 2037-26-5 | 2 | % | | ---- | ---- | ---- | ---- | 95.4 |
| 4-Bromofluorobenzene | 460-00-4 | 2 | % | | ---- | ---- | ---- | ---- | 103 |
| **EP231S: PFAS Surrogate** | | | | | | | | | |
| 13C4-PFOS | ---- | 0.002 | % | | 103 | 98.6 | 96.8 | 85.2 | 87.2 |
| 13C8-PFOA | ---- | 0.002 | % | | 101 | 95.2 | 102 | 96.6 | 102 |

## Analytical Results

| Sub-Matrix: **WATER** (Matrix: **WATER**) | | | | Client sample ID | **RB01** | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 30-Oct-2020 00:00 | ---- | ---- | ---- | ---- |
| *Compound* | *CAS Number* | *LOR* | *Unit* | | **EM2019188-006** | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **EK055G: Ammonia as N by Discrete Analyser** | | | | | | | | | |
| **Ammonia as N** | 7664-41-7 | 0.01 | mg/L | | <0.01 | ---- | ---- | ---- | ---- |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | | <0.01 | ---- | ---- | ---- | ---- |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | | <0.1 | ---- | ---- | ---- | ---- |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | | <0.01 | ---- | ---- | ---- | ---- |

## Surrogate Control Limits

Sub-Matrix: **WATER**

| Compound | CAS Number | Recovery Limits (%) Low | High |
|---|---|---|---|
| **EP066S: PCB Surrogate** | | | |
| **Decachlorobiphenyl** | 2051-24-3 | 41 | 125 |
| **EP074S: VOC Surrogates** | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 72 | 132 |
| **Toluene-D8** | 2037-26-5 | 77 | 132 |
| **4-Bromofluorobenzene** | 460-00-4 | 67 | 131 |
| **EP075(SIM)S: Phenolic Compound Surrogates** | | | |
| **Phenol-d6** | 13127-88-3 | 10 | 46 |
| **2-Chlorophenol-D4** | 93951-73-6 | 23 | 104 |
| **2.4.6-Tribromophenol** | 118-79-6 | 28 | 130 |
| **EP075(SIM)T: PAH Surrogates** | | | |
| **2-Fluorobiphenyl** | 321-60-8 | 36 | 114 |
| **Anthracene-d10** | 1719-06-8 | 51 | 119 |
| **4-Terphenyl-d14** | 1718-51-0 | 49 | 127 |
| **EP075S: Acid Extractable Surrogates (Waste Classification)** | | | |
| **Phenol-d6** | 13127-88-3 | 13 | 90 |
| **2-Chlorophenol-D4** | 93951-73-6 | 42 | 117 |
| **2.4.6-Tribromophenol** | 118-79-6 | 52 | 140 |
| **EP075T: Base/Neutral Extractable Surrogates (Waste Classification)** | | | |
| **Nitrobenzene-D5** | 4165-60-0 | 49 | 136 |
| **1.2-Dichlorobenzene-D4** | 2199-69-1 | 49 | 128 |
| **2-Fluorobiphenyl** | 321-60-8 | 57 | 137 |
| **Anthracene-d10** | 1719-06-8 | 67 | 137 |
| **4-Terphenyl-d14** | 1718-51-0 | 66 | 136 |
| **EP080S: TPH(V)/BTEX Surrogates** | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 73 | 129 |
| **Toluene-D8** | 2037-26-5 | 70 | 125 |
| **4-Bromofluorobenzene** | 460-00-4 | 71 | 129 |
| **EP231S: PFAS Surrogate** | | | |
| **13C4-PFOS** | ---- | 65 | 140 |
| **13C8-PFOA** | ---- | 71 | 133 |

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **EM2101365** | Page | : 1 of 9 |
| Client | : **GHD PTY LTD** | Laboratory | : Environmental Division Melbourne |
| Contact | : MR ALAN WILSON | Contact | : Shirley LeCornu |
| Address | : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001 | Address | : 4 Westall Rd Springvale VIC Australia 3171 |
| Telephone | : +61 08 8111 6600 | Telephone | : +6138549 9630 |
| Project | : 12529997/08 | Date Samples Received | : 02-Feb-2021 10:00 |
| Order number | : 12529997/08 | Date Analysis Commenced | : 02-Feb-2021 |
| C-O-C number | : ---- | Issue Date | : 08-Feb-2021 16:13 |
| Sampler | : ADW | | |
| Site | : ---- | | |
| Quote number | : EN/005/17 (Victoria Primary Quote) | | |
| No. of samples received | : 3 | | |
| No. of samples analysed | : 3 | | |

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Ankit Joshi | Inorganic Chemist | Sydney Inorganics, Smithfield, NSW |
| Arenie Vijayaratnam | Non-Metals Team Leader | Melbourne Inorganics, Springvale, VIC |
| Dilani Fernando | Senior Inorganic Chemist | Melbourne Inorganics, Springvale, VIC |
| Nancy Wang | 2IC Organic Chemist | Melbourne Organics, Springvale, VIC |
| Nikki Stepniewski | Senior Inorganic Instrument Chemist | Melbourne Inorganics, Springvale, VIC |
| Samantha Smith | Laboratory Coordinator | WRG Subcontracting, Springvale, VIC |
| Xing Lin | Senior Organic Chemist | Melbourne Organics, Springvale, VIC |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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

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

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

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

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

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

- EG050G-F: EM2101365 #1 and 2 Hexavalent chromium results may be biased high compared to Dissolved Chromium filtered as sample were not field filtered prior to sample preservation.
- EA010-P: Electrical Conductivity @ 25°C was analysed by manual method (EA010).
- EP075 (SIM): Where reported, 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.
- 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.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- Ionic Balance out of acceptable limits for sample #1 due to analytes not quantified in this report.
- MBAS (EP050) is calculated as LAS, molecular weight 348 g/mol.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- E.coli & Total Coliforms by MPN (MM514) is conducted by ALS Scoresby NATA accreditation no. 992, site no. 989.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORM BH-14 | WORM BH-16 | WORM BH-11 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 01-Feb-2021 00:00 | 01-Feb-2021 00:00 | 01-Feb-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2101365-001 | EM2101365-002 | EM2101365-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **EA005P: pH by PC Titrator** | | | | | | | | | |
| pH Value | ---- | 0.01 | pH Unit | | **7.75** | **7.41** | **7.68** | ---- | ---- |
| **EA010P: Conductivity by PC Titrator** | | | | | | | | | |
| Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | | **2030** | **1830** | **4690** | ---- | ---- |
| **EA016: Calculated TDS (from Electrical Conductivity)** | | | | | | | | | |
| Total Dissolved Solids (Calc.) | ---- | 1 | mg/L | | **1320** | **1190** | **3050** | ---- | ---- |
| **EA025: Total Suspended Solids dried at 104 ± 2°C** | | | | | | | | | |
| Suspended Solids (SS) | ---- | 5 | mg/L | | <5 | **19800** | ---- | ---- | ---- |
| **ED037P: Alkalinity by PC Titrator** | | | | | | | | | |
| Hydroxide Alkalinity as CaCO3 | DMO-210-001 | 1 | mg/L | | <1 | <1 | <1 | ---- | ---- |
| Carbonate Alkalinity as CaCO3 | 3812-32-6 | 1 | mg/L | | <1 | <1 | <1 | ---- | ---- |
| Bicarbonate Alkalinity as CaCO3 | 71-52-3 | 1 | mg/L | | **488** | **505** | **419** | ---- | ---- |
| Total Alkalinity as CaCO3 | ---- | 1 | mg/L | | **488** | **505** | **419** | ---- | ---- |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | | |
| Sulfate as SO4 - Turbidimetric | 14808-79-8 | 1 | mg/L | | **50** | **135** | **101** | ---- | ---- |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | | | |
| Chloride | 16887-00-6 | 1 | mg/L | | **454** | **372** | **1410** | ---- | ---- |
| **ED093F: Dissolved Major Cations** | | | | | | | | | |
| Calcium | 7440-70-2 | 1 | mg/L | | **29** | **86** | **83** | ---- | ---- |
| Magnesium | 7439-95-4 | 1 | mg/L | | **63** | **83** | **161** | ---- | ---- |
| Sodium | 7440-23-5 | 1 | mg/L | | **275** | **185** | **597** | ---- | ---- |
| Potassium | 7440-09-7 | 1 | mg/L | | **11** | **4** | **10** | ---- | ---- |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | | |
| Silver | 7440-22-4 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | ---- | ---- |
| Arsenic | 7440-38-2 | 0.001 | mg/L | | **0.001** | <0.001 | <0.001 | ---- | ---- |
| Cadmium | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | ---- | ---- |
| Copper | 7440-50-8 | 0.001 | mg/L | | **0.002** | <0.001 | <0.001 | ---- | ---- |
| Molybdenum | 7439-98-7 | 0.001 | mg/L | | **0.004** | **0.003** | **0.002** | ---- | ---- |
| Nickel | 7440-02-0 | 0.001 | mg/L | | **0.030** | **0.033** | <0.001 | ---- | ---- |
| Lead | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | ---- | ---- |
| Selenium | 7782-49-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | ---- | ---- |
| Tin | 7440-31-5 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | ---- | ---- |
| Zinc | 7440-66-6 | 0.005 | mg/L | | **0.007** | **0.006** | **0.013** | ---- | ---- |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | | |
| Mercury | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORM BH-14 | WORM BH-16 | WORM BH-11 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 01-Feb-2021 00:00 | 01-Feb-2021 00:00 | 01-Feb-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2101365-001 | EM2101365-002 | EM2101365-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **EG050F: Dissolved Hexavalent Chromium** | | | | | | | | | |
| Hexavalent Chromium | 18540-29-9 | 0.01 | mg/L | | <0.01 | <0.01 | ---- | ---- | ---- |
| **EK026SF: Total CN by Segmented Flow Analyser** | | | | | | | | | |
| Total Cyanide | 57-12-5 | 0.004 | mg/L | | <0.004 | <0.004 | ---- | ---- | ---- |
| **EK040P: Fluoride by PC Titrator** | | | | | | | | | |
| Fluoride | 16984-48-8 | 0.1 | mg/L | | **0.5** | **0.2** | ---- | ---- | ---- |
| **EK055G: Ammonia as N by Discrete Analyser** | | | | | | | | | |
| Ammonia as N | 7664-41-7 | 0.01 | mg/L | | **0.09** | **0.20** | <0.01 | ---- | ---- |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | | | | |
| Nitrite as N | 14797-65-0 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | ---- | ---- |
| **EK058G: Nitrate as N by Discrete Analyser** | | | | | | | | | |
| Nitrate as N | 14797-55-8 | 0.01 | mg/L | | **0.55** | **0.02** | **0.46** | ---- | ---- |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | | |
| Nitrite + Nitrate as N | ---- | 0.01 | mg/L | | **0.55** | **0.02** | **0.46** | ---- | ---- |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | | |
| Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | | **0.8** | **2.1** | **0.6** | ---- | ---- |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | | |
| ^ Total Nitrogen as N | ---- | 0.1 | mg/L | | **1.4** | **2.1** | **1.1** | ---- | ---- |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | | |
| Total Phosphorus as P | ---- | 0.01 | mg/L | | **0.17** | **25.4** | **0.44** | ---- | ---- |
| **EN055: Ionic Balance** | | | | | | | | | |
| ø Total Anions | ---- | 0.01 | meq/L | | **23.6** | **23.4** | **50.2** | ---- | ---- |
| ø Total Cations | ---- | 0.01 | meq/L | | **18.9** | **19.3** | **43.6** | ---- | ---- |
| ø Ionic Balance | ---- | 0.01 | % | | **11.1** | **9.66** | **7.06** | ---- | ---- |
| **EP020: Oil and Grease (O&G)** | | | | | | | | | |
| Oil & Grease | ---- | 5 | mg/L | | <5 | ---- | ---- | ---- | ---- |
| **EP026SP: Chemical Oxygen Demand (Spectrophotometric)** | | | | | | | | | |
| Chemical Oxygen Demand | ---- | 10 | mg/L | | **43** | **173** | ---- | ---- | ---- |
| **EP030: Biochemical Oxygen Demand (BOD)** | | | | | | | | | |
| Biochemical Oxygen Demand | ---- | 2 | mg/L | | **4** | **30** | ---- | ---- | ---- |
| **EP050: Anionic Surfactants as MBAS** | | | | | | | | | |
| Anionic Surfactants as MBAS | ---- | 0.1 | mg/L | | <0.1 | ---- | ---- | ---- | ---- |
| **EP066: Polychlorinated Biphenyls (PCB)** | | | | | | | | | |
| ^ Total Polychlorinated biphenyls | ---- | 1 | µg/L | | <1 | <1 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORM BH-14 | WORM BH-16 | WORM BH-11 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 01-Feb-2021 00:00 | 01-Feb-2021 00:00 | 01-Feb-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2101365-001 | EM2101365-002 | EM2101365-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **EP074A: Monocyclic Aromatic Hydrocarbons** | | | | | | | | | |
| Styrene | 100-42-5 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| **EP074E: Halogenated Aliphatic Compounds** | | | | | | | | | |
| Vinyl chloride | 75-01-4 | 50 | µg/L | | <50 | <50 | ---- | ---- | ---- |
| 1.1-Dichloroethene | 75-35-4 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| Methylene chloride | 75-09-2 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| trans-1.2-Dichloroethene | 156-60-5 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| cis-1.2-Dichloroethene | 156-59-2 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| 1.1.1-Trichloroethane | 71-55-6 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| Carbon Tetrachloride | 56-23-5 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| 1.2-Dichloroethane | 107-06-2 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| Trichloroethene | 79-01-6 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| 1.1.2-Trichloroethane | 79-00-5 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| Tetrachloroethene | 127-18-4 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| 1.1.1.2-Tetrachloroethane | 630-20-6 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| 1.1.2.2-Tetrachloroethane | 79-34-5 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| Hexachlorobutadiene | 87-68-3 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| **EP074F: Halogenated Aromatic Compounds** | | | | | | | | | |
| Chlorobenzene | 108-90-7 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| 1.4-Dichlorobenzene | 106-46-7 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| 1.2-Dichlorobenzene | 95-50-1 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| 1.2.4-Trichlorobenzene | 120-82-1 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| **EP074G: Trihalomethanes** | | | | | | | | | |
| Chloroform | 67-66-3 | 5 | µg/L | | <5 | <5 | ---- | ---- | ---- |
| **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 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORM BH-14 | WORM BH-16 | WORM BH-11 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 01-Feb-2021 00:00 | 01-Feb-2021 00:00 | 01-Feb-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2101365-001 | EM2101365-002 | EM2101365-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued** | | | | | | | | | |
| 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 | ---- | ---- | ---- |
| 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 (Halogenated)** | | | | | | | | | |
| 2-Chlorophenol | 95-57-8 | 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 | 4 | µg/L | | <4 | <4 | ---- | ---- | ---- |
| 2.4.5-Trichlorophenol | 95-95-4 | 2 | µg/L | | <2 | <2 | ---- | ---- | ---- |
| 2.4.6-Trichlorophenol | 88-06-2 | 2 | µg/L | | <2 | <2 | ---- | ---- | ---- |
| 2.3.5.6-Tetrachlorophenol | 935-95-5 | 2 | µg/L | | <2 | <2 | ---- | ---- | ---- |
| 2.3.4.5 & 2.3.4.6-Tetrachlorophenol | 4901-51-3/58-90-2 | 2 | µg/L | | <2 | <2 | ---- | ---- | ---- |
| Pentachlorophenol | 87-86-5 | 2 | µg/L | | <2 | <2 | ---- | ---- | ---- |
| **EP075A: Phenolic Compounds (Non-halogenated)** | | | | | | | | | |
| Phenol | 108-95-2 | 4 | µg/L | | <4 | <4 | ---- | ---- | ---- |
| 2-Methylphenol | 95-48-7 | 4 | µg/L | | <4 | <4 | ---- | ---- | ---- |
| 3- & 4-Methylphenol | 1319-77-3 | 4 | µg/L | | <4 | <4 | ---- | ---- | ---- |
| 2-Nitrophenol | 88-75-5 | 4 | µg/L | | <4 | <4 | ---- | ---- | ---- |
| 2.4-Dimethylphenol | 105-67-9 | 4 | µg/L | | <4 | <4 | ---- | ---- | ---- |
| 2.4-Dinitrophenol | 51-28-5 | 100 | µg/L | | <100 | <100 | ---- | ---- | ---- |
| 4-Nitrophenol | 100-02-7 | 50 | µg/L | | <50 | <50 | ---- | ---- | ---- |
| 2-Methyl-4.6-dinitrophenol | 8071-51-0 | 50 | µg/L | | <50 | <50 | ---- | ---- | ---- |
| Dinoseb | 88-85-7 | 50 | µg/L | | <50 | <50 | ---- | ---- | ---- |
| 2-Cyclohexyl-4.6-Dinitrophenol | 131-89-5 | 50 | µg/L | | <50 | <50 | ---- | ---- | ---- |
| **EP075I: Organochlorine Pesticides** | | | | | | | | | |
| alpha-BHC | 319-84-6 | 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 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORM BH-14 | WORM BH-16 | WORM BH-11 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 01-Feb-2021 00:00 | 01-Feb-2021 00:00 | 01-Feb-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2101365-001 | EM2101365-002 | EM2101365-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **EP075l: Organochlorine Pesticides - Continued** | | | | | | | | | |
| **cis-Chlordane** | 5103-71-9 | 0.5 | µg/L | | <0.5 | <0.5 | ---- | ---- | ---- |
| **trans-Chlordane** | 5103-74-2 | 0.5 | µg/L | | <0.5 | <0.5 | ---- | ---- | ---- |
| **4.4`-DDE** | 72-55-9 | 0.5 | µg/L | | <0.5 | <0.5 | ---- | ---- | ---- |
| **Dieldrin** | 60-57-1 | 0.5 | µg/L | | <0.5 | <0.5 | ---- | ---- | ---- |
| **4.4`-DDD** | 72-54-8 | 0.5 | µg/L | | <0.5 | <0.5 | ---- | ---- | ---- |
| **4.4`-DDT** | 50-29-3 | 0.5 | µg/L | | <0.5 | <0.5 | ---- | ---- | ---- |
| **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 | **780** | ---- | ---- | ---- |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | | <50 | **460** | ---- | ---- | ---- |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | | <50 | **1240** | ---- | ---- | ---- |
| **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 | **1100** | ---- | ---- | ---- |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | | <100 | **180** | ---- | ---- | ---- |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | | <100 | **1280** | ---- | ---- | ---- |
| ^ **>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 | ---- | ---- | ---- |
| **MM514: E.coli & Total Coliforms MPN by Colilert** | | | | | | | | | |
| **Escherichia coli (Colilert)** | ---- | 1 | orgs/100mL | | **10** | ---- | ---- | ---- | ---- |
| **EP066S: PCB Surrogate** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORM BH-14 | WORM BH-16 | WORM BH-11 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 01-Feb-2021 00:00 | 01-Feb-2021 00:00 | 01-Feb-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2101365-001 | EM2101365-002 | EM2101365-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **EP066S: PCB Surrogate - Continued** | | | | | | | | | |
| Decachlorobiphenyl | 2051-24-3 | 1 | % | | 75.1 | 73.7 | ---- | ---- | ---- |
| **EP074S: VOC Surrogates** | | | | | | | | | |
| 1.2-Dichloroethane-D4 | 17060-07-0 | 5 | % | | 114 | 112 | ---- | ---- | ---- |
| Toluene-D8 | 2037-26-5 | 5 | % | | 96.0 | 95.8 | ---- | ---- | ---- |
| 4-Bromofluorobenzene | 460-00-4 | 5 | % | | 103 | 102 | ---- | ---- | ---- |
| **EP075(SIM)S: Phenolic Compound Surrogates** | | | | | | | | | |
| Phenol-d6 | 13127-88-3 | 1.0 | % | | 25.8 | 26.4 | ---- | ---- | ---- |
| 2-Chlorophenol-D4 | 93951-73-6 | 1.0 | % | | 61.7 | 53.9 | ---- | ---- | ---- |
| 2.4.6-Tribromophenol | 118-79-6 | 1.0 | % | | 75.2 | 81.7 | ---- | ---- | ---- |
| **EP075(SIM)T: PAH Surrogates** | | | | | | | | | |
| 2-Fluorobiphenyl | 321-60-8 | 1.0 | % | | 69.4 | 63.2 | ---- | ---- | ---- |
| Anthracene-d10 | 1719-06-8 | 1.0 | % | | 76.8 | 72.1 | ---- | ---- | ---- |
| 4-Terphenyl-d14 | 1718-51-0 | 1.0 | % | | 80.5 | 72.9 | ---- | ---- | ---- |
| **EP075S: Acid Extractable Surrogates (Waste Classification)** | | | | | | | | | |
| Phenol-d6 | 13127-88-3 | 0.25 | % | | 34.5 | 41.6 | ---- | ---- | ---- |
| 2-Chlorophenol-D4 | 93951-73-6 | 0.25 | % | | 84.1 | 82.4 | ---- | ---- | ---- |
| 2.4.6-Tribromophenol | 118-79-6 | 0.25 | % | | 84.2 | 101 | ---- | ---- | ---- |
| **EP075T: Base/Neutral Extractable Surrogates (Waste Classification)** | | | | | | | | | |
| Nitrobenzene-D5 | 4165-60-0 | 0.25 | % | | 94.0 | 91.6 | ---- | ---- | ---- |
| 1.2-Dichlorobenzene-D4 | 2199-69-1 | 0.25 | % | | 83.3 | 79.3 | ---- | ---- | ---- |
| 2-Fluorobiphenyl | 321-60-8 | 0.25 | % | | 94.3 | 88.6 | ---- | ---- | ---- |
| Anthracene-d10 | 1719-06-8 | 0.25 | % | | 105 | 98.4 | ---- | ---- | ---- |
| 4-Terphenyl-d14 | 1718-51-0 | 0.25 | % | | 95.6 | 94.4 | ---- | ---- | ---- |
| **EP080S: TPH(V)/BTEX Surrogates** | | | | | | | | | |
| 1.2-Dichloroethane-D4 | 17060-07-0 | 2 | % | | 103 | 99.7 | ---- | ---- | ---- |
| Toluene-D8 | 2037-26-5 | 2 | % | | 97.1 | 96.9 | ---- | ---- | ---- |
| 4-Bromofluorobenzene | 460-00-4 | 2 | % | | 111 | 110 | ---- | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP066S: PCB Surrogate** | | | |
| **Decachlorobiphenyl** | 2051-24-3 | 41 | 125 |
| **EP074S: VOC Surrogates** | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 72 | 132 |
| **Toluene-D8** | 2037-26-5 | 77 | 132 |
| **4-Bromofluorobenzene** | 460-00-4 | 67 | 131 |
| **EP075(SIM)S: Phenolic Compound Surrogates** | | | |
| **Phenol-d6** | 13127-88-3 | 10 | 51 |
| **2-Chlorophenol-D4** | 93951-73-6 | 30 | 114 |
| **2.4.6-Tribromophenol** | 118-79-6 | 26 | 133 |
| **EP075(SIM)T: PAH Surrogates** | | | |
| **2-Fluorobiphenyl** | 321-60-8 | 35 | 127 |
| **Anthracene-d10** | 1719-06-8 | 44 | 122 |
| **4-Terphenyl-d14** | 1718-51-0 | 44 | 124 |
| **EP075S: Acid Extractable Surrogates (Waste Classification)** | | | |
| **Phenol-d6** | 13127-88-3 | 13 | 57 |
| **2-Chlorophenol-D4** | 93951-73-6 | 33 | 118 |
| **2.4.6-Tribromophenol** | 118-79-6 | 28 | 135 |
| **EP075T: Base/Neutral Extractable Surrogates (Waste Classification)** | | | |
| **Nitrobenzene-D5** | 4165-60-0 | 41 | 136 |
| **1.2-Dichlorobenzene-D4** | 2199-69-1 | 42 | 134 |
| **2-Fluorobiphenyl** | 321-60-8 | 45 | 137 |
| **Anthracene-d10** | 1719-06-8 | 53 | 141 |
| **4-Terphenyl-d14** | 1718-51-0 | 43 | 136 |
| **EP080S: TPH(V)/BTEX Surrogates** | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 73 | 129 |
| **Toluene-D8** | 2037-26-5 | 70 | 125 |
| **4-Bromofluorobenzene** | 460-00-4 | 71 | 129 |

## Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825.

(WATER) EP020: Oil and Grease (O&G)

(WATER) EP050: Anionic Surfactants as MBAS

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **EM2101443** | Page | : 1 of 9 |
| Client | : **GHD PTY LTD** | Laboratory | : Environmental Division Melbourne |
| Contact | : MR ALAN WILSON | Contact | : Shirley LeCornu |
| Address | : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001 | Address | : 4 Westall Rd Springvale VIC Australia 3171 |
| Telephone | : +61 08 8111 6600 | Telephone | : +6138549 9630 |
| Project | : 12529997/08 | Date Samples Received | : 03-Feb-2021 08:45 |
| Order number | : 12529997/08 | Date Analysis Commenced | : 03-Feb-2021 |
| C-O-C number | : ---- | Issue Date | : 09-Feb-2021 14:31 |
| Sampler | : ALAN WILSON | | |
| Site | : ---- | | |
| Quote number | : EN/005/17 (Victoria Primary Quote) | | |
| No. of samples received | : 4 | | |
| No. of samples analysed | : 4 | | |

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Ankit Joshi | Inorganic Chemist | Sydney Inorganics, Smithfield, NSW |
| Arenie Vijayaratnam | Non-Metals Team Leader | Melbourne Inorganics, Springvale, VIC |
| Bronwyn Sheen | Assistant Laboratory Manager | Melbourne Organics, Springvale, VIC |
| Dilani Fernando | Senior Inorganic Chemist | Melbourne Inorganics, Springvale, VIC |
| Nikki Stepniewski | Senior Inorganic Instrument Chemist | Melbourne Inorganics, Springvale, VIC |
| Samantha Smith | Laboratory Coordinator | WRG Subcontracting, Springvale, VIC |
| Wisam Marassa | Inorganics Coordinator | Sydney Inorganics, Smithfield, NSW |
| Xing Lin | Senior Organic Chemist | Melbourne Organics, Springvale, VIC |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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

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

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

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

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

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

- EP026SP- EM2101443 # 1,2 - sample/s required dilution prior to analyse due to matrix interfernces. LOR values have been adjusted accordingly.
- EG050G-F: EM2101443 #1-3 Hexavalent chromium results may be biased high compared to Dissolved Chromium filtered as sample were not field filtered prior to sample preservation.
- EP075 (SIM): Where reported, 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.
- 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.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- MBAS (EP050) is calculated as LAS, molecular weight 348 g/mol.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- E.coli & Total Coliforms by MPN (MM514) is conducted by ALS Scoresby NATA accreditation no. 992, site no. 989.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | WORMBH32 | WORMBH09 | WORMBH12 | DUP01 | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 02-Feb-2021 00:00 | 02-Feb-2021 00:00 | 02-Feb-2021 00:00 | 02-Feb-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | EM2101443-001 | EM2101443-002 | EM2101443-003 | EM2101443-004 | -------- |
| | | | | Result | Result | Result | Result | ---- |
| **EA005P: pH by PC Titrator** | | | | | | | | |
| pH Value | ---- | 0.01 | pH Unit | **6.87** | **7.98** | **7.65** | **7.50** | ---- |
| **EA010P: Conductivity by PC Titrator** | | | | | | | | |
| Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | **12300** | **8840** | **3890** | **3870** | ---- |
| **EA016: Calculated TDS (from Electrical Conductivity)** | | | | | | | | |
| Total Dissolved Solids (Calc.) | ---- | 1 | mg/L | **8000** | **5750** | **2530** | **2520** | ---- |
| **EA025: Total Suspended Solids dried at 104 ± 2°C** | | | | | | | | |
| Suspended Solids (SS) | ---- | 5 | mg/L | **482** | **984** | **9** | ---- | ---- |
| **ED037P: Alkalinity by PC Titrator** | | | | | | | | |
| Hydroxide Alkalinity as CaCO3 | DMO-210-001 | 1 | mg/L | <1 | <1 | <1 | <1 | ---- |
| Carbonate Alkalinity as CaCO3 | 3812-32-6 | 1 | mg/L | <1 | <1 | <1 | <1 | ---- |
| Bicarbonate Alkalinity as CaCO3 | 71-52-3 | 1 | mg/L | **424** | **458** | **355** | **359** | ---- |
| Total Alkalinity as CaCO3 | ---- | 1 | mg/L | **424** | **458** | **355** | **359** | ---- |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | |
| Sulfate as SO4 - Turbidimetric | 14808-79-8 | 1 | mg/L | **608** | **305** | **113** | **111** | ---- |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | | |
| Chloride | 16887-00-6 | 1 | mg/L | **4070** | **3000** | **1090** | **1090** | ---- |
| **ED093F: Dissolved Major Cations** | | | | | | | | |
| Calcium | 7440-70-2 | 1 | mg/L | **116** | **83** | **72** | **68** | ---- |
| Magnesium | 7439-95-4 | 1 | mg/L | **284** | **405** | **212** | **221** | ---- |
| Sodium | 7440-23-5 | 1 | mg/L | **1890** | **1280** | **330** | **346** | ---- |
| Potassium | 7440-09-7 | 1 | mg/L | **16** | **12** | **14** | **14** | ---- |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | |
| Silver | 7440-22-4 | 0.001 | mg/L | **0.005** | **0.002** | <0.001 | ---- | ---- |
| Arsenic | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | ---- | ---- |
| Cadmium | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | ---- | ---- |
| Copper | 7440-50-8 | 0.001 | mg/L | **0.004** | <0.001 | **0.010** | ---- | ---- |
| Molybdenum | 7439-98-7 | 0.001 | mg/L | **0.002** | **0.002** | <0.001 | ---- | ---- |
| Nickel | 7440-02-0 | 0.001 | mg/L | **0.004** | **0.002** | **0.012** | ---- | ---- |
| Lead | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | **0.024** | ---- | ---- |
| Selenium | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| Tin | 7440-31-5 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | ---- | ---- |
| Zinc | 7440-66-6 | 0.005 | mg/L | **0.063** | **0.006** | **0.149** | ---- | ---- |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | |
| Mercury | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | WORMBH32 | WORMBH09 | WORMBH12 | DUP01 | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 02-Feb-2021 00:00 | 02-Feb-2021 00:00 | 02-Feb-2021 00:00 | 02-Feb-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | EM2101443-001 | EM2101443-002 | EM2101443-003 | EM2101443-004 | -------- |
| | | | | Result | Result | Result | Result | ---- |
| **EG050F: Dissolved Hexavalent Chromium** | | | | | | | | |
| Hexavalent Chromium | 18540-29-9 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| **EK026SF: Total CN by Segmented Flow Analyser** | | | | | | | | |
| Total Cyanide | 57-12-5 | 0.004 | mg/L | <0.004 | <0.004 | <0.004 | <0.004 | ---- |
| **EK040P: Fluoride by PC Titrator** | | | | | | | | |
| Fluoride | 16984-48-8 | 0.1 | mg/L | **1.0** | **0.7** | <0.1 | <0.1 | ---- |
| **EK055G: Ammonia as N by Discrete Analyser** | | | | | | | | |
| Ammonia as N | 7664-41-7 | 0.01 | mg/L | <0.01 | **0.08** | <0.01 | <0.01 | ---- |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | | | |
| Nitrite as N | 14797-65-0 | 0.01 | mg/L | **0.01** | **0.01** | **0.01** | <0.01 | ---- |
| **EK058G: Nitrate as N by Discrete Analyser** | | | | | | | | |
| Nitrate as N | 14797-55-8 | 0.01 | mg/L | **0.12** | **0.57** | **0.63** | **0.63** | ---- |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | |
| Nitrite + Nitrate as N | ---- | 0.01 | mg/L | **0.13** | **0.58** | **0.64** | **0.63** | ---- |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | |
| Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | **0.2** | **1.8** | **0.3** | **0.3** | ---- |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | |
| ^ Total Nitrogen as N | ---- | 0.1 | mg/L | **0.3** | **2.4** | **0.9** | **0.9** | ---- |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | |
| Total Phosphorus as P | ---- | 0.01 | mg/L | **0.13** | **5.02** | **0.07** | **0.05** | ---- |
| **EN055: Ionic Balance** | | | | | | | | |
| ø Total Anions | ---- | 0.01 | meq/L | **136** | **100** | **40.2** | **40.2** | ---- |
| ø Total Cations | ---- | 0.01 | meq/L | **112** | **93.4** | **35.8** | **37.0** | ---- |
| ø Ionic Balance | ---- | 0.01 | % | **9.75** | **3.44** | **5.84** | **4.20** | ---- |
| **EP020: Oil and Grease (O&G)** | | | | | | | | |
| Oil & Grease | ---- | 5 | mg/L | <5 | <5 | <5 | ---- | ---- |
| **EP026SP: Chemical Oxygen Demand (Spectrophotometric)** | | | | | | | | |
| Chemical Oxygen Demand | ---- | 10 | mg/L | <20 | <20 | <10 | ---- | ---- |
| **EP030: Biochemical Oxygen Demand (BOD)** | | | | | | | | |
| Biochemical Oxygen Demand | ---- | 2 | mg/L | <2 | <2 | <2 | ---- | ---- |
| **EP050: Anionic Surfactants as MBAS** | | | | | | | | |
| Anionic Surfactants as MBAS | ---- | 0.1 | mg/L | <0.1 | <0.1 | <0.1 | ---- | ---- |
| **EP066: Polychlorinated Biphenyls (PCB)** | | | | | | | | |
| ^ Total Polychlorinated biphenyls | ---- | 1 | µg/L | <1 | <1 | <1 | <1 | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORMBH32 | WORMBH09 | WORMBH12 | DUP01 | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 02-Feb-2021 00:00 | 02-Feb-2021 00:00 | 02-Feb-2021 00:00 | 02-Feb-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | | EM2101443-001 | EM2101443-002 | EM2101443-003 | EM2101443-004 | -------- |
| | | | | | Result | Result | Result | Result | ---- |
| **EP074A: Monocyclic Aromatic Hydrocarbons** | | | | | | | | | |
| Styrene | 100-42-5 | 5 | µg/L | | <5 | <5 | <5 | <5 | ---- |
| **EP074E: Halogenated Aliphatic Compounds** | | | | | | | | | |
| Vinyl chloride | 75-01-4 | 50 | µg/L | | <50 | <50 | <50 | <50 | ---- |
| 1.1-Dichloroethene | 75-35-4 | 5 | µg/L | | <5 | <5 | <5 | <5 | ---- |
| Methylene chloride | 75-09-2 | 5 | µg/L | | <5 | <5 | <5 | <5 | ---- |
| trans-1.2-Dichloroethene | 156-60-5 | 5 | µg/L | | <5 | <5 | <5 | <5 | ---- |
| cis-1.2-Dichloroethene | 156-59-2 | 5 | µg/L | | <5 | <5 | <5 | <5 | ---- |
| 1.1.1-Trichloroethane | 71-55-6 | 5 | µg/L | | <5 | <5 | <5 | <5 | ---- |
| Carbon Tetrachloride | 56-23-5 | 5 | µg/L | | <5 | <5 | <5 | <5 | ---- |
| 1.2-Dichloroethane | 107-06-2 | 5 | µg/L | | <5 | <5 | <5 | <5 | ---- |
| Trichloroethene | 79-01-6 | 5 | µg/L | | <5 | <5 | <5 | <5 | ---- |
| 1.1.2-Trichloroethane | 79-00-5 | 5 | µg/L | | <5 | <5 | <5 | <5 | ---- |
| Tetrachloroethene | 127-18-4 | 5 | µg/L | | <5 | <5 | <5 | <5 | ---- |
| 1.1.1.2-Tetrachloroethane | 630-20-6 | 5 | µg/L | | <5 | <5 | <5 | <5 | ---- |
| 1.1.2.2-Tetrachloroethane | 79-34-5 | 5 | µg/L | | <5 | <5 | <5 | <5 | ---- |
| Hexachlorobutadiene | 87-68-3 | 5 | µg/L | | <5 | <5 | <5 | <5 | ---- |
| **EP074F: Halogenated Aromatic Compounds** | | | | | | | | | |
| Chlorobenzene | 108-90-7 | 5 | µg/L | | <5 | <5 | <5 | <5 | ---- |
| 1.4-Dichlorobenzene | 106-46-7 | 5 | µg/L | | <5 | <5 | <5 | <5 | ---- |
| 1.2-Dichlorobenzene | 95-50-1 | 5 | µg/L | | <5 | <5 | <5 | <5 | ---- |
| 1.2.4-Trichlorobenzene | 120-82-1 | 5 | µg/L | | <5 | <5 | <5 | <5 | ---- |
| **EP074G: Trihalomethanes** | | | | | | | | | |
| Chloroform | 67-66-3 | 5 | µg/L | | <5 | <5 | <5 | <5 | ---- |
| **EP075(SIM)B: Polynuclear Aromatic Hydrocarbons** | | | | | | | | | |
| Naphthalene | 91-20-3 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | <1.0 | ---- |
| Acenaphthylene | 208-96-8 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | <1.0 | ---- |
| Acenaphthene | 83-32-9 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | <1.0 | ---- |
| Fluorene | 86-73-7 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | <1.0 | ---- |
| Phenanthrene | 85-01-8 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | <1.0 | ---- |
| Anthracene | 120-12-7 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | <1.0 | ---- |
| Fluoranthene | 206-44-0 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | <1.0 | ---- |
| Pyrene | 129-00-0 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | <1.0 | ---- |
| Benz(a)anthracene | 56-55-3 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | <1.0 | ---- |
| Chrysene | 218-01-9 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | <1.0 | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORMBH32 | WORMBH09 | WORMBH12 | DUP01 | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 02-Feb-2021 00:00 | 02-Feb-2021 00:00 | 02-Feb-2021 00:00 | 02-Feb-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | | EM2101443-001 | EM2101443-002 | EM2101443-003 | EM2101443-004 | -------- |
| | | | | | Result | Result | Result | Result | ---- |
| **EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued** | | | | | | | | | |
| Benzo(b+j)fluoranthene | 205-99-2 205-82-3 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | <1.0 | ---- |
| Benzo(k)fluoranthene | 207-08-9 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | <1.0 | ---- |
| Benzo(a)pyrene | 50-32-8 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| Indeno(1.2.3.cd)pyrene | 193-39-5 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | <1.0 | ---- |
| Dibenz(a.h)anthracene | 53-70-3 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | <1.0 | ---- |
| Benzo(g.h.i)perylene | 191-24-2 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | <1.0 | ---- |
| ^ Sum of polycyclic aromatic hydrocarbons | ---- | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| ^ Benzo(a)pyrene TEQ (zero) | ---- | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | <0.5 | ---- |
| **EP075A: Phenolic Compounds (Halogenated)** | | | | | | | | | |
| 2-Chlorophenol | 95-57-8 | 2 | µg/L | | <2 | <2 | <2 | <2 | ---- |
| 2.4-Dichlorophenol | 120-83-2 | 2 | µg/L | | <2 | <2 | <2 | <2 | ---- |
| 2.6-Dichlorophenol | 87-65-0 | 2 | µg/L | | <2 | <2 | <2 | <2 | ---- |
| 4-Chloro-3-methylphenol | 59-50-7 | 4 | µg/L | | <4 | <4 | <4 | <4 | ---- |
| 2.4.5-Trichlorophenol | 95-95-4 | 2 | µg/L | | <2 | <2 | <2 | <2 | ---- |
| 2.4.6-Trichlorophenol | 88-06-2 | 2 | µg/L | | <2 | <2 | <2 | <2 | ---- |
| 2.3.5.6-Tetrachlorophenol | 935-95-5 | 2 | µg/L | | <2 | <2 | <2 | <2 | ---- |
| 2.3.4.5 & 2.3.4.6-Tetrachlorophenol | 4901-51-3/58-90-2 | 2 | µg/L | | <2 | <2 | <2 | <2 | ---- |
| Pentachlorophenol | 87-86-5 | 2 | µg/L | | <2 | <2 | <2 | <2 | ---- |
| Sum of Phenols (halogenated) | ---- | 2 | µg/L | | ---- | ---- | ---- | <2 | ---- |
| **EP075A: Phenolic Compounds (Non-halogenated)** | | | | | | | | | |
| Phenol | 108-95-2 | 4 | µg/L | | <4 | <4 | <4 | <4 | ---- |
| 2-Methylphenol | 95-48-7 | 4 | µg/L | | <4 | <4 | <4 | <4 | ---- |
| 3- & 4-Methylphenol | 1319-77-3 | 4 | µg/L | | <4 | <4 | <4 | <4 | ---- |
| 2-Nitrophenol | 88-75-5 | 4 | µg/L | | <4 | <4 | <4 | <4 | ---- |
| 2.4-Dimethylphenol | 105-67-9 | 4 | µg/L | | <4 | <4 | <4 | <4 | ---- |
| 2.4-Dinitrophenol | 51-28-5 | 100 | µg/L | | <100 | <100 | <100 | <100 | ---- |
| 4-Nitrophenol | 100-02-7 | 50 | µg/L | | <50 | <50 | <50 | <50 | ---- |
| 2-Methyl-4.6-dinitrophenol | 8071-51-0 | 50 | µg/L | | <50 | <50 | <50 | <50 | ---- |
| Dinoseb | 88-85-7 | 50 | µg/L | | <50 | <50 | <50 | <50 | ---- |
| 2-Cyclohexyl-4.6-Dinitrophenol | 131-89-5 | 50 | µg/L | | <50 | <50 | <50 | <50 | ---- |
| Sum of Phenols (non-halogenated) | ---- | 4 | µg/L | | ---- | ---- | ---- | <4 | ---- |
| **EP075B: Polynuclear Aromatic Hydrocarbons** | | | | | | | | | |
| Benzo(a)pyrene | 50-32-8 | 0.50 | µg/L | | ---- | ---- | ---- | <0.50 | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORMBH32 | WORMBH09 | WORMBH12 | DUP01 | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 02-Feb-2021 00:00 | 02-Feb-2021 00:00 | 02-Feb-2021 00:00 | 02-Feb-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | | EM2101443-001 | EM2101443-002 | EM2101443-003 | EM2101443-004 | -------- |
| | | | | | Result | Result | Result | Result | ---- |
| **EP075(I): Organochlorine Pesticides** | | | | | | | | | |
| alpha-BHC | 319-84-6 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Heptachlor | 76-44-8 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Aldrin | 309-00-2 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| cis-Chlordane | 5103-71-9 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| trans-Chlordane | 5103-74-2 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| 4.4`-DDE | 72-55-9 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Dieldrin | 60-57-1 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| 4.4`-DDD | 72-54-8 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| 4.4`-DDT | 50-29-3 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | | |
| C6 - C9 Fraction | ---- | 20 | µg/L | | <20 | <20 | <20 | ---- | ---- |
| C10 - C14 Fraction | ---- | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| C15 - C28 Fraction | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| C29 - C36 Fraction | ---- | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| ^ C10 - C36 Fraction (sum) | ---- | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | | | | |
| C6 - C10 Fraction | C6_C10 | 20 | µg/L | | <20 | <20 | <20 | ---- | ---- |
| ^ C6 - C10 Fraction minus BTEX (F1) | C6_C10-BTEX | 20 | µg/L | | <20 | <20 | <20 | ---- | ---- |
| >C10 - C16 Fraction | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| >C16 - C34 Fraction | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| >C34 - C40 Fraction | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| ^ >C10 - C40 Fraction (sum) | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| ^ >C10 - C16 Fraction minus Naphthalene (F2) | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| **EP080: BTEXN** | | | | | | | | | |
| Benzene | 71-43-2 | 1 | µg/L | | <1 | <1 | <1 | ---- | ---- |
| Toluene | 108-88-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Ethylbenzene | 100-41-4 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| meta- & para-Xylene | 108-38-3 106-42-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| ortho-Xylene | 95-47-6 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| ^ Total Xylenes | ---- | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| ^ Sum of BTEX | ---- | 1 | µg/L | | <1 | <1 | <1 | ---- | ---- |
| Naphthalene | 91-20-3 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORMBH32 | WORMBH09 | WORMBH12 | DUP01 | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 02-Feb-2021 00:00 | 02-Feb-2021 00:00 | 02-Feb-2021 00:00 | 02-Feb-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | | EM2101443-001 | EM2101443-002 | EM2101443-003 | EM2101443-004 | -------- |
| | | | | | Result | Result | Result | Result | ---- |
| **MM514: E.coli & Total Coliforms MPN by Colilert** | | | | | | | | | |
| Escherichia coli (Colilert) | ---- | 1 | orgs/100mL | | <10 | 150 | 0 | 0 | ---- |
| **EP066S: PCB Surrogate** | | | | | | | | | |
| Decachlorobiphenyl | 2051-24-3 | 1 | % | | 102 | 116 | 104 | 103 | ---- |
| **EP074S: VOC Surrogates** | | | | | | | | | |
| 1.2-Dichloroethane-D4 | 17060-07-0 | 5 | % | | 101 | 98.7 | 98.8 | 96.8 | ---- |
| Toluene-D8 | 2037-26-5 | 5 | % | | 93.5 | 89.4 | 90.6 | 88.7 | ---- |
| 4-Bromofluorobenzene | 460-00-4 | 5 | % | | 102 | 98.6 | 100 | 101 | ---- |
| **EP075(SIM)S: Phenolic Compound Surrogates** | | | | | | | | | |
| Phenol-d6 | 13127-88-3 | 1.0 | % | | 33.6 | 26.0 | 38.1 | 39.1 | ---- |
| 2-Chlorophenol-D4 | 93951-73-6 | 1.0 | % | | 78.0 | 73.0 | 87.1 | 89.3 | ---- |
| 2.4.6-Tribromophenol | 118-79-6 | 1.0 | % | | 95.1 | 91.9 | 106 | 101 | ---- |
| **EP075(SIM)T: PAH Surrogates** | | | | | | | | | |
| 2-Fluorobiphenyl | 321-60-8 | 1.0 | % | | 87.3 | 84.7 | 100.0 | 102 | ---- |
| Anthracene-d10 | 1719-06-8 | 1.0 | % | | 90.1 | 87.9 | 100 | 101 | ---- |
| 4-Terphenyl-d14 | 1718-51-0 | 1.0 | % | | 93.2 | 88.7 | 104 | 104 | ---- |
| **EP075S: Acid Extractable Surrogates (Waste Classification)** | | | | | | | | | |
| Phenol-d6 | 13127-88-3 | 0.25 | % | | 42.3 | 26.7 | 44.7 | 46.9 | ---- |
| 2-Chlorophenol-D4 | 93951-73-6 | 0.25 | % | | 93.6 | 81.0 | 98.8 | 102 | ---- |
| 2.4.6-Tribromophenol | 118-79-6 | 0.25 | % | | 95.2 | 88.8 | 100 | 103 | ---- |
| **EP075T: Base/Neutral Extractable Surrogates (Waste Classification)** | | | | | | | | | |
| Nitrobenzene-D5 | 4165-60-0 | 0.25 | % | | 98.8 | 100 | 112 | 106 | ---- |
| 1.2-Dichlorobenzene-D4 | 2199-69-1 | 0.25 | % | | 97.1 | 80.8 | 100 | 102 | ---- |
| 2-Fluorobiphenyl | 321-60-8 | 0.25 | % | | 104 | 90.0 | 109 | 112 | ---- |
| Anthracene-d10 | 1719-06-8 | 0.25 | % | | 101 | 104 | 107 | 107 | ---- |
| 4-Terphenyl-d14 | 1718-51-0 | 0.25 | % | | 98.0 | 86.4 | 104 | 104 | ---- |
| **EP080S: TPH(V)/BTEX Surrogates** | | | | | | | | | |
| 1.2-Dichloroethane-D4 | 17060-07-0 | 2 | % | | 100 | 98.2 | 98.6 | ---- | ---- |
| Toluene-D8 | 2037-26-5 | 2 | % | | 100 | 95.9 | 97.2 | ---- | ---- |
| 4-Bromofluorobenzene | 460-00-4 | 2 | % | | 104 | 100 | 99.4 | ---- | ---- |

## Surrogate Control Limits

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP066S: PCB Surrogate** | | | |
| **Decachlorobiphenyl** | 2051-24-3 | 41 | 125 |
| **EP074S: VOC Surrogates** | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 72 | 132 |
| **Toluene-D8** | 2037-26-5 | 77 | 132 |
| **4-Bromofluorobenzene** | 460-00-4 | 67 | 131 |
| **EP075(SIM)S: Phenolic Compound Surrogates** | | | |
| **Phenol-d6** | 13127-88-3 | 10 | 51 |
| **2-Chlorophenol-D4** | 93951-73-6 | 30 | 114 |
| **2.4.6-Tribromophenol** | 118-79-6 | 26 | 133 |
| **EP075(SIM)T: PAH Surrogates** | | | |
| **2-Fluorobiphenyl** | 321-60-8 | 35 | 127 |
| **Anthracene-d10** | 1719-06-8 | 44 | 122 |
| **4-Terphenyl-d14** | 1718-51-0 | 44 | 124 |
| **EP075S: Acid Extractable Surrogates (Waste Classification)** | | | |
| **Phenol-d6** | 13127-88-3 | 13 | 57 |
| **2-Chlorophenol-D4** | 93951-73-6 | 33 | 118 |
| **2.4.6-Tribromophenol** | 118-79-6 | 28 | 135 |
| **EP075T: Base/Neutral Extractable Surrogates (Waste Classification)** | | | |
| **Nitrobenzene-D5** | 4165-60-0 | 41 | 136 |
| **1.2-Dichlorobenzene-D4** | 2199-69-1 | 42 | 134 |
| **2-Fluorobiphenyl** | 321-60-8 | 45 | 137 |
| **Anthracene-d10** | 1719-06-8 | 53 | 141 |
| **4-Terphenyl-d14** | 1718-51-0 | 43 | 136 |
| **EP080S: TPH(V)/BTEX Surrogates** | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 73 | 129 |
| **Toluene-D8** | 2037-26-5 | 70 | 125 |
| **4-Bromofluorobenzene** | 460-00-4 | 71 | 129 |

## Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EP020: Oil and Grease (O&G)

(WATER) EP050: Anionic Surfactants as MBAS

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **EM2101604** | Page | : 1 of 9 |
| Client | : **GHD PTY LTD** | Laboratory | : Environmental Division Melbourne |
| Contact | : MR ALAN WILSON | Contact | : Shirley LeCornu |
| Address | : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001 | Address | : 4 Westall Rd Springvale VIC Australia 3171 |
| Telephone | : +61 08 8111 6600 | Telephone | : +6138549 9630 |
| Project | : 12529997 | Date Samples Received | : 04-Feb-2021 13:20 |
| Order number | : ---- | Date Analysis Commenced | : 04-Feb-2021 |
| C-O-C number | : ---- | Issue Date | : 10-Feb-2021 16:01 |
| Sampler | : ADW | | |
| Site | : ---- | | |
| Quote number | : EN/005/17 (Victoria Primary Quote) | | |
| No. of samples received | : 4 | | |
| No. of samples analysed | : 4 | | |

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Andrew Lu | VOC Section Supervisor | Melbourne Organics, Springvale, VIC |
| Ankit Joshi | Inorganic Chemist | Sydney Inorganics, Smithfield, NSW |
| Dilani Fernando | Senior Inorganic Chemist | Melbourne Inorganics, Springvale, VIC |
| Nikki Stepniewski | Senior Inorganic Instrument Chemist | Melbourne Inorganics, Springvale, VIC |
| Samantha Smith | Laboratory Coordinator | WRG Subcontracting, Springvale, VIC |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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

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

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

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

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

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

- EP026SP - EM2101604 #1,2 - samples required dilution prior to analyse due to matrix interfernces. LOR values have been adjusted accordingly.
- EG050G-F: EM2101604 #1-2 Hexavalent chromium results may be biased high compared to Dissolved Chromium filtered as sample were not field filtered prior to sample preservation.
- EP075 (SIM): Where reported, 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.
- 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.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EG020-F : EM2101582 #3 Poor matrix spike recovery for dissolved metal due to sample matrix. Confirmed by re-preparation and re-analysis.
- EK067G: EM2101469 #1 Poor matrix spike recovery for TP due to sample matrix. Confirmed by re-extraction and re-analysis.
- EK067G: EM2101469 #1, Poor matrix spike recovery for TP due to sample matrix. Confirmed by re-extraction and re-analysis.
- MBAS (EP050) is calculated as LAS, molecular weight 348 g/mol.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- EK067G: EM2101604 #4 Poor duplicate precision for TKN. Confirmed by re-extraction and re-analysis.
- EK067G: EM2101619 #1 Poor matrix spike recovery for total phosphorus as P due to sample matrix.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- E.coli & Total Coliforms by MPN (MM514) is conducted by ALS Scoresby NATA accreditation no. 992, site no. 989.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | WORMBH23a | WORMBH22 | RB01 | TB01 | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 03-Feb-2021 00:00 | 03-Feb-2021 00:00 | 03-Feb-2021 00:00 | 03-Feb-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | EM2101604-001 | EM2101604-002 | EM2101604-003 | EM2101604-004 | -------- |
| | | | | Result | Result | Result | Result | ---- |
| **EA005P: pH by PC Titrator** | | | | | | | | |
| pH Value | ---- | 0.01 | pH Unit | **7.78** | **7.84** | ---- | ---- | ---- |
| **EA010P: Conductivity by PC Titrator** | | | | | | | | |
| Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | **6580** | **6910** | ---- | ---- | ---- |
| **EA016: Calculated TDS (from Electrical Conductivity)** | | | | | | | | |
| Total Dissolved Solids (Calc.) | ---- | 1 | mg/L | **4280** | **4490** | ---- | ---- | ---- |
| **EA025: Total Suspended Solids dried at 104 ± 2°C** | | | | | | | | |
| Suspended Solids (SS) | ---- | 5 | mg/L | **42** | **28** | ---- | ---- | ---- |
| **ED037P: Alkalinity by PC Titrator** | | | | | | | | |
| Hydroxide Alkalinity as CaCO3 | DMO-210-001 | 1 | mg/L | <1 | <1 | ---- | ---- | ---- |
| Carbonate Alkalinity as CaCO3 | 3812-32-6 | 1 | mg/L | <1 | <1 | ---- | ---- | ---- |
| Bicarbonate Alkalinity as CaCO3 | 71-52-3 | 1 | mg/L | **519** | **383** | ---- | ---- | ---- |
| Total Alkalinity as CaCO3 | ---- | 1 | mg/L | **519** | **383** | ---- | ---- | ---- |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | |
| Sulfate as SO4 - Turbidimetric | 14808-79-8 | 1 | mg/L | **401** | **527** | ---- | ---- | ---- |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | | |
| Chloride | 16887-00-6 | 1 | mg/L | **1840** | **1940** | ---- | ---- | ---- |
| **ED093F: Dissolved Major Cations** | | | | | | | | |
| Calcium | 7440-70-2 | 1 | mg/L | **121** | **116** | ---- | ---- | ---- |
| Magnesium | 7439-95-4 | 1 | mg/L | **249** | **269** | ---- | ---- | ---- |
| Sodium | 7440-23-5 | 1 | mg/L | **936** | **974** | ---- | ---- | ---- |
| Potassium | 7440-09-7 | 1 | mg/L | **34** | **26** | ---- | ---- | ---- |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | |
| Silver | 7440-22-4 | 0.001 | mg/L | <0.001 | <0.001 | ---- | ---- | ---- |
| Arsenic | 7440-38-2 | 0.001 | mg/L | **0.004** | **0.007** | ---- | ---- | ---- |
| Cadmium | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | ---- | ---- | ---- |
| Copper | 7440-50-8 | 0.001 | mg/L | <0.001 | **0.004** | ---- | ---- | ---- |
| Molybdenum | 7439-98-7 | 0.001 | mg/L | **0.001** | **0.002** | ---- | ---- | ---- |
| Nickel | 7440-02-0 | 0.001 | mg/L | **0.012** | **0.039** | ---- | ---- | ---- |
| Lead | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | ---- | ---- | ---- |
| Selenium | 7782-49-2 | 0.01 | mg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| Tin | 7440-31-5 | 0.001 | mg/L | <0.001 | <0.001 | ---- | ---- | ---- |
| Zinc | 7440-66-6 | 0.005 | mg/L | **0.020** | **0.032** | ---- | ---- | ---- |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | |
| Mercury | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORMBH23a | WORMBH22 | RB01 | TB01 | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 03-Feb-2021 00:00 | 03-Feb-2021 00:00 | 03-Feb-2021 00:00 | 03-Feb-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | | EM2101604-001 | EM2101604-002 | EM2101604-003 | EM2101604-004 | -------- |
| | | | | | Result | Result | Result | Result | ---- |
| **EG050F: Dissolved Hexavalent Chromium** | | | | | | | | | |
| Hexavalent Chromium | 18540-29-9 | 0.01 | mg/L | | <0.01 | <0.01 | ---- | ---- | ---- |
| **EK026SF: Total CN by Segmented Flow Analyser** | | | | | | | | | |
| Total Cyanide | 57-12-5 | 0.004 | mg/L | | <0.004 | <0.004 | ---- | ---- | ---- |
| **EK040P: Fluoride by PC Titrator** | | | | | | | | | |
| Fluoride | 16984-48-8 | 0.1 | mg/L | | **0.3** | **0.3** | ---- | ---- | ---- |
| **EK055G: Ammonia as N by Discrete Analyser** | | | | | | | | | |
| Ammonia as N | 7664-41-7 | 0.01 | mg/L | | **0.46** | **0.19** | <0.01 | ---- | ---- |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | | | | |
| Nitrite as N | 14797-65-0 | 0.01 | mg/L | | <0.01 | <0.01 | ---- | ---- | ---- |
| **EK058G: Nitrate as N by Discrete Analyser** | | | | | | | | | |
| Nitrate as N | 14797-55-8 | 0.01 | mg/L | | **0.10** | <0.01 | ---- | ---- | ---- |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | | |
| Nitrite + Nitrate as N | ---- | 0.01 | mg/L | | **0.10** | <0.01 | <0.01 | ---- | ---- |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | | |
| Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | | **1.1** | **0.4** | <0.1 | ---- | ---- |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | | |
| ^ Total Nitrogen as N | ---- | 0.1 | mg/L | | **1.2** | **0.4** | <0.1 | ---- | ---- |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | | |
| Total Phosphorus as P | ---- | 0.01 | mg/L | | **0.10** | **0.07** | ---- | ---- | ---- |
| **EN055: Ionic Balance** | | | | | | | | | |
| ø Total Anions | ---- | 0.01 | meq/L | | **70.6** | **73.3** | ---- | ---- | ---- |
| ø Total Cations | ---- | 0.01 | meq/L | | **68.1** | **71.0** | ---- | ---- | ---- |
| ø Ionic Balance | ---- | 0.01 | % | | **1.81** | **1.66** | ---- | ---- | ---- |
| **EP020: Oil and Grease (O&G)** | | | | | | | | | |
| Oil & Grease | ---- | 5 | mg/L | | **----** | <5 | ---- | ---- | ---- |
| **EP026SP: Chemical Oxygen Demand (Spectrophotometric)** | | | | | | | | | |
| Chemical Oxygen Demand | ---- | 10 | mg/L | | <50 | **27** | ---- | ---- | ---- |
| **EP030: Biochemical Oxygen Demand (BOD)** | | | | | | | | | |
| Biochemical Oxygen Demand | ---- | 2 | mg/L | | **6** | **5** | ---- | ---- | ---- |
| **EP050: Anionic Surfactants as MBAS** | | | | | | | | | |
| Anionic Surfactants as MBAS | ---- | 0.1 | mg/L | | **----** | <0.1 | ---- | ---- | ---- |
| **EP066: Polychlorinated Biphenyls (PCB)** | | | | | | | | | |
| ^ Total Polychlorinated biphenyls | ---- | 1 | µg/L | | <1 | <1 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | WORMBH23a | WORMBH22 | RB01 | TB01 | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 03-Feb-2021 00:00 | 03-Feb-2021 00:00 | 03-Feb-2021 00:00 | 03-Feb-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | EM2101604-001 | EM2101604-002 | EM2101604-003 | EM2101604-004 | -------- |
| | | | | Result | Result | Result | Result | ---- |
| **EP074A: Monocyclic Aromatic Hydrocarbons** | | | | | | | | |
| Styrene | 100-42-5 | 5 | µg/L | <5 | <5 | ---- | ---- | ---- |
| **EP074E: Halogenated Aliphatic Compounds** | | | | | | | | |
| Vinyl chloride | 75-01-4 | 50 | µg/L | <50 | <50 | ---- | ---- | ---- |
| 1.1-Dichloroethene | 75-35-4 | 5 | µg/L | <5 | <5 | ---- | ---- | ---- |
| Methylene chloride | 75-09-2 | 5 | µg/L | <5 | <5 | ---- | ---- | ---- |
| trans-1.2-Dichloroethene | 156-60-5 | 5 | µg/L | <5 | <5 | ---- | ---- | ---- |
| cis-1.2-Dichloroethene | 156-59-2 | 5 | µg/L | <5 | <5 | ---- | ---- | ---- |
| 1.1.1-Trichloroethane | 71-55-6 | 5 | µg/L | <5 | <5 | ---- | ---- | ---- |
| Carbon Tetrachloride | 56-23-5 | 5 | µg/L | <5 | <5 | ---- | ---- | ---- |
| 1.2-Dichloroethane | 107-06-2 | 5 | µg/L | <5 | <5 | ---- | ---- | ---- |
| Trichloroethene | 79-01-6 | 5 | µg/L | <5 | <5 | ---- | ---- | ---- |
| 1.1.2-Trichloroethane | 79-00-5 | 5 | µg/L | <5 | <5 | ---- | ---- | ---- |
| Tetrachloroethene | 127-18-4 | 5 | µg/L | <5 | <5 | ---- | ---- | ---- |
| 1.1.1.2-Tetrachloroethane | 630-20-6 | 5 | µg/L | <5 | <5 | ---- | ---- | ---- |
| 1.1.2.2-Tetrachloroethane | 79-34-5 | 5 | µg/L | <5 | <5 | ---- | ---- | ---- |
| Hexachlorobutadiene | 87-68-3 | 5 | µg/L | <5 | <5 | ---- | ---- | ---- |
| **EP074F: Halogenated Aromatic Compounds** | | | | | | | | |
| Chlorobenzene | 108-90-7 | 5 | µg/L | <5 | <5 | ---- | ---- | ---- |
| 1.4-Dichlorobenzene | 106-46-7 | 5 | µg/L | <5 | <5 | ---- | ---- | ---- |
| 1.2-Dichlorobenzene | 95-50-1 | 5 | µg/L | <5 | <5 | ---- | ---- | ---- |
| 1.2.4-Trichlorobenzene | 120-82-1 | 5 | µg/L | <5 | <5 | ---- | ---- | ---- |
| **EP074G: Trihalomethanes** | | | | | | | | |
| Chloroform | 67-66-3 | 5 | µg/L | <5 | <5 | ---- | ---- | ---- |
| **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 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORMBH23a | WORMBH22 | RB01 | TB01 | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 03-Feb-2021 00:00 | 03-Feb-2021 00:00 | 03-Feb-2021 00:00 | 03-Feb-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | | EM2101604-001 | EM2101604-002 | EM2101604-003 | EM2101604-004 | -------- |
| | | | | | Result | Result | Result | Result | ---- |
| **EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued** | | | | | | | | | |
| 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 | ---- | ---- | ---- |
| 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 (Halogenated)** | | | | | | | | | |
| 2-Chlorophenol | 95-57-8 | 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 | 4 | µg/L | | <4 | <4 | ---- | ---- | ---- |
| 2.4.5-Trichlorophenol | 95-95-4 | 2 | µg/L | | <2 | <2 | ---- | ---- | ---- |
| 2.4.6-Trichlorophenol | 88-06-2 | 2 | µg/L | | <2 | <2 | ---- | ---- | ---- |
| 2.3.5.6-Tetrachlorophenol | 935-95-5 | 2 | µg/L | | <2 | <2 | ---- | ---- | ---- |
| 2.3.4.5 & 2.3.4.6-Tetrachlorophenol | 4901-51-3/58-90-2 | 2 | µg/L | | <2 | <2 | ---- | ---- | ---- |
| Pentachlorophenol | 87-86-5 | 2 | µg/L | | <2 | <2 | ---- | ---- | ---- |
| **EP075A: Phenolic Compounds (Non-halogenated)** | | | | | | | | | |
| Phenol | 108-95-2 | 4 | µg/L | | <4 | <4 | ---- | ---- | ---- |
| 2-Methylphenol | 95-48-7 | 4 | µg/L | | <4 | <4 | ---- | ---- | ---- |
| 3- & 4-Methylphenol | 1319-77-3 | 4 | µg/L | | <4 | <4 | ---- | ---- | ---- |
| 2-Nitrophenol | 88-75-5 | 4 | µg/L | | <4 | <4 | ---- | ---- | ---- |
| 2.4-Dimethylphenol | 105-67-9 | 4 | µg/L | | <4 | <4 | ---- | ---- | ---- |
| 2.4-Dinitrophenol | 51-28-5 | 100 | µg/L | | <100 | <100 | ---- | ---- | ---- |
| 4-Nitrophenol | 100-02-7 | 50 | µg/L | | <50 | <50 | ---- | ---- | ---- |
| 2-Methyl-4.6-dinitrophenol | 8071-51-0 | 50 | µg/L | | <50 | <50 | ---- | ---- | ---- |
| Dinoseb | 88-85-7 | 50 | µg/L | | <50 | <50 | ---- | ---- | ---- |
| 2-Cyclohexyl-4.6-Dinitrophenol | 131-89-5 | 50 | µg/L | | <50 | <50 | ---- | ---- | ---- |
| **EP075I: Organochlorine Pesticides** | | | | | | | | | |
| alpha-BHC | 319-84-6 | 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 | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORMBH23a | WORMBH22 | RB01 | TB01 | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 03-Feb-2021 00:00 | 03-Feb-2021 00:00 | 03-Feb-2021 00:00 | 03-Feb-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | | EM2101604-001 | EM2101604-002 | EM2101604-003 | EM2101604-004 | -------- |
| | | | | | Result | Result | Result | Result | ---- |
| **EP075I: Organochlorine Pesticides - Continued** | | | | | | | | | |
| cis-Chlordane | 5103-71-9 | 0.5 | µg/L | | <0.5 | <0.5 | ---- | ---- | ---- |
| trans-Chlordane | 5103-74-2 | 0.5 | µg/L | | <0.5 | <0.5 | ---- | ---- | ---- |
| 4.4`-DDE | 72-55-9 | 0.5 | µg/L | | <0.5 | <0.5 | ---- | ---- | ---- |
| Dieldrin | 60-57-1 | 0.5 | µg/L | | <0.5 | <0.5 | ---- | ---- | ---- |
| 4.4`-DDD | 72-54-8 | 0.5 | µg/L | | <0.5 | <0.5 | ---- | ---- | ---- |
| 4.4`-DDT | 50-29-3 | 0.5 | µg/L | | <0.5 | <0.5 | ---- | ---- | ---- |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | | |
| C6 - C9 Fraction | ---- | 20 | µg/L | | <20 | <20 | ---- | <20 | ---- |
| C10 - C14 Fraction | ---- | 50 | µg/L | | <50 | <50 | ---- | ---- | ---- |
| C15 - C28 Fraction | ---- | 100 | µg/L | | **120** | **320** | ---- | ---- | ---- |
| C29 - C36 Fraction | ---- | 50 | µg/L | | <50 | **80** | ---- | ---- | ---- |
| ^ C10 - C36 Fraction (sum) | ---- | 50 | µg/L | | **120** | **400** | ---- | ---- | ---- |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | | | | |
| C6 - C10 Fraction | C6_C10 | 20 | µg/L | | <20 | <20 | ---- | <20 | ---- |
| ^ C6 - C10 Fraction minus BTEX (F1) | C6_C10-BTEX | 20 | µg/L | | <20 | <20 | ---- | <20 | ---- |
| >C10 - C16 Fraction | ---- | 100 | µg/L | | <100 | <100 | ---- | ---- | ---- |
| >C16 - C34 Fraction | ---- | 100 | µg/L | | **110** | **360** | ---- | ---- | ---- |
| >C34 - C40 Fraction | ---- | 100 | µg/L | | <100 | <100 | ---- | ---- | ---- |
| ^ >C10 - C40 Fraction (sum) | ---- | 100 | µg/L | | **110** | **360** | ---- | ---- | ---- |
| ^ >C10 - C16 Fraction minus Naphthalene (F2) | ---- | 100 | µg/L | | <100 | <100 | ---- | ---- | ---- |
| **EP080: BTEXN** | | | | | | | | | |
| Benzene | 71-43-2 | 1 | µg/L | | <1 | <1 | ---- | <1 | ---- |
| Toluene | 108-88-3 | 2 | µg/L | | <2 | <2 | ---- | <2 | ---- |
| Ethylbenzene | 100-41-4 | 2 | µg/L | | <2 | <2 | ---- | <2 | ---- |
| meta- & para-Xylene | 108-38-3 106-42-3 | 2 | µg/L | | <2 | <2 | ---- | <2 | ---- |
| ortho-Xylene | 95-47-6 | 2 | µg/L | | <2 | <2 | ---- | <2 | ---- |
| ^ Total Xylenes | ---- | 2 | µg/L | | <2 | <2 | ---- | <2 | ---- |
| ^ Sum of BTEX | ---- | 1 | µg/L | | <1 | <1 | ---- | <1 | ---- |
| Naphthalene | 91-20-3 | 5 | µg/L | | <5 | <5 | ---- | <5 | ---- |
| **MM514: E.coli & Total Coliforms MPN by Colilert** | | | | | | | | | |
| Escherichia coli (Colilert) | ---- | 1 | orgs/100mL | | **0** | **0** | ---- | ---- | ---- |
| **EP066S: PCB Surrogate** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | WORMBH23a | WORMBH22 | RB01 | TB01 | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 03-Feb-2021 00:00 | 03-Feb-2021 00:00 | 03-Feb-2021 00:00 | 03-Feb-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | EM2101604-001 | EM2101604-002 | EM2101604-003 | EM2101604-004 | -------- |
| | | | | Result | Result | Result | Result | ---- |
| **EP066S: PCB Surrogate - Continued** | | | | | | | | |
| Decachlorobiphenyl | 2051-24-3 | 1 | % | 87.2 | 79.3 | ---- | ---- | ---- |
| **EP074S: VOC Surrogates** | | | | | | | | |
| 1.2-Dichloroethane-D4 | 17060-07-0 | 5 | % | 100 | 94.6 | ---- | ---- | ---- |
| Toluene-D8 | 2037-26-5 | 5 | % | 92.3 | 92.3 | ---- | ---- | ---- |
| 4-Bromofluorobenzene | 460-00-4 | 5 | % | 99.7 | 101 | ---- | ---- | ---- |
| **EP075(SIM)S: Phenolic Compound Surrogates** | | | | | | | | |
| Phenol-d6 | 13127-88-3 | 1.0 | % | 32.7 | 27.5 | ---- | ---- | ---- |
| 2-Chlorophenol-D4 | 93951-73-6 | 1.0 | % | 76.3 | 64.9 | ---- | ---- | ---- |
| 2.4.6-Tribromophenol | 118-79-6 | 1.0 | % | 101 | 89.0 | ---- | ---- | ---- |
| **EP075(SIM)T: PAH Surrogates** | | | | | | | | |
| 2-Fluorobiphenyl | 321-60-8 | 1.0 | % | 79.5 | 72.3 | ---- | ---- | ---- |
| Anthracene-d10 | 1719-06-8 | 1.0 | % | 85.2 | 79.1 | ---- | ---- | ---- |
| 4-Terphenyl-d14 | 1718-51-0 | 1.0 | % | 89.4 | 82.2 | ---- | ---- | ---- |
| **EP075S: Acid Extractable Surrogates (Waste Classification)** | | | | | | | | |
| Phenol-d6 | 13127-88-3 | 0.25 | % | 32.5 | 33.8 | ---- | ---- | ---- |
| 2-Chlorophenol-D4 | 93951-73-6 | 0.25 | % | 69.5 | 71.5 | ---- | ---- | ---- |
| 2.4.6-Tribromophenol | 118-79-6 | 0.25 | % | 81.5 | 81.3 | ---- | ---- | ---- |
| **EP075T: Base/Neutral Extractable Surrogates (Waste Classification)** | | | | | | | | |
| Nitrobenzene-D5 | 4165-60-0 | 0.25 | % | 80.4 | 82.8 | ---- | ---- | ---- |
| 1.2-Dichlorobenzene-D4 | 2199-69-1 | 0.25 | % | 71.8 | 73.8 | ---- | ---- | ---- |
| 2-Fluorobiphenyl | 321-60-8 | 0.25 | % | 78.5 | 80.0 | ---- | ---- | ---- |
| Anthracene-d10 | 1719-06-8 | 0.25 | % | 86.7 | 89.4 | ---- | ---- | ---- |
| 4-Terphenyl-d14 | 1718-51-0 | 0.25 | % | 74.7 | 76.5 | ---- | ---- | ---- |
| **EP080S: TPH(V)/BTEX Surrogates** | | | | | | | | |
| 1.2-Dichloroethane-D4 | 17060-07-0 | 2 | % | 87.0 | 81.9 | ---- | 87.5 | ---- |
| Toluene-D8 | 2037-26-5 | 2 | % | 92.3 | 92.3 | ---- | 96.4 | ---- |
| 4-Bromofluorobenzene | 460-00-4 | 2 | % | 110 | 108 | ---- | 108 | ---- |

## Surrogate Control Limits

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP066S: PCB Surrogate** | | | |
| **Decachlorobiphenyl** | 2051-24-3 | 41 | 125 |
| **EP074S: VOC Surrogates** | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 72 | 132 |
| **Toluene-D8** | 2037-26-5 | 77 | 132 |
| **4-Bromofluorobenzene** | 460-00-4 | 67 | 131 |
| **EP075(SIM)S: Phenolic Compound Surrogates** | | | |
| **Phenol-d6** | 13127-88-3 | 10 | 51 |
| **2-Chlorophenol-D4** | 93951-73-6 | 30 | 114 |
| **2.4.6-Tribromophenol** | 118-79-6 | 26 | 133 |
| **EP075(SIM)T: PAH Surrogates** | | | |
| **2-Fluorobiphenyl** | 321-60-8 | 35 | 127 |
| **Anthracene-d10** | 1719-06-8 | 44 | 122 |
| **4-Terphenyl-d14** | 1718-51-0 | 44 | 124 |
| **EP075S: Acid Extractable Surrogates (Waste Classification)** | | | |
| **Phenol-d6** | 13127-88-3 | 13 | 57 |
| **2-Chlorophenol-D4** | 93951-73-6 | 33 | 118 |
| **2.4.6-Tribromophenol** | 118-79-6 | 28 | 135 |
| **EP075T: Base/Neutral Extractable Surrogates (Waste Classification)** | | | |
| **Nitrobenzene-D5** | 4165-60-0 | 41 | 136 |
| **1.2-Dichlorobenzene-D4** | 2199-69-1 | 42 | 134 |
| **2-Fluorobiphenyl** | 321-60-8 | 45 | 137 |
| **Anthracene-d10** | 1719-06-8 | 53 | 141 |
| **4-Terphenyl-d14** | 1718-51-0 | 43 | 136 |
| **EP080S: TPH(V)/BTEX Surrogates** | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 73 | 129 |
| **Toluene-D8** | 2037-26-5 | 70 | 125 |
| **4-Bromofluorobenzene** | 460-00-4 | 71 | 129 |

## Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EP020: Oil and Grease (O&G)

(WATER) EP050: Anionic Surfactants as MBAS

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **EM2109232** | Page | : 1 of 9 |
| Client | : **GHD PTY LTD** | Laboratory | : Environmental Division Melbourne |
| Contact | : MR ALAN WILSON | Contact | : Shirley LeCornu |
| Address | : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001 | Address | : 4 Westall Rd Springvale VIC Australia 3171 |
| Telephone | : 03 8687 8494 | Telephone | : +6138549 9630 |
| Project | : 12529997 | Date Samples Received | : 19-May-2021 14:51 |
| Order number | : ---- | Date Analysis Commenced | : 19-May-2021 |
| C-O-C number | : ---- | Issue Date | : 25-May-2021 16:23 |
| Sampler | : ---- | | |
| Site | : ---- | | |
| Quote number | : EN/005/17 (Victoria Primary Quote) | | |
| No. of samples received | : 4 | | |
| No. of samples analysed | : 4 | | |

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Nancy Wang | 2IC Organic Chemist | Melbourne Organics, Springvale, VIC |
| Nikki Stepniewski | Senior Inorganic Instrument Chemist | Melbourne Inorganics, Springvale, VIC |
| Samantha Smith | Laboratory Coordinator | WRG Subcontracting, Springvale, VIC |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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

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

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

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

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

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

- EP075 (SIM): Where reported, 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.
- 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.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- E.coli & Total Coliforms by MPN (MM514) is conducted by ALS Scoresby NATA accreditation no. 992, site no. 989.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | WORMBH49 | QC01 | WORMBH27 | QC02 | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 18-May-2021 00:00 | 18-May-2021 00:00 | 18-May-2021 00:00 | 18-May-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | EM2109232-001 | EM2109232-002 | EM2109232-003 | EM2109232-004 | -------- |
| | | | | Result | Result | Result | Result | ---- |
| **EA005P: pH by PC Titrator** | | | | | | | | |
| pH Value | ---- | 0.01 | pH Unit | **8.21** | ---- | **8.46** | ---- | ---- |
| **EA010P: Conductivity by PC Titrator** | | | | | | | | |
| Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | **2590** | ---- | **2480** | ---- | ---- |
| **EA020EC: Salinity** | | | | | | | | |
| Salinity | ---- | 0.01 | g/kg | **1.35** | ---- | **1.29** | ---- | ---- |
| **ED037P: Alkalinity by PC Titrator** | | | | | | | | |
| Hydroxide Alkalinity as CaCO3 | DMO-210-001 | 1 | mg/L | <1 | ---- | <1 | ---- | ---- |
| Carbonate Alkalinity as CaCO3 | 3812-32-6 | 1 | mg/L | <1 | ---- | **20** | ---- | ---- |
| Bicarbonate Alkalinity as CaCO3 | 71-52-3 | 1 | mg/L | **268** | ---- | **266** | ---- | ---- |
| Total Alkalinity as CaCO3 | ---- | 1 | mg/L | **268** | ---- | **286** | ---- | ---- |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | |
| Sulfate as SO4 - Turbidimetric | 14808-79-8 | 1 | mg/L | **109** | ---- | **57** | ---- | ---- |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | | |
| Chloride | 16887-00-6 | 1 | mg/L | **638** | ---- | **620** | ---- | ---- |
| **ED093F: Dissolved Major Cations** | | | | | | | | |
| Calcium | 7440-70-2 | 1 | mg/L | **19** | ---- | **12** | ---- | ---- |
| Magnesium | 7439-95-4 | 1 | mg/L | **71** | ---- | **45** | ---- | ---- |
| Sodium | 7440-23-5 | 1 | mg/L | **355** | ---- | **380** | ---- | ---- |
| Potassium | 7440-09-7 | 1 | mg/L | **22** | ---- | **27** | ---- | ---- |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | |
| Silver | 7440-22-4 | 0.001 | mg/L | <0.001 | ---- | <0.001 | ---- | ---- |
| Arsenic | 7440-38-2 | 0.001 | mg/L | **0.009** | ---- | <0.001 | ---- | ---- |
| Cadmium | 7440-43-9 | 0.0001 | mg/L | <0.0001 | ---- | <0.0001 | ---- | ---- |
| Copper | 7440-50-8 | 0.001 | mg/L | <0.001 | ---- | <0.001 | ---- | ---- |
| Molybdenum | 7439-98-7 | 0.001 | mg/L | **0.032** | ---- | **0.022** | ---- | ---- |
| Nickel | 7440-02-0 | 0.001 | mg/L | **0.012** | ---- | <0.001 | ---- | ---- |
| Lead | 7439-92-1 | 0.001 | mg/L | <0.001 | ---- | <0.001 | ---- | ---- |
| Selenium | 7782-49-2 | 0.01 | mg/L | <0.01 | ---- | <0.01 | ---- | ---- |
| Tin | 7440-31-5 | 0.001 | mg/L | <0.001 | ---- | <0.001 | ---- | ---- |
| Zinc | 7440-66-6 | 0.005 | mg/L | <0.005 | ---- | <0.005 | ---- | ---- |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | |
| Mercury | 7439-97-6 | 0.0001 | mg/L | <0.0001 | ---- | <0.0001 | ---- | ---- |
| **EG050F: Dissolved Hexavalent Chromium** | | | | | | | | |
| Hexavalent Chromium | 18540-29-9 | 0.01 | mg/L | <0.01 | ---- | <0.01 | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORMBH49 | QC01 | WORMBH27 | QC02 | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 18-May-2021 00:00 | 18-May-2021 00:00 | 18-May-2021 00:00 | 18-May-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | | EM2109232-001 | EM2109232-002 | EM2109232-003 | EM2109232-004 | -------- |
| | | | | | Result | Result | Result | Result | ---- |
| **EK026SF: Total CN by Segmented Flow Analyser** | | | | | | | | | |
| Total Cyanide | 57-12-5 | 0.004 | mg/L | | <0.004 | ---- | <0.004 | ---- | ---- |
| **EK040P: Fluoride by PC Titrator** | | | | | | | | | |
| Fluoride | 16984-48-8 | 0.1 | mg/L | | **0.2** | ---- | **0.2** | ---- | ---- |
| **EK055G: Ammonia as N by Discrete Analyser** | | | | | | | | | |
| Ammonia as N | 7664-41-7 | 0.01 | mg/L | | **0.03** | ---- | **0.07** | <0.01 | ---- |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | | | | |
| Nitrite as N | 14797-65-0 | 0.01 | mg/L | | <0.01 | ---- | <0.01 | <0.01 | ---- |
| **EK058G: Nitrate as N by Discrete Analyser** | | | | | | | | | |
| Nitrate as N | 14797-55-8 | 0.01 | mg/L | | **0.02** | ---- | **0.01** | <0.01 | ---- |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | | |
| Nitrite + Nitrate as N | ---- | 0.01 | mg/L | | **0.02** | ---- | **0.01** | <0.01 | ---- |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | | |
| Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | | **0.2** | ---- | **0.2** | <0.1 | ---- |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | | |
| ^ Total Nitrogen as N | ---- | 0.1 | mg/L | | **0.2** | ---- | **0.2** | <0.1 | ---- |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | | |
| Total Phosphorus as P | ---- | 0.01 | mg/L | | **0.19** | ---- | **0.29** | ---- | ---- |
| **EN055: Ionic Balance** | | | | | | | | | |
| ø Total Anions | ---- | 0.01 | meq/L | | **25.6** | ---- | **24.4** | ---- | ---- |
| ø Total Cations | ---- | 0.01 | meq/L | | **22.8** | ---- | **21.5** | ---- | ---- |
| ø Ionic Balance | ---- | 0.01 | % | | **5.84** | ---- | **6.25** | ---- | ---- |
| **EP066: Polychlorinated Biphenyls (PCB)** | | | | | | | | | |
| ^ Total Polychlorinated biphenyls | ---- | 1 | µg/L | | <1 | ---- | <1 | ---- | ---- |
| **EP074A: Monocyclic Aromatic Hydrocarbons** | | | | | | | | | |
| Styrene | 100-42-5 | 5 | µg/L | | <5 | ---- | <5 | ---- | ---- |
| **EP074E: Halogenated Aliphatic Compounds** | | | | | | | | | |
| Vinyl chloride | 75-01-4 | 50 | µg/L | | <50 | ---- | <50 | ---- | ---- |
| 1.1-Dichloroethene | 75-35-4 | 5 | µg/L | | <5 | ---- | <5 | ---- | ---- |
| Methylene chloride | 75-09-2 | 5 | µg/L | | <5 | ---- | <5 | ---- | ---- |
| trans-1.2-Dichloroethene | 156-60-5 | 5 | µg/L | | <5 | ---- | <5 | ---- | ---- |
| cis-1.2-Dichloroethene | 156-59-2 | 5 | µg/L | | <5 | ---- | <5 | ---- | ---- |
| 1.1.1-Trichloroethane | 71-55-6 | 5 | µg/L | | <5 | ---- | <5 | ---- | ---- |
| Carbon Tetrachloride | 56-23-5 | 5 | µg/L | | <5 | ---- | <5 | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORMBH49 | QC01 | WORMBH27 | QC02 | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 18-May-2021 00:00 | 18-May-2021 00:00 | 18-May-2021 00:00 | 18-May-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | | EM2109232-001 | EM2109232-002 | EM2109232-003 | EM2109232-004 | -------- |
| | | | | | Result | Result | Result | Result | ---- |
| **EP074E: Halogenated Aliphatic Compounds - Continued** | | | | | | | | | |
| 1.2-Dichloroethane | 107-06-2 | 5 | µg/L | | <5 | ---- | <5 | ---- | ---- |
| Trichloroethene | 79-01-6 | 5 | µg/L | | <5 | ---- | <5 | ---- | ---- |
| 1.1.2-Trichloroethane | 79-00-5 | 5 | µg/L | | <5 | ---- | <5 | ---- | ---- |
| Tetrachloroethene | 127-18-4 | 5 | µg/L | | <5 | ---- | <5 | ---- | ---- |
| 1.1.1.2-Tetrachloroethane | 630-20-6 | 5 | µg/L | | <5 | ---- | <5 | ---- | ---- |
| 1.1.2.2-Tetrachloroethane | 79-34-5 | 5 | µg/L | | <5 | ---- | <5 | ---- | ---- |
| Hexachlorobutadiene | 87-68-3 | 5 | µg/L | | <5 | ---- | <5 | ---- | ---- |
| **EP074F: Halogenated Aromatic Compounds** | | | | | | | | | |
| Chlorobenzene | 108-90-7 | 5 | µg/L | | <5 | ---- | <5 | ---- | ---- |
| 1.4-Dichlorobenzene | 106-46-7 | 5 | µg/L | | <5 | ---- | <5 | ---- | ---- |
| 1.2-Dichlorobenzene | 95-50-1 | 5 | µg/L | | <5 | ---- | <5 | ---- | ---- |
| 1.2.4-Trichlorobenzene | 120-82-1 | 5 | µg/L | | <5 | ---- | <5 | ---- | ---- |
| **EP074G: Trihalomethanes** | | | | | | | | | |
| Chloroform | 67-66-3 | 5 | µg/L | | <5 | ---- | <5 | ---- | ---- |
| **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 | ---- | ---- |
| 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 (Halogenated)** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORMBH49 | QC01 | WORMBH27 | QC02 | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 18-May-2021 00:00 | 18-May-2021 00:00 | 18-May-2021 00:00 | 18-May-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | | EM2109232-001 | EM2109232-002 | EM2109232-003 | EM2109232-004 | -------- |
| | | | | | Result | Result | Result | Result | ---- |
| **EP075A: Phenolic Compounds (Halogenated) - Continued** | | | | | | | | | |
| 2-Chlorophenol | 95-57-8 | 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 | 4 | µg/L | | <4 | ---- | <4 | ---- | ---- |
| 2.4.5-Trichlorophenol | 95-95-4 | 2 | µg/L | | <2 | ---- | <2 | ---- | ---- |
| 2.4.6-Trichlorophenol | 88-06-2 | 2 | µg/L | | <2 | ---- | <2 | ---- | ---- |
| 2.3.5.6-Tetrachlorophenol | 935-95-5 | 2 | µg/L | | <2 | ---- | <2 | ---- | ---- |
| 2.3.4.5 & 2.3.4.6-Tetrachlorophenol | 4901-51-3/58-90-2 | 2 | µg/L | | <2 | ---- | <2 | ---- | ---- |
| Pentachlorophenol | 87-86-5 | 2 | µg/L | | <2 | ---- | <2 | ---- | ---- |
| **EP075A: Phenolic Compounds (Non-halogenated)** | | | | | | | | | |
| Phenol | 108-95-2 | 4 | µg/L | | <4 | ---- | <4 | ---- | ---- |
| 2-Methylphenol | 95-48-7 | 4 | µg/L | | <4 | ---- | <4 | ---- | ---- |
| 3- & 4-Methylphenol | 1319-77-3 | 4 | µg/L | | <4 | ---- | <4 | ---- | ---- |
| 2-Nitrophenol | 88-75-5 | 4 | µg/L | | <4 | ---- | <4 | ---- | ---- |
| 2.4-Dimethylphenol | 105-67-9 | 4 | µg/L | | <4 | ---- | <4 | ---- | ---- |
| 2.4-Dinitrophenol | 51-28-5 | 100 | µg/L | | <100 | ---- | <100 | ---- | ---- |
| 4-Nitrophenol | 100-02-7 | 50 | µg/L | | <50 | ---- | <50 | ---- | ---- |
| 2-Methyl-4.6-dinitrophenol | 8071-51-0 | 50 | µg/L | | <50 | ---- | <50 | ---- | ---- |
| Dinoseb | 88-85-7 | 50 | µg/L | | <50 | ---- | <50 | ---- | ---- |
| 2-Cyclohexyl-4.6-Dinitrophenol | 131-89-5 | 50 | µg/L | | <50 | ---- | <50 | ---- | ---- |
| **EP075I: Organochlorine Pesticides** | | | | | | | | | |
| alpha-BHC | 319-84-6 | 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 | ---- | ---- |
| cis-Chlordane | 5103-71-9 | 0.5 | µg/L | | <0.5 | ---- | <0.5 | ---- | ---- |
| trans-Chlordane | 5103-74-2 | 0.5 | µg/L | | <0.5 | ---- | <0.5 | ---- | ---- |
| 4.4`-DDE | 72-55-9 | 0.5 | µg/L | | <0.5 | ---- | <0.5 | ---- | ---- |
| Dieldrin | 60-57-1 | 0.5 | µg/L | | <0.5 | ---- | <0.5 | ---- | ---- |
| 4.4`-DDD | 72-54-8 | 0.5 | µg/L | | <0.5 | ---- | <0.5 | ---- | ---- |
| 4.4`-DDT | 50-29-3 | 0.5 | µg/L | | <0.5 | ---- | <0.5 | ---- | ---- |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | | |
| C6 - C9 Fraction | ---- | 20 | µg/L | | <20 | <20 | <20 | ---- | ---- |
| C10 - C14 Fraction | ---- | 50 | µg/L | | <50 | ---- | <50 | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORMBH49 | QC01 | WORMBH27 | QC02 | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 18-May-2021 00:00 | 18-May-2021 00:00 | 18-May-2021 00:00 | 18-May-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | | EM2109232-001 | EM2109232-002 | EM2109232-003 | EM2109232-004 | -------- |
| | | | | | Result | Result | Result | Result | ---- |
| **EP080/071: Total Petroleum Hydrocarbons - Continued** | | | | | | | | | |
| 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 | <20 | ---- | ---- |
| ^ C6 - C10 Fraction minus BTEX (F1) | C6_C10-BTEX | 20 | µg/L | | <20 | <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 | <1 | ---- | ---- |
| Toluene | 108-88-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Ethylbenzene | 100-41-4 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| meta- & para-Xylene | 108-38-3 106-42-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| ortho-Xylene | 95-47-6 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| ^ Total Xylenes | ---- | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| ^ Sum of BTEX | ---- | 1 | µg/L | | <1 | <1 | <1 | ---- | ---- |
| Naphthalene | 91-20-3 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **MM514: E.coli & Total Coliforms MPN by Colilert** | | | | | | | | | |
| Escherichia coli (Colilert) | ---- | 1 | orgs/100mL | | **0** | ---- | **0** | ---- | ---- |
| **EP066S: PCB Surrogate** | | | | | | | | | |
| Decachlorobiphenyl | 2051-24-3 | 1 | % | | **72.8** | ---- | **59.8** | ---- | ---- |
| **EP074S: VOC Surrogates** | | | | | | | | | |
| 1.2-Dichloroethane-D4 | 17060-07-0 | 5 | % | | **104** | ---- | **108** | ---- | ---- |
| Toluene-D8 | 2037-26-5 | 5 | % | | **97.1** | ---- | **99.1** | ---- | ---- |
| 4-Bromofluorobenzene | 460-00-4 | 5 | % | | **107** | ---- | **107** | ---- | ---- |
| **EP075(SIM)S: Phenolic Compound Surrogates** | | | | | | | | | |
| Phenol-d6 | 13127-88-3 | 1.0 | % | | **30.2** | ---- | **24.8** | ---- | ---- |
| 2-Chlorophenol-D4 | 93951-73-6 | 1.0 | % | | **70.6** | ---- | **49.8** | ---- | ---- |
| 2.4.6-Tribromophenol | 118-79-6 | 1.0 | % | | **78.1** | ---- | **49.2** | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORMBH49 | QC01 | WORMBH27 | QC02 | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 18-May-2021 00:00 | 18-May-2021 00:00 | 18-May-2021 00:00 | 18-May-2021 00:00 | ---- |
| Compound | CAS Number | LOR | Unit | | EM2109232-001 | EM2109232-002 | EM2109232-003 | EM2109232-004 | -------- |
| | | | | | Result | Result | Result | Result | ---- |
| **EP075(SIM)T: PAH Surrogates** | | | | | | | | | |
| 2-Fluorobiphenyl | 321-60-8 | 1.0 | % | | 82.7 | ---- | 46.6 | ---- | ---- |
| Anthracene-d10 | 1719-06-8 | 1.0 | % | | 82.0 | ---- | 45.9 | ---- | ---- |
| 4-Terphenyl-d14 | 1718-51-0 | 1.0 | % | | 87.7 | ---- | 49.2 | ---- | ---- |
| **EP075S: Acid Extractable Surrogates (Waste Classification)** | | | | | | | | | |
| Phenol-d6 | 13127-88-3 | 0.25 | % | | 41.5 | ---- | 35.4 | ---- | ---- |
| 2-Chlorophenol-D4 | 93951-73-6 | 0.25 | % | | 82.9 | ---- | 72.3 | ---- | ---- |
| 2.4.6-Tribromophenol | 118-79-6 | 0.25 | % | | 80.4 | ---- | 67.7 | ---- | ---- |
| **EP075T: Base/Neutral Extractable Surrogates (Waste Classification)** | | | | | | | | | |
| Nitrobenzene-D5 | 4165-60-0 | 0.25 | % | | 90.4 | ---- | 81.3 | ---- | ---- |
| 1.2-Dichlorobenzene-D4 | 2199-69-1 | 0.25 | % | | 84.0 | ---- | 76.4 | ---- | ---- |
| 2-Fluorobiphenyl | 321-60-8 | 0.25 | % | | 89.3 | ---- | 83.5 | ---- | ---- |
| Anthracene-d10 | 1719-06-8 | 0.25 | % | | 101 | ---- | 93.1 | ---- | ---- |
| 4-Terphenyl-d14 | 1718-51-0 | 0.25 | % | | 85.3 | ---- | 88.9 | ---- | ---- |
| **EP080S: TPH(V)/BTEX Surrogates** | | | | | | | | | |
| 1.2-Dichloroethane-D4 | 17060-07-0 | 2 | % | | 100 | 101 | 104 | ---- | ---- |
| Toluene-D8 | 2037-26-5 | 2 | % | | 99.0 | 103 | 101 | ---- | ---- |
| 4-Bromofluorobenzene | 460-00-4 | 2 | % | | 110 | 112 | 110 | ---- | ---- |

## Surrogate Control Limits

Sub-Matrix: **WATER**

| Compound | CAS Number | Recovery Limits (%) Low | High |
|---|---|---|---|
| **EP066S: PCB Surrogate** | | | |
| **Decachlorobiphenyl** | 2051-24-3 | 41 | 125 |
| **EP074S: VOC Surrogates** | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 72 | 132 |
| **Toluene-D8** | 2037-26-5 | 77 | 132 |
| **4-Bromofluorobenzene** | 460-00-4 | 67 | 131 |
| **EP075(SIM)S: Phenolic Compound Surrogates** | | | |
| **Phenol-d6** | 13127-88-3 | 10 | 51 |
| **2-Chlorophenol-D4** | 93951-73-6 | 30 | 114 |
| **2.4.6-Tribromophenol** | 118-79-6 | 26 | 133 |
| **EP075(SIM)T: PAH Surrogates** | | | |
| **2-Fluorobiphenyl** | 321-60-8 | 35 | 127 |
| **Anthracene-d10** | 1719-06-8 | 44 | 122 |
| **4-Terphenyl-d14** | 1718-51-0 | 44 | 124 |
| **EP075S: Acid Extractable Surrogates (Waste Classification)** | | | |
| **Phenol-d6** | 13127-88-3 | 13 | 57 |
| **2-Chlorophenol-D4** | 93951-73-6 | 33 | 118 |
| **2.4.6-Tribromophenol** | 118-79-6 | 28 | 135 |
| **EP075T: Base/Neutral Extractable Surrogates (Waste Classification)** | | | |
| **Nitrobenzene-D5** | 4165-60-0 | 41 | 136 |
| **1.2-Dichlorobenzene-D4** | 2199-69-1 | 42 | 134 |
| **2-Fluorobiphenyl** | 321-60-8 | 45 | 137 |
| **Anthracene-d10** | 1719-06-8 | 53 | 141 |
| **4-Terphenyl-d14** | 1718-51-0 | 43 | 136 |
| **EP080S: TPH(V)/BTEX Surrogates** | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 73 | 129 |
| **Toluene-D8** | 2037-26-5 | 70 | 125 |
| **4-Bromofluorobenzene** | 460-00-4 | 71 | 129 |

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **EM2109616** | Page | : 1 of 13 |
| Client | : **GHD PTY LTD** | Laboratory | : Environmental Division Melbourne |
| Contact | : MR ALAN WILSON | Contact | : Shirley LeCornu |
| Address | : LEVEL 8, 180 LONSDALE ST<br>MELBOURNE VIC, AUSTRALIA 3001 | Address | : 4 Westall Rd Springvale VIC Australia 3171 |
| Telephone | : 03 8687 8494 | Telephone | : +6138549 9630 |
| Project | : 12529997 | Date Samples Received | : 24-May-2021 16:20 |
| Order number | : | Date Analysis Commenced | : 24-May-2021 |
| C-O-C number | : ---- | Issue Date | : 31-May-2021 16:49 |
| Sampler | : MM | | |
| Site | : | | |
| Quote number | : EN/005 | | |
| No. of samples received | : 5 | | |
| No. of samples analysed | : 5 | | |

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Arenie Vijayaratnam | Non-Metals Team Leader | Melbourne Inorganics, Springvale, VIC |
| Dilani Fernando | Senior Inorganic Chemist | Melbourne Inorganics, Springvale, VIC |
| Nancy Wang | 2IC Organic Chemist | Melbourne Organics, Springvale, VIC |
| Nikki Stepniewski | Senior Inorganic Instrument Chemist | Melbourne Inorganics, Springvale, VIC |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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

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

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

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

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

- EP075: Where reported, 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.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- EP075: Where reported, 'Sum of PAH' is the sum of the USEPA 16 priority PAHs
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | WORM-BH22 | WORM-BH23A | QC1 | RB1 | TB1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 |
| Compound | CAS Number | LOR | Unit | EM2109616-001 | EM2109616-002 | EM2109616-003 | EM2109616-004 | EM2109616-005 |
| | | | | Result | Result | Result | Result | Result |
| **EA005P: pH by PC Titrator** | | | | | | | | |
| pH Value | ---- | 0.01 | pH Unit | **6.73** | **6.98** | **7.12** | ---- | ---- |
| **EA010P: Conductivity by PC Titrator** | | | | | | | | |
| Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | **7410** | **7040** | **7100** | ---- | ---- |
| **EA016: Calculated TDS (from Electrical Conductivity)** | | | | | | | | |
| Total Dissolved Solids (Calc.) | ---- | 1 | mg/L | **4820** | **4580** | **4620** | ---- | ---- |
| **ED037P: Alkalinity by PC Titrator** | | | | | | | | |
| Hydroxide Alkalinity as CaCO3 | DMO-210-001 | 1 | mg/L | <1 | <1 | <1 | ---- | ---- |
| Carbonate Alkalinity as CaCO3 | 3812-32-6 | 1 | mg/L | <1 | <1 | <1 | ---- | ---- |
| Bicarbonate Alkalinity as CaCO3 | 71-52-3 | 1 | mg/L | **427** | **552** | **558** | ---- | ---- |
| Total Alkalinity as CaCO3 | ---- | 1 | mg/L | **427** | **552** | **558** | ---- | ---- |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | |
| Sulfate as SO4 - Turbidimetric | 14808-79-8 | 1 | mg/L | **527** | **385** | **381** | ---- | ---- |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | | |
| Chloride | 16887-00-6 | 1 | mg/L | **1810** | **1730** | **1750** | ---- | ---- |
| **ED093F: Dissolved Major Cations** | | | | | | | | |
| Calcium | 7440-70-2 | 1 | mg/L | **133** | **132** | **131** | ---- | ---- |
| Magnesium | 7439-95-4 | 1 | mg/L | **266** | **241** | **240** | ---- | ---- |
| Sodium | 7440-23-5 | 1 | mg/L | **976** | **931** | **930** | ---- | ---- |
| Potassium | 7440-09-7 | 1 | mg/L | **23** | **44** | **44** | ---- | ---- |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | |
| Arsenic | 7440-38-2 | 0.001 | mg/L | **0.003** | <0.001 | <0.001 | ---- | ---- |
| Cadmium | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | ---- | ---- |
| Chromium | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | ---- | ---- |
| Copper | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | ---- | ---- |
| Nickel | 7440-02-0 | 0.001 | mg/L | **0.031** | **0.004** | **0.004** | ---- | ---- |
| Lead | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | ---- | ---- |
| Zinc | 7440-66-6 | 0.005 | mg/L | **0.007** | <0.005 | <0.005 | ---- | ---- |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | |
| Mercury | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | ---- | ---- |
| **EK055G: Ammonia as N by Discrete Analyser** | | | | | | | | |
| Ammonia as N | 7664-41-7 | 0.01 | mg/L | **0.29** | **0.63** | **0.62** | ---- | ---- |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | | | |
| Nitrite as N | 14797-65-0 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | WORM-BH22 | WORM-BH23A | QC1 | RB1 | TB1 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 |
| Compound | CAS Number | LOR | Unit | EM2109616-001 | EM2109616-002 | EM2109616-003 | EM2109616-004 | EM2109616-005 |
| | | | | Result | Result | Result | Result | Result |
| **EK058G: Nitrate as N by Discrete Analyser** | | | | | | | | |
| Nitrate as N | 14797-55-8 | 0.01 | mg/L | **0.02** | **0.01** | <0.01 | ---- | ---- |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | |
| Nitrite + Nitrate as N | ---- | 0.01 | mg/L | **0.02** | **0.01** | <0.01 | <0.01 | ---- |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | |
| Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | **0.4** | **0.8** | **0.8** | <0.1 | ---- |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | |
| ^ Total Nitrogen as N | ---- | 0.1 | mg/L | **0.4** | **0.8** | **0.8** | <0.1 | ---- |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | |
| Total Phosphorus as P | ---- | 0.01 | mg/L | **0.05** | **0.05** | **0.05** | ---- | ---- |
| **EN055: Ionic Balance** | | | | | | | | |
| ø Total Anions | ---- | 0.01 | meq/L | **70.6** | **67.8** | **68.4** | ---- | ---- |
| ø Total Cations | ---- | 0.01 | meq/L | **71.6** | **68.0** | **67.9** | ---- | ---- |
| ø Ionic Balance | ---- | 0.01 | % | **0.71** | **0.14** | **0.42** | ---- | ---- |
| **EP066: Polychlorinated Biphenyls (PCB)** | | | | | | | | |
| ^ Total Polychlorinated biphenyls | ---- | 1 | µg/L | <1 | <1 | <1 | ---- | ---- |
| **EP068A: Organochlorine Pesticides (OC)** | | | | | | | | |
| alpha-BHC | 319-84-6 | 0.5 | µg/L | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Hexachlorobenzene (HCB) | 118-74-1 | 0.5 | µg/L | <0.5 | <0.5 | <0.5 | ---- | ---- |
| beta-BHC | 319-85-7 | 0.5 | µg/L | <0.5 | <0.5 | <0.5 | ---- | ---- |
| gamma-BHC | 58-89-9 | 0.5 | µg/L | <0.5 | <0.5 | <0.5 | ---- | ---- |
| delta-BHC | 319-86-8 | 0.5 | µg/L | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Heptachlor | 76-44-8 | 0.5 | µg/L | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Aldrin | 309-00-2 | 0.5 | µg/L | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Heptachlor epoxide | 1024-57-3 | 0.5 | µg/L | <0.5 | <0.5 | <0.5 | ---- | ---- |
| trans-Chlordane | 5103-74-2 | 0.5 | µg/L | <0.5 | <0.5 | <0.5 | ---- | ---- |
| alpha-Endosulfan | 959-98-8 | 0.5 | µg/L | <0.5 | <0.5 | <0.5 | ---- | ---- |
| cis-Chlordane | 5103-71-9 | 0.5 | µg/L | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Dieldrin | 60-57-1 | 0.5 | µg/L | <0.5 | <0.5 | <0.5 | ---- | ---- |
| 4.4`-DDE | 72-55-9 | 0.5 | µg/L | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Endrin | 72-20-8 | 0.5 | µg/L | <0.5 | <0.5 | <0.5 | ---- | ---- |
| beta-Endosulfan | 33213-65-9 | 0.5 | µg/L | <0.5 | <0.5 | <0.5 | ---- | ---- |
| 4.4`-DDD | 72-54-8 | 0.5 | µg/L | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Endrin aldehyde | 7421-93-4 | 0.5 | µg/L | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Endosulfan sulfate | 1031-07-8 | 0.5 | µg/L | <0.5 | <0.5 | <0.5 | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORM-BH22 | WORM-BH23A | QC1 | RB1 | TB1 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2109616-001 | EM2109616-002 | EM2109616-003 | EM2109616-004 | EM2109616-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP068A: Organochlorine Pesticides (OC) - Continued** | | | | | | | | | |
| 4.4`-DDT | 50-29-3 | 2.0 | µg/L | | <2.0 | <2.0 | <2.0 | ---- | ---- |
| Endrin ketone | 53494-70-5 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Methoxychlor | 72-43-5 | 2.0 | µg/L | | <2.0 | <2.0 | <2.0 | ---- | ---- |
| ^ Total Chlordane (sum) | ---- | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| ^ Sum of DDD + DDE + DDT | 72-54-8/72-55-9/50-2 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| ^ Sum of Aldrin + Dieldrin | 309-00-2/60-57-1 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| **EP074A: Monocyclic Aromatic Hydrocarbons** | | | | | | | | | |
| Styrene | 100-42-5 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| Isopropylbenzene | 98-82-8 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| n-Propylbenzene | 103-65-1 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.3.5-Trimethylbenzene | 108-67-8 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| sec-Butylbenzene | 135-98-8 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.2.4-Trimethylbenzene | 95-63-6 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| tert-Butylbenzene | 98-06-6 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| p-Isopropyltoluene | 99-87-6 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| n-Butylbenzene | 104-51-8 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **EP074B: Oxygenated Compounds** | | | | | | | | | |
| Vinyl Acetate | 108-05-4 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| 2-Butanone (MEK) | 78-93-3 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| 4-Methyl-2-pentanone (MIBK) | 108-10-1 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| 2-Hexanone (MBK) | 591-78-6 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| **EP074C: Sulfonated Compounds** | | | | | | | | | |
| Carbon disulfide | 75-15-0 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **EP074D: Fumigants** | | | | | | | | | |
| 2.2-Dichloropropane | 594-20-7 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.2-Dichloropropane | 78-87-5 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| cis-1.3-Dichloropropylene | 10061-01-5 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| trans-1.3-Dichloropropylene | 10061-02-6 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.2-Dibromoethane (EDB) | 106-93-4 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **EP074E: Halogenated Aliphatic Compounds** | | | | | | | | | |
| Dichlorodifluoromethane | 75-71-8 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| Chloromethane | 74-87-3 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| Vinyl chloride | 75-01-4 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORM-BH22 | WORM-BH23A | QC1 | RB1 | TB1 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2109616-001 | EM2109616-002 | EM2109616-003 | EM2109616-004 | EM2109616-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP074E: Halogenated Aliphatic Compounds - Continued** | | | | | | | | | |
| Bromomethane | 74-83-9 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| Chloroethane | 75-00-3 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| Trichlorofluoromethane | 75-69-4 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| 1.1-Dichloroethene | 75-35-4 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| Iodomethane | 74-88-4 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| trans-1.2-Dichloroethene | 156-60-5 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.1-Dichloroethane | 75-34-3 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| cis-1.2-Dichloroethene | 156-59-2 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.1.1-Trichloroethane | 71-55-6 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.1-Dichloropropylene | 563-58-6 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| Carbon Tetrachloride | 56-23-5 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.2-Dichloroethane | 107-06-2 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| Trichloroethene | 79-01-6 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| Dibromomethane | 74-95-3 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.1.2-Trichloroethane | 79-00-5 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.3-Dichloropropane | 142-28-9 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| Tetrachloroethene | 127-18-4 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.1.1.2-Tetrachloroethane | 630-20-6 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| trans-1.4-Dichloro-2-butene | 110-57-6 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| cis-1.4-Dichloro-2-butene | 1476-11-5 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.1.2.2-Tetrachloroethane | 79-34-5 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.2.3-Trichloropropane | 96-18-4 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| Pentachloroethane | 76-01-7 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.2-Dibromo-3-chloropropane | 96-12-8 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **EP074F: Halogenated Aromatic Compounds** | | | | | | | | | |
| Chlorobenzene | 108-90-7 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| Bromobenzene | 108-86-1 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 2-Chlorotoluene | 95-49-8 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 4-Chlorotoluene | 106-43-4 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.2.3-Trichlorobenzene | 87-61-6 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **EP074G: Trihalomethanes** | | | | | | | | | |
| Chloroform | 67-66-3 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| Bromodichloromethane | 75-27-4 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| Dibromochloromethane | 124-48-1 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORM-BH22 | WORM-BH23A | QC1 | RB1 | TB1 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2109616-001 | EM2109616-002 | EM2109616-003 | EM2109616-004 | EM2109616-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP074G: Trihalomethanes - Continued** | | | | | | | | | |
| Bromoform | 75-25-2 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **EP075A: Phenolic Compounds** | | | | | | | | | |
| Phenol | 108-95-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2-Chlorophenol | 95-57-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2-Methylphenol | 95-48-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 3- & 4-Methylphenol | 1319-77-3 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| 2-Nitrophenol | 88-75-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2.4-Dimethylphenol | 105-67-9 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2.4-Dichlorophenol | 120-83-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2.6-Dichlorophenol | 87-65-0 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 4-Chloro-3-methylphenol | 59-50-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2.4.6-Trichlorophenol | 88-06-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2.4.5-Trichlorophenol | 95-95-4 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Pentachlorophenol | 87-86-5 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| **EP075B: Polynuclear Aromatic Hydrocarbons** | | | | | | | | | |
| Naphthalene | 91-20-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2-Methylnaphthalene | 91-57-6 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2-Chloronaphthalene | 91-58-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Acenaphthylene | 208-96-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Acenaphthene | 83-32-9 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Fluorene | 86-73-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Phenanthrene | 85-01-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Anthracene | 120-12-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Fluoranthene | 206-44-0 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Pyrene | 129-00-0 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| N-2-Fluorenyl Acetamide | 53-96-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Benz(a)anthracene | 56-55-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Chrysene | 218-01-9 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Benzo(b+j) & Benzo(k)fluoranthene | 205-99-2 207-08-9 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| 7.12-Dimethylbenz(a)anthracene | 57-97-6 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Benzo(a)pyrene | 50-32-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 3-Methylcholanthrene | 56-49-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Indeno(1.2.3.cd)pyrene | 193-39-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Dibenz(a.h)anthracene | 53-70-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORM-BH22 | WORM-BH23A | QC1 | RB1 | TB1 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2109616-001 | EM2109616-002 | EM2109616-003 | EM2109616-004 | EM2109616-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP075B: Polynuclear Aromatic Hydrocarbons - Continued** | | | | | | | | | |
| Benzo(g.h.i)perylene | 191-24-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| ^ Sum of PAHs | ---- | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| ^ Benzo(a)pyrene TEQ (zero) | ---- | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **EP075C: Phthalate Esters** | | | | | | | | | |
| Dimethyl phthalate | 131-11-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Diethyl phthalate | 84-66-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Di-n-butyl phthalate | 84-74-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Butyl benzyl phthalate | 85-68-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| bis(2-ethylhexyl) phthalate | 117-81-7 | 10 | µg/L | | <10 | <10 | <10 | ---- | ---- |
| Di-n-octylphthalate | 117-84-0 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **EP075D: Nitrosamines** | | | | | | | | | |
| N-Nitrosomethylethylamine | 10595-95-6 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| N-Nitrosodiethylamine | 55-18-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| N-Nitrosopyrrolidine | 930-55-2 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| N-Nitrosomorpholine | 59-89-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| N-Nitrosodi-n-propylamine | 621-64-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| N-Nitrosopiperidine | 100-75-4 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| N-Nitrosodibutylamine | 924-16-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| N-Nitrosodiphenyl & Diphenylamine | 86-30-6 122-39-4 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| Methapyrilene | 91-80-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **EP075E: Nitroaromatics and Ketones** | | | | | | | | | |
| 2-Picoline | 109-06-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Acetophenone | 98-86-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Nitrobenzene | 98-95-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Isophorone | 78-59-1 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2.6-Dinitrotoluene | 606-20-2 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| 2.4-Dinitrotoluene | 121-14-2 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| 1-Naphthylamine | 134-32-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 4-Nitroquinoline-N-oxide | 56-57-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 5-Nitro-o-toluidine | 99-55-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Azobenzene | 103-33-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 1.3.5-Trinitrobenzene | 99-35-4 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Phenacetin | 62-44-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORM-BH22 | WORM-BH23A | QC1 | RB1 | TB1 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2109616-001 | EM2109616-002 | EM2109616-003 | EM2109616-004 | EM2109616-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP075E: Nitroaromatics and Ketones - Continued** | | | | | | | | | |
| 4-Aminobiphenyl | 92-67-1 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Pentachloronitrobenzene | 82-68-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Pronamide | 23950-58-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Dimethylaminoazobenzene | 60-11-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Chlorobenzilate | 510-15-6 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **EP075F: Haloethers** | | | | | | | | | |
| Bis(2-chloroethyl) ether | 111-44-4 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Bis(2-chloroethoxy) methane | 111-91-1 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 4-Chlorophenyl phenyl ether | 7005-72-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 4-Bromophenyl phenyl ether | 101-55-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **EP075G: Chlorinated Hydrocarbons** | | | | | | | | | |
| 1.3-Dichlorobenzene | 541-73-1 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 1.4-Dichlorobenzene | 106-46-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 1.2-Dichlorobenzene | 95-50-1 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Hexachloroethane | 67-72-1 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 1.2.4-Trichlorobenzene | 120-82-1 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Hexachloropropylene | 1888-71-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Hexachlorobutadiene | 87-68-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Hexachlorocyclopentadiene | 77-47-4 | 10 | µg/L | | <10 | <10 | <10 | ---- | ---- |
| Pentachlorobenzene | 608-93-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Hexachlorobenzene (HCB) | 118-74-1 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| **EP075H: Anilines and Benzidines** | | | | | | | | | |
| Aniline | 62-53-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 4-Chloroaniline | 106-47-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2-Nitroaniline | 88-74-4 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| 3-Nitroaniline | 99-09-2 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| Dibenzofuran | 132-64-9 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 4-Nitroaniline | 100-01-6 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Carbazole | 86-74-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 3.3`-Dichlorobenzidine | 91-94-1 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **EP075I: Organochlorine Pesticides** | | | | | | | | | |
| alpha-BHC | 319-84-6 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| beta-BHC | 319-85-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| gamma-BHC | 58-89-9 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORM-BH22 | WORM-BH23A | QC1 | RB1 | TB1 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2109616-001 | EM2109616-002 | EM2109616-003 | EM2109616-004 | EM2109616-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP075I: Organochlorine Pesticides - Continued** | | | | | | | | | |
| delta-BHC | 319-86-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Heptachlor | 76-44-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Aldrin | 309-00-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Heptachlor epoxide | 1024-57-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| alpha-Endosulfan | 959-98-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 4.4`-DDE | 72-55-9 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Dieldrin | 60-57-1 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Endrin | 72-20-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| beta-Endosulfan | 33213-65-9 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 4.4`-DDD | 72-54-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Endosulfan sulfate | 1031-07-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 4.4`-DDT | 50-29-3 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| ^ Sum of Aldrin + Dieldrin | 309-00-2/60-57-1 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| ^ Sum of DDD + DDE + DDT | 72-54-8/72-55-9/50-2 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| **EP075J: Organophosphorus Pesticides** | | | | | | | | | |
| Dichlorvos | 62-73-7 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Dimethoate | 60-51-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Diazinon | 333-41-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Chlorpyrifos-methyl | 5598-13-0 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Malathion | 121-75-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Fenthion | 55-38-9 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Chlorpyrifos | 2921-88-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Pirimphos-ethyl | 23505-41-1 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Chlorfenvinphos | 470-90-6 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Prothiofos | 34643-46-4 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Ethion | 563-12-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | | |
| C6 - C9 Fraction | ---- | 20 | µg/L | | <20 | <20 | <20 | ---- | <20 |
| C10 - C14 Fraction | ---- | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| C15 - C28 Fraction | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| C29 - C36 Fraction | ---- | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| ^ C10 - C36 Fraction (sum) | ---- | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORM-BH22 | WORM-BH23A | QC1 | RB1 | TB1 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2109616-001 | EM2109616-002 | EM2109616-003 | EM2109616-004 | EM2109616-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued** | | | | | | | | | |
| C6 - C10 Fraction | C6_C10 | 20 | µg/L | | <20 | <20 | <20 | ---- | <20 |
| ^ C6 - C10 Fraction minus BTEX (F1) | C6_C10-BTEX | 20 | µg/L | | <20 | <20 | <20 | ---- | <20 |
| >C10 - C16 Fraction | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| >C16 - C34 Fraction | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| >C34 - C40 Fraction | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| ^ >C10 - C40 Fraction (sum) | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| ^ >C10 - C16 Fraction minus Naphthalene (F2) | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| **EP080: BTEXN** | | | | | | | | | |
| Benzene | 71-43-2 | 1 | µg/L | | <1 | <1 | <1 | ---- | <1 |
| Toluene | 108-88-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | <2 |
| Ethylbenzene | 100-41-4 | 2 | µg/L | | <2 | <2 | <2 | ---- | <2 |
| meta- & para-Xylene | 108-38-3 106-42-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | <2 |
| ortho-Xylene | 95-47-6 | 2 | µg/L | | <2 | <2 | <2 | ---- | <2 |
| ^ Total Xylenes | ---- | 2 | µg/L | | <2 | <2 | <2 | ---- | <2 |
| ^ Sum of BTEX | ---- | 1 | µg/L | | <1 | <1 | <1 | ---- | <1 |
| Naphthalene | 91-20-3 | 5 | µg/L | | <5 | <5 | <5 | ---- | <5 |
| **EP066S: PCB Surrogate** | | | | | | | | | |
| Decachlorobiphenyl | 2051-24-3 | 1 | % | | **45.8** | **55.2** | **55.0** | ---- | ---- |
| **EP068S: Organochlorine Pesticide Surrogate** | | | | | | | | | |
| Dibromo-DDE | 21655-73-2 | 0.5 | % | | **59.8** | **71.1** | **71.2** | ---- | ---- |
| **EP068T: Organophosphorus Pesticide Surrogate** | | | | | | | | | |
| DEF | 78-48-8 | 0.5 | % | | **63.9** | **73.4** | **64.8** | ---- | ---- |
| **EP074S: VOC Surrogates** | | | | | | | | | |
| 1.2-Dichloroethane-D4 | 17060-07-0 | 5 | % | | **110** | **106** | **105** | ---- | ---- |
| Toluene-D8 | 2037-26-5 | 5 | % | | **96.4** | **90.5** | **91.1** | ---- | ---- |
| 4-Bromofluorobenzene | 460-00-4 | 5 | % | | **103** | **97.0** | **99.1** | ---- | ---- |
| **EP075S: Acid Extractable Surrogates** | | | | | | | | | |
| 2-Fluorophenol | 367-12-4 | 2 | % | | **35.9** | **35.4** | **33.2** | ---- | ---- |
| Phenol-d6 | 13127-88-3 | 2 | % | | **21.9** | **22.3** | **22.3** | ---- | ---- |
| 2-Chlorophenol-D4 | 93951-73-6 | 2 | % | | **53.8** | **58.8** | **61.5** | ---- | ---- |
| 2.4.6-Tribromophenol | 118-79-6 | 2 | % | | **68.4** | **78.4** | **76.6** | ---- | ---- |
| **EP075T: Base/Neutral Extractable Surrogates** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORM-BH22 | WORM-BH23A | QC1 | RB1 | TB1 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 | 24-May-2021 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2109616-001 | EM2109616-002 | EM2109616-003 | EM2109616-004 | EM2109616-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP075T: Base/Neutral Extractable Surrogates - Continued** | | | | | | | | | |
| Nitrobenzene-D5 | 4165-60-0 | 2 | % | | 59.5 | 70.1 | 73.1 | ---- | ---- |
| 1.2-Dichlorobenzene-D4 | 2199-69-1 | 2 | % | | 51.0 | 58.7 | 56.0 | ---- | ---- |
| 2-Fluorobiphenyl | 321-60-8 | 2 | % | | 59.8 | 69.3 | 61.7 | ---- | ---- |
| Anthracene-d10 | 1719-06-8 | 2 | % | | 62.3 | 73.6 | 72.1 | ---- | ---- |
| 4-Terphenyl-d14 | 1718-51-0 | 2 | % | | 79.5 | 93.1 | 91.0 | ---- | ---- |
| **EP080S: TPH(V)/BTEX Surrogates** | | | | | | | | | |
| 1.2-Dichloroethane-D4 | 17060-07-0 | 2 | % | | 108 | 105 | 104 | ---- | 101 |
| Toluene-D8 | 2037-26-5 | 2 | % | | 99.2 | 93.1 | 93.7 | ---- | 94.6 |
| 4-Bromofluorobenzene | 460-00-4 | 2 | % | | 103 | 101 | 99.6 | ---- | 99.4 |

## Surrogate Control Limits

| Sub-Matrix: **WATER** | | Recovery Limits (%) | |
|---|---|---|---|
| *Compound* | *CAS Number* | *Low* | *High* |
| **EP066S: PCB Surrogate** | | | |
| **Decachlorobiphenyl** | 2051-24-3 | 41 | 125 |
| **EP068S: Organochlorine Pesticide Surrogate** | | | |
| **Dibromo-DDE** | 21655-73-2 | 49 | 117 |
| **EP068T: Organophosphorus Pesticide Surrogate** | | | |
| **DEF** | 78-48-8 | 51 | 127 |
| **EP074S: VOC Surrogates** | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 72 | 132 |
| **Toluene-D8** | 2037-26-5 | 77 | 132 |
| **4-Bromofluorobenzene** | 460-00-4 | 67 | 131 |
| **EP075S: Acid Extractable Surrogates** | | | |
| **2-Fluorophenol** | 367-12-4 | 6 | 83 |
| **Phenol-d6** | 13127-88-3 | 10 | 65 |
| **2-Chlorophenol-D4** | 93951-73-6 | 22 | 112 |
| **2.4.6-Tribromophenol** | 118-79-6 | 22 | 125 |
| **EP075T: Base/Neutral Extractable Surrogates** | | | |
| **Nitrobenzene-D5** | 4165-60-0 | 37 | 115 |
| **1.2-Dichlorobenzene-D4** | 2199-69-1 | 32 | 99 |
| **2-Fluorobiphenyl** | 321-60-8 | 39 | 116 |
| **Anthracene-d10** | 1719-06-8 | 49 | 123 |
| **4-Terphenyl-d14** | 1718-51-0 | 47 | 129 |
| **EP080S: TPH(V)/BTEX Surrogates** | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 73 | 129 |
| **Toluene-D8** | 2037-26-5 | 70 | 125 |
| **4-Bromofluorobenzene** | 460-00-4 | 71 | 129 |

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **EM2115167** | Page | : 1 of 9 |
| Client | : **GHD PTY LTD** | Laboratory | : Environmental Division Melbourne |
| Contact | : ALAN WILSON | Contact | : Shirley LeCornu |
| Address | : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001 | Address | : 4 Westall Rd Springvale VIC Australia 3171 |
| Telephone | : ---- | Telephone | : +6138549 9630 |
| Project | : 12529997 | Date Samples Received | : 04-Aug-2021 11:50 |
| Order number | : ---- | Date Analysis Commenced | : 04-Aug-2021 |
| C-O-C number | : ---- | Issue Date | : 10-Aug-2021 15:19 |
| Sampler | : KC | | |
| Site | : ---- | | |
| Quote number | : EN/005/17 (Victoria Primary Quote) | | |
| No. of samples received | : 3 | | |
| No. of samples analysed | : 3 | | |

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Nikki Stepniewski | Senior Inorganic Instrument Chemist | Melbourne Inorganics, Springvale, VIC |
| Xing Lin | Senior Organic Chemist | Melbourne Organics, Springvale, VIC |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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

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

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

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

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

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

- EP075 (SIM): Where reported, 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.
- 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.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- Samples were filtered through a 0.45um filter prior to the dissolved metals analysis.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORMBH15 | TB_3821 | RB_3821 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 03-Aug-2021 00:00 | 03-Aug-2021 00:00 | 03-Aug-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2115167-001 | EM2115167-002 | EM2115167-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **EA005P: pH by PC Titrator** | | | | | | | | | |
| pH Value | ---- | 0.01 | pH Unit | | **7.15** | ---- | ---- | ---- | ---- |
| **EA010P: Conductivity by PC Titrator** | | | | | | | | | |
| Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | | **8980** | ---- | ---- | ---- | ---- |
| **EA015: Total Dissolved Solids dried at 180 ± 5 °C** | | | | | | | | | |
| Total Dissolved Solids @180°C | ---- | 10 | mg/L | | **4820** | ---- | ---- | ---- | ---- |
| **ED037P: Alkalinity by PC Titrator** | | | | | | | | | |
| Hydroxide Alkalinity as CaCO3 | DMO-210-001 | 1 | mg/L | | <1 | ---- | ---- | ---- | ---- |
| Carbonate Alkalinity as CaCO3 | 3812-32-6 | 1 | mg/L | | <1 | ---- | ---- | ---- | ---- |
| Bicarbonate Alkalinity as CaCO3 | 71-52-3 | 1 | mg/L | | **1700** | ---- | ---- | ---- | ---- |
| Total Alkalinity as CaCO3 | ---- | 1 | mg/L | | **1700** | ---- | ---- | ---- | ---- |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | | |
| Sulfate as SO4 - Turbidimetric | 14808-79-8 | 1 | mg/L | | **6** | ---- | ---- | ---- | ---- |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | | | |
| Chloride | 16887-00-6 | 1 | mg/L | | **2070** | ---- | ---- | ---- | ---- |
| **ED093F: Dissolved Major Cations** | | | | | | | | | |
| Calcium | 7440-70-2 | 1 | mg/L | | **181** | ---- | ---- | ---- | ---- |
| Magnesium | 7439-95-4 | 1 | mg/L | | **316** | ---- | ---- | ---- | ---- |
| Sodium | 7440-23-5 | 1 | mg/L | | **1060** | ---- | ---- | ---- | ---- |
| Potassium | 7440-09-7 | 1 | mg/L | | **52** | ---- | ---- | ---- | ---- |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | | |
| Silver | 7440-22-4 | 0.001 | mg/L | | <0.001 | ---- | ---- | ---- | ---- |
| Arsenic | 7440-38-2 | 0.001 | mg/L | | **0.006** | ---- | ---- | ---- | ---- |
| Cadmium | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | ---- | ---- | ---- | ---- |
| Copper | 7440-50-8 | 0.001 | mg/L | | <0.001 | ---- | ---- | ---- | ---- |
| Molybdenum | 7439-98-7 | 0.001 | mg/L | | **0.006** | ---- | ---- | ---- | ---- |
| Nickel | 7440-02-0 | 0.001 | mg/L | | **0.040** | ---- | ---- | ---- | ---- |
| Lead | 7439-92-1 | 0.001 | mg/L | | <0.001 | ---- | ---- | ---- | ---- |
| Selenium | 7782-49-2 | 0.01 | mg/L | | <0.01 | ---- | ---- | ---- | ---- |
| Tin | 7440-31-5 | 0.001 | mg/L | | <0.001 | ---- | ---- | ---- | ---- |
| Zinc | 7440-66-6 | 0.005 | mg/L | | <0.005 | ---- | ---- | ---- | ---- |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | | |
| Mercury | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | ---- | ---- | ---- | ---- |
| **EG050F: Dissolved Hexavalent Chromium** | | | | | | | | | |
| Hexavalent Chromium | 18540-29-9 | 0.01 | mg/L | | <0.01 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORMBH15 | TB_3821 | RB_3821 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 03-Aug-2021 00:00 | 03-Aug-2021 00:00 | 03-Aug-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2115167-001 | EM2115167-002 | EM2115167-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **EK026SF: Total CN by Segmented Flow Analyser** | | | | | | | | | |
| Total Cyanide | 57-12-5 | 0.004 | mg/L | | <0.004 | ---- | ---- | ---- | ---- |
| **EK040P: Fluoride by PC Titrator** | | | | | | | | | |
| Fluoride | 16984-48-8 | 0.1 | mg/L | | **0.3** | ---- | ---- | ---- | ---- |
| **EK055G: Ammonia as N by Discrete Analyser** | | | | | | | | | |
| Ammonia as N | 7664-41-7 | 0.01 | mg/L | | **2.40** | ---- | <0.01 | ---- | ---- |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | | | | |
| Nitrite as N | 14797-65-0 | 0.01 | mg/L | | **0.06** | ---- | ---- | ---- | ---- |
| **EK058G: Nitrate as N by Discrete Analyser** | | | | | | | | | |
| Nitrate as N | 14797-55-8 | 0.01 | mg/L | | **0.01** | ---- | ---- | ---- | ---- |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | | |
| Nitrite + Nitrate as N | ---- | 0.01 | mg/L | | **0.07** | ---- | <0.01 | ---- | ---- |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | | |
| Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | | **2.7** | ---- | <0.1 | ---- | ---- |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | | |
| ^ Total Nitrogen as N | ---- | 0.1 | mg/L | | **2.8** | ---- | <0.1 | ---- | ---- |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | | |
| Total Phosphorus as P | ---- | 0.01 | mg/L | | **0.21** | ---- | ---- | ---- | ---- |
| **EN055: Ionic Balance** | | | | | | | | | |
| ø Total Anions | ---- | 0.01 | meq/L | | **92.5** | ---- | ---- | ---- | ---- |
| ø Total Cations | ---- | 0.01 | meq/L | | **82.5** | ---- | ---- | ---- | ---- |
| ø Ionic Balance | ---- | 0.01 | % | | **5.72** | ---- | ---- | ---- | ---- |
| **EP066: Polychlorinated Biphenyls (PCB)** | | | | | | | | | |
| ^ Total Polychlorinated biphenyls | ---- | 1 | µg/L | | <1 | ---- | ---- | ---- | ---- |
| **EP074A: Monocyclic Aromatic Hydrocarbons** | | | | | | | | | |
| Styrene | 100-42-5 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| **EP074E: Halogenated Aliphatic Compounds** | | | | | | | | | |
| Vinyl chloride | 75-01-4 | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| 1.1-Dichloroethene | 75-35-4 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| Methylene chloride | 75-09-2 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| trans-1.2-Dichloroethene | 156-60-5 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| cis-1.2-Dichloroethene | 156-59-2 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| 1.1.1-Trichloroethane | 71-55-6 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |
| Carbon Tetrachloride | 56-23-5 | 5 | µg/L | | <5 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | WORMBH15 | TB_3821 | RB_3821 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 03-Aug-2021 00:00 | 03-Aug-2021 00:00 | 03-Aug-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | EM2115167-001 | EM2115167-002 | EM2115167-003 | -------- | -------- |
| | | | | Result | Result | Result | ---- | ---- |
| **EP074E: Halogenated Aliphatic Compounds - Continued** | | | | | | | | |
| 1.2-Dichloroethane | 107-06-2 | 5 | µg/L | <5 | ---- | ---- | ---- | ---- |
| Trichloroethene | 79-01-6 | 5 | µg/L | <5 | ---- | ---- | ---- | ---- |
| 1.1.2-Trichloroethane | 79-00-5 | 5 | µg/L | <5 | ---- | ---- | ---- | ---- |
| Tetrachloroethene | 127-18-4 | 5 | µg/L | <5 | ---- | ---- | ---- | ---- |
| 1.1.1.2-Tetrachloroethane | 630-20-6 | 5 | µg/L | <5 | ---- | ---- | ---- | ---- |
| 1.1.2.2-Tetrachloroethane | 79-34-5 | 5 | µg/L | <5 | ---- | ---- | ---- | ---- |
| Hexachlorobutadiene | 87-68-3 | 5 | µg/L | <5 | ---- | ---- | ---- | ---- |
| **EP074F: Halogenated Aromatic Compounds** | | | | | | | | |
| Chlorobenzene | 108-90-7 | 5 | µg/L | <5 | ---- | ---- | ---- | ---- |
| 1.4-Dichlorobenzene | 106-46-7 | 5 | µg/L | <5 | ---- | ---- | ---- | ---- |
| 1.2-Dichlorobenzene | 95-50-1 | 5 | µg/L | <5 | ---- | ---- | ---- | ---- |
| 1.2.4-Trichlorobenzene | 120-82-1 | 5 | µg/L | <5 | ---- | ---- | ---- | ---- |
| **EP074G: Trihalomethanes** | | | | | | | | |
| Chloroform | 67-66-3 | 5 | µg/L | <5 | ---- | ---- | ---- | ---- |
| **EP075(SIM)B: Polynuclear Aromatic Hydrocarbons** | | | | | | | | |
| Naphthalene | 91-20-3 | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- |
| Acenaphthylene | 208-96-8 | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- |
| Acenaphthene | 83-32-9 | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- |
| Fluorene | 86-73-7 | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- |
| Phenanthrene | 85-01-8 | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- |
| Anthracene | 120-12-7 | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- |
| Fluoranthene | 206-44-0 | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- |
| Pyrene | 129-00-0 | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- |
| Benz(a)anthracene | 56-55-3 | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- |
| Chrysene | 218-01-9 | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- |
| Benzo(b+j)fluoranthene | 205-99-2 205-82-3 | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- |
| Benzo(k)fluoranthene | 207-08-9 | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- |
| Benzo(a)pyrene | 50-32-8 | 0.5 | µg/L | <0.5 | ---- | ---- | ---- | ---- |
| Indeno(1.2.3.cd)pyrene | 193-39-5 | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- |
| Dibenz(a.h)anthracene | 53-70-3 | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- |
| Benzo(g.h.i)perylene | 191-24-2 | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- |
| ^ Sum of polycyclic aromatic hydrocarbons | ---- | 0.5 | µg/L | <0.5 | ---- | ---- | ---- | ---- |
| ^ Benzo(a)pyrene TEQ (zero) | ---- | 0.5 | µg/L | <0.5 | ---- | ---- | ---- | ---- |
| **EP075A: Phenolic Compounds (Halogenated)** | | | | | | | | |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORMBH15 | TB_3821 | RB_3821 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 03-Aug-2021 00:00 | 03-Aug-2021 00:00 | 03-Aug-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2115167-001 | EM2115167-002 | EM2115167-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **EP075A: Phenolic Compounds (Halogenated) - Continued** | | | | | | | | | |
| 2-Chlorophenol | 95-57-8 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2.4-Dichlorophenol | 120-83-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2.6-Dichlorophenol | 87-65-0 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 4-Chloro-3-methylphenol | 59-50-7 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| 2.4.5-Trichlorophenol | 95-95-4 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2.4.6-Trichlorophenol | 88-06-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2.3.5.6-Tetrachlorophenol | 935-95-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| 2.3.4.5 & 2.3.4.6-Tetrachlorophenol | 4901-51-3/58-90-2 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| Pentachlorophenol | 87-86-5 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **EP075A: Phenolic Compounds (Non-halogenated)** | | | | | | | | | |
| Phenol | 108-95-2 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| 2-Methylphenol | 95-48-7 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| 3- & 4-Methylphenol | 1319-77-3 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| 2-Nitrophenol | 88-75-5 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| 2.4-Dimethylphenol | 105-67-9 | 4 | µg/L | | <4 | ---- | ---- | ---- | ---- |
| 2.4-Dinitrophenol | 51-28-5 | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| 4-Nitrophenol | 100-02-7 | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| 2-Methyl-4.6-dinitrophenol | 8071-51-0 | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| Dinoseb | 88-85-7 | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| 2-Cyclohexyl-4.6-Dinitrophenol | 131-89-5 | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| **EP075I: Organochlorine Pesticides** | | | | | | | | | |
| alpha-BHC | 319-84-6 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| Heptachlor | 76-44-8 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| Aldrin | 309-00-2 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| cis-Chlordane | 5103-71-9 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| trans-Chlordane | 5103-74-2 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| 4.4`-DDE | 72-55-9 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| Dieldrin | 60-57-1 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| 4.4`-DDD | 72-54-8 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| 4.4`-DDT | 50-29-3 | 0.5 | µg/L | | <0.5 | ---- | ---- | ---- | ---- |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | | |
| C6 - C9 Fraction | ---- | 20 | µg/L | | <20 | <20 | ---- | ---- | ---- |
| C10 - C14 Fraction | ---- | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORMBH15 | TB_3821 | RB_3821 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 03-Aug-2021 00:00 | 03-Aug-2021 00:00 | 03-Aug-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2115167-001 | EM2115167-002 | EM2115167-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **EP080/071: Total Petroleum Hydrocarbons - Continued** | | | | | | | | | |
| C15 - C28 Fraction | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| C29 - C36 Fraction | ---- | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| ^ C10 - C36 Fraction (sum) | ---- | 50 | µg/L | | <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 | ---- | ---- | ---- | ---- |
| >C16 - C34 Fraction | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| >C34 - C40 Fraction | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| ^ >C10 - C40 Fraction (sum) | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| ^ >C10 - C16 Fraction minus Naphthalene (F2) | ---- | 100 | µg/L | | <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 | ---- | ---- | ---- |
| **EP066S: PCB Surrogate** | | | | | | | | | |
| Decachlorobiphenyl | 2051-24-3 | 1 | % | | **87.1** | ---- | ---- | ---- | ---- |
| **EP074S: VOC Surrogates** | | | | | | | | | |
| 1.2-Dichloroethane-D4 | 17060-07-0 | 5 | % | | **107** | ---- | ---- | ---- | ---- |
| Toluene-D8 | 2037-26-5 | 5 | % | | **100** | ---- | ---- | ---- | ---- |
| 4-Bromofluorobenzene | 460-00-4 | 5 | % | | **99.5** | ---- | ---- | ---- | ---- |
| **EP075(SIM)S: Phenolic Compound Surrogates** | | | | | | | | | |
| Phenol-d6 | 13127-88-3 | 1.0 | % | | **30.0** | ---- | ---- | ---- | ---- |
| 2-Chlorophenol-D4 | 93951-73-6 | 1.0 | % | | **88.2** | ---- | ---- | ---- | ---- |
| 2.4.6-Tribromophenol | 118-79-6 | 1.0 | % | | **100** | ---- | ---- | ---- | ---- |
| **EP075(SIM)T: PAH Surrogates** | | | | | | | | | |
| 2-Fluorobiphenyl | 321-60-8 | 1.0 | % | | **93.4** | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORMBH15 | TB_3821 | RB_3821 | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 03-Aug-2021 00:00 | 03-Aug-2021 00:00 | 03-Aug-2021 00:00 | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EM2115167-001 | EM2115167-002 | EM2115167-003 | -------- | -------- |
| | | | | | Result | Result | Result | ---- | ---- |
| **EP075(SIM)T: PAH Surrogates - Continued** | | | | | | | | | |
| **Anthracene-d10** | 1719-06-8 | 1.0 | % | | **108** | ---- | ---- | ---- | ---- |
| **4-Terphenyl-d14** | 1718-51-0 | 1.0 | % | | **103** | ---- | ---- | ---- | ---- |
| **EP075S: Acid Extractable Surrogates (Waste Classification)** | | | | | | | | | |
| **Phenol-d6** | 13127-88-3 | 0.25 | % | | **41.0** | ---- | ---- | ---- | ---- |
| **2-Chlorophenol-D4** | 93951-73-6 | 0.25 | % | | **89.3** | ---- | ---- | ---- | ---- |
| **2.4.6-Tribromophenol** | 118-79-6 | 0.25 | % | | **87.7** | ---- | ---- | ---- | ---- |
| **EP075T: Base/Neutral Extractable Surrogates (Waste Classification)** | | | | | | | | | |
| **Nitrobenzene-D5** | 4165-60-0 | 0.25 | % | | **91.0** | ---- | ---- | ---- | ---- |
| **1.2-Dichlorobenzene-D4** | 2199-69-1 | 0.25 | % | | **80.2** | ---- | ---- | ---- | ---- |
| **2-Fluorobiphenyl** | 321-60-8 | 0.25 | % | | **96.6** | ---- | ---- | ---- | ---- |
| **Anthracene-d10** | 1719-06-8 | 0.25 | % | | **112** | ---- | ---- | ---- | ---- |
| **4-Terphenyl-d14** | 1718-51-0 | 0.25 | % | | **94.8** | ---- | ---- | ---- | ---- |
| **EP080S: TPH(V)/BTEX Surrogates** | | | | | | | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 2 | % | | **106** | **106** | ---- | ---- | ---- |
| **Toluene-D8** | 2037-26-5 | 2 | % | | **101** | **101** | ---- | ---- | ---- |
| **4-Bromofluorobenzene** | 460-00-4 | 2 | % | | **100** | **99.9** | ---- | ---- | ---- |

## Surrogate Control Limits

Sub-Matrix: **WATER**

| Compound | CAS Number | Recovery Limits (%) Low | High |
|---|---|---|---|
| **EP066S: PCB Surrogate** | | | |
| **Decachlorobiphenyl** | 2051-24-3 | 41 | 125 |
| **EP074S: VOC Surrogates** | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 72 | 132 |
| **Toluene-D8** | 2037-26-5 | 77 | 132 |
| **4-Bromofluorobenzene** | 460-00-4 | 67 | 131 |
| **EP075(SIM)S: Phenolic Compound Surrogates** | | | |
| **Phenol-d6** | 13127-88-3 | 10 | 51 |
| **2-Chlorophenol-D4** | 93951-73-6 | 30 | 114 |
| **2.4.6-Tribromophenol** | 118-79-6 | 26 | 133 |
| **EP075(SIM)T: PAH Surrogates** | | | |
| **2-Fluorobiphenyl** | 321-60-8 | 35 | 127 |
| **Anthracene-d10** | 1719-06-8 | 44 | 122 |
| **4-Terphenyl-d14** | 1718-51-0 | 44 | 124 |
| **EP075S: Acid Extractable Surrogates (Waste Classification)** | | | |
| **Phenol-d6** | 13127-88-3 | 13 | 57 |
| **2-Chlorophenol-D4** | 93951-73-6 | 33 | 118 |
| **2.4.6-Tribromophenol** | 118-79-6 | 28 | 135 |
| **EP075T: Base/Neutral Extractable Surrogates (Waste Classification)** | | | |
| **Nitrobenzene-D5** | 4165-60-0 | 41 | 136 |
| **1.2-Dichlorobenzene-D4** | 2199-69-1 | 42 | 134 |
| **2-Fluorobiphenyl** | 321-60-8 | 45 | 137 |
| **Anthracene-d10** | 1719-06-8 | 53 | 141 |
| **4-Terphenyl-d14** | 1718-51-0 | 43 | 136 |
| **EP080S: TPH(V)/BTEX Surrogates** | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 73 | 129 |
| **Toluene-D8** | 2037-26-5 | 70 | 125 |
| **4-Bromofluorobenzene** | 460-00-4 | 71 | 129 |

ALS Environmental

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **EM2115365** | Page | : 1 of 9 |
| Client | : **GHD PTY LTD** | Laboratory | : Environmental Division Melbourne |
| Contact | : ALAN WILSON | Contact | : Shirley LeCornu |
| Address | : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001 | Address | : 4 Westall Rd Springvale VIC Australia 3171 |
| Telephone | : ---- | Telephone | : +6138549 9630 |
| Project | : 12529997 | Date Samples Received | : 05-Aug-2021 10:25 |
| Order number | : ---- | Date Analysis Commenced | : 05-Aug-2021 |
| C-O-C number | : ---- | Issue Date | : 11-Aug-2021 15:02 |
| Sampler | : KC | | |
| Site | : ---- | | |
| Quote number | : EN/005/17 (Victoria Primary Quote) | | |
| No. of samples received | : 5 | | |
| No. of samples analysed | : 5 | | |

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Dilani Fernando | Senior Inorganic Chemist | Melbourne Inorganics, Springvale, VIC |
| Nancy Wang | 2IC Organic Chemist | Melbourne Organics, Springvale, VIC |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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

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

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

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

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

- EP075 (SIM): Where reported, 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.
- 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.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

## Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

| Compound | CAS Number | LOR | Unit | Sample ID | WORMBH12 | WORMBH16 | QC01 | RB_4821 | TB_4821 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 |
| | | | | | EM2115365-001 | EM2115365-002 | EM2115365-003 | EM2115365-004 | EM2115365-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EA005P: pH by PC Titrator** | | | | | | | | | |
| **pH Value** | ---- | 0.01 | pH Unit | | **7.71** | **7.49** | **7.67** | ---- | ---- |
| **EA010P: Conductivity by PC Titrator** | | | | | | | | | |
| **Electrical Conductivity @ 25°C** | ---- | 1 | µS/cm | | **4540** | **1770** | **4550** | ---- | ---- |
| **EA015: Total Dissolved Solids dried at 180 ± 5 °C** | | | | | | | | | |
| **Total Dissolved Solids @180°C** | ---- | 10 | mg/L | | **2550** | **1140** | **2450** | ---- | ---- |
| **ED037P: Alkalinity by PC Titrator** | | | | | | | | | |
| **Hydroxide Alkalinity as CaCO3** | DMO-210-001 | 1 | mg/L | | <1 | <1 | <1 | ---- | ---- |
| **Carbonate Alkalinity as CaCO3** | 3812-32-6 | 1 | mg/L | | <1 | <1 | <1 | ---- | ---- |
| **Bicarbonate Alkalinity as CaCO3** | 71-52-3 | 1 | mg/L | | **415** | **491** | **410** | ---- | ---- |
| **Total Alkalinity as CaCO3** | ---- | 1 | mg/L | | **415** | **491** | **410** | ---- | ---- |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | | |
| **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | 1 | mg/L | | **120** | **124** | **125** | ---- | ---- |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | | | |
| **Chloride** | 16887-00-6 | 1 | mg/L | | **1150** | **328** | **1160** | ---- | ---- |
| **ED093F: Dissolved Major Cations** | | | | | | | | | |
| **Calcium** | 7440-70-2 | 1 | mg/L | | **85** | **84** | **85** | ---- | ---- |
| **Magnesium** | 7439-95-4 | 1 | mg/L | | **251** | **79** | **254** | ---- | ---- |
| **Sodium** | 7440-23-5 | 1 | mg/L | | **358** | **181** | **361** | ---- | ---- |
| **Potassium** | 7440-09-7 | 1 | mg/L | | **14** | **3** | **14** | ---- | ---- |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | | |
| **Silver** | 7440-22-4 | 0.001 | mg/L | | <0.001 | <0.001 | **0.001** | ---- | ---- |
| **Arsenic** | 7440-38-2 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | ---- | ---- |
| **Cadmium** | 7440-43-9 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | ---- | ---- |
| **Copper** | 7440-50-8 | 0.001 | mg/L | | **0.004** | **0.003** | **0.005** | ---- | ---- |
| **Molybdenum** | 7439-98-7 | 0.001 | mg/L | | **0.001** | **0.002** | **0.001** | ---- | ---- |
| **Nickel** | 7440-02-0 | 0.001 | mg/L | | **0.003** | **0.012** | **0.004** | ---- | ---- |
| **Lead** | 7439-92-1 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | ---- | ---- |
| **Selenium** | 7782-49-2 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | ---- | ---- |
| **Tin** | 7440-31-5 | 0.001 | mg/L | | <0.001 | <0.001 | <0.001 | ---- | ---- |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | | **0.017** | **0.028** | **0.019** | ---- | ---- |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | | <0.0001 | <0.0001 | <0.0001 | ---- | ---- |
| **EG050F: Dissolved Hexavalent Chromium** | | | | | | | | | |
| **Hexavalent Chromium** | 18540-29-9 | 0.01 | mg/L | | <0.01 | <0.01 | <0.01 | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | WORMBH12 | WORMBH16 | QC01 | RB_4821 | TB_4821 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 |
| Compound | CAS Number | LOR | Unit | EM2115365-001 | EM2115365-002 | EM2115365-003 | EM2115365-004 | EM2115365-005 |
| | | | | Result | Result | Result | Result | Result |
| **EK026SF: Total CN by Segmented Flow Analyser** | | | | | | | | |
| Total Cyanide | 57-12-5 | 0.004 | mg/L | <0.004 | <0.004 | <0.004 | ---- | ---- |
| **EK040P: Fluoride by PC Titrator** | | | | | | | | |
| Fluoride | 16984-48-8 | 0.1 | mg/L | **0.3** | **0.2** | **0.2** | ---- | ---- |
| **EK055G: Ammonia as N by Discrete Analyser** | | | | | | | | |
| Ammonia as N | 7664-41-7 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | <0.01 | ---- |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | | | |
| Nitrite as N | 14797-65-0 | 0.01 | mg/L | <0.01 | <0.01 | <0.01 | ---- | ---- |
| **EK058G: Nitrate as N by Discrete Analyser** | | | | | | | | |
| Nitrate as N | 14797-55-8 | 0.01 | mg/L | **0.44** | **0.28** | **0.43** | ---- | ---- |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | |
| Nitrite + Nitrate as N | ---- | 0.01 | mg/L | **0.44** | **0.28** | **0.43** | <0.01 | ---- |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | |
| Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | **0.2** | **0.4** | **0.2** | <0.1 | ---- |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | |
| ^ Total Nitrogen as N | ---- | 0.1 | mg/L | **0.6** | **0.7** | **0.6** | <0.1 | ---- |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | |
| Total Phosphorus as P | ---- | 0.01 | mg/L | **0.04** | **0.97** | **0.04** | ---- | ---- |
| **EN055: Ionic Balance** | | | | | | | | |
| ø Total Anions | ---- | 0.01 | meq/L | **43.2** | **21.6** | **43.5** | ---- | ---- |
| ø Total Cations | ---- | 0.01 | meq/L | **40.8** | **18.6** | **41.2** | ---- | ---- |
| ø Ionic Balance | ---- | 0.01 | % | **2.86** | **7.45** | **2.72** | ---- | ---- |
| **EP066: Polychlorinated Biphenyls (PCB)** | | | | | | | | |
| ^ Total Polychlorinated biphenyls | ---- | 1 | µg/L | <1 | <1 | <1 | ---- | ---- |
| **EP074A: Monocyclic Aromatic Hydrocarbons** | | | | | | | | |
| Styrene | 100-42-5 | 5 | µg/L | <5 | <5 | <5 | ---- | ---- |
| **EP074E: Halogenated Aliphatic Compounds** | | | | | | | | |
| Vinyl chloride | 75-01-4 | 50 | µg/L | <50 | <50 | <50 | ---- | ---- |
| 1.1-Dichloroethene | 75-35-4 | 5 | µg/L | <5 | <5 | <5 | ---- | ---- |
| Methylene chloride | 75-09-2 | 5 | µg/L | <5 | <5 | <5 | ---- | ---- |
| trans-1.2-Dichloroethene | 156-60-5 | 5 | µg/L | <5 | <5 | <5 | ---- | ---- |
| cis-1.2-Dichloroethene | 156-59-2 | 5 | µg/L | <5 | <5 | <5 | ---- | ---- |
| 1.1.1-Trichloroethane | 71-55-6 | 5 | µg/L | <5 | <5 | <5 | ---- | ---- |
| Carbon Tetrachloride | 56-23-5 | 5 | µg/L | <5 | <5 | <5 | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORMBH12 | WORMBH16 | QC01 | RB_4821 | TB_4821 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2115365-001 | EM2115365-002 | EM2115365-003 | EM2115365-004 | EM2115365-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP074E: Halogenated Aliphatic Compounds - Continued** | | | | | | | | | |
| 1.2-Dichloroethane | 107-06-2 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| Trichloroethene | 79-01-6 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.1.2-Trichloroethane | 79-00-5 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| Tetrachloroethene | 127-18-4 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.1.1.2-Tetrachloroethane | 630-20-6 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.1.2.2-Tetrachloroethane | 79-34-5 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| Hexachlorobutadiene | 87-68-3 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **EP074F: Halogenated Aromatic Compounds** | | | | | | | | | |
| Chlorobenzene | 108-90-7 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.4-Dichlorobenzene | 106-46-7 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.2-Dichlorobenzene | 95-50-1 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| 1.2.4-Trichlorobenzene | 120-82-1 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **EP074G: Trihalomethanes** | | | | | | | | | |
| Chloroform | 67-66-3 | 5 | µg/L | | <5 | <5 | <5 | ---- | ---- |
| **EP075(SIM)B: Polynuclear Aromatic Hydrocarbons** | | | | | | | | | |
| Naphthalene | 91-20-3 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | ---- | ---- |
| Acenaphthylene | 208-96-8 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | ---- | ---- |
| Acenaphthene | 83-32-9 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | ---- | ---- |
| Fluorene | 86-73-7 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | ---- | ---- |
| Phenanthrene | 85-01-8 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | ---- | ---- |
| Anthracene | 120-12-7 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | ---- | ---- |
| Fluoranthene | 206-44-0 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | ---- | ---- |
| Pyrene | 129-00-0 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | ---- | ---- |
| Benz(a)anthracene | 56-55-3 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | ---- | ---- |
| Chrysene | 218-01-9 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | ---- | ---- |
| Benzo(b+j)fluoranthene | 205-99-2 205-82-3 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | ---- | ---- |
| Benzo(k)fluoranthene | 207-08-9 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | ---- | ---- |
| Benzo(a)pyrene | 50-32-8 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Indeno(1.2.3.cd)pyrene | 193-39-5 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | ---- | ---- |
| Dibenz(a.h)anthracene | 53-70-3 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | ---- | ---- |
| Benzo(g.h.i)perylene | 191-24-2 | 1.0 | µg/L | | <1.0 | <1.0 | <1.0 | ---- | ---- |
| ^ Sum of polycyclic aromatic hydrocarbons | ---- | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| ^ Benzo(a)pyrene TEQ (zero) | ---- | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| **EP075A: Phenolic Compounds (Halogenated)** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORMBH12 | WORMBH16 | QC01 | RB_4821 | TB_4821 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2115365-001 | EM2115365-002 | EM2115365-003 | EM2115365-004 | EM2115365-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP075A: Phenolic Compounds (Halogenated) - Continued** | | | | | | | | | |
| 2-Chlorophenol | 95-57-8 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2.4-Dichlorophenol | 120-83-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2.6-Dichlorophenol | 87-65-0 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 4-Chloro-3-methylphenol | 59-50-7 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| 2.4.5-Trichlorophenol | 95-95-4 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2.4.6-Trichlorophenol | 88-06-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2.3.5.6-Tetrachlorophenol | 935-95-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| 2.3.4.5 & 2.3.4.6-Tetrachlorophenol | 4901-51-3/58-90-2 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| Pentachlorophenol | 87-86-5 | 2 | µg/L | | <2 | <2 | <2 | ---- | ---- |
| **EP075A: Phenolic Compounds (Non-halogenated)** | | | | | | | | | |
| Phenol | 108-95-2 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| 2-Methylphenol | 95-48-7 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| 3- & 4-Methylphenol | 1319-77-3 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| 2-Nitrophenol | 88-75-5 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| 2.4-Dimethylphenol | 105-67-9 | 4 | µg/L | | <4 | <4 | <4 | ---- | ---- |
| 2.4-Dinitrophenol | 51-28-5 | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| 4-Nitrophenol | 100-02-7 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| 2-Methyl-4.6-dinitrophenol | 8071-51-0 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| Dinoseb | 88-85-7 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| 2-Cyclohexyl-4.6-Dinitrophenol | 131-89-5 | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| **EP075I: Organochlorine Pesticides** | | | | | | | | | |
| alpha-BHC | 319-84-6 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Heptachlor | 76-44-8 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Aldrin | 309-00-2 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| cis-Chlordane | 5103-71-9 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| trans-Chlordane | 5103-74-2 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| 4.4`-DDE | 72-55-9 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| Dieldrin | 60-57-1 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| 4.4`-DDD | 72-54-8 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| 4.4`-DDT | 50-29-3 | 0.5 | µg/L | | <0.5 | <0.5 | <0.5 | ---- | ---- |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | | |
| C6 - C9 Fraction | ---- | 20 | µg/L | | <20 | <20 | <20 | ---- | <20 |
| C10 - C14 Fraction | ---- | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |

## Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

| Compound | CAS Number | LOR | Unit | Sample ID | WORMBH12 | WORMBH16 | QC01 | RB_4821 | TB_4821 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 |
| | | | | | EM2115365-001 | EM2115365-002 | EM2115365-003 | EM2115365-004 | EM2115365-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP080/071: Total Petroleum Hydrocarbons - Continued** | | | | | | | | | |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | | <50 | <50 | <50 | ---- | ---- |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | | | | |
| **C6 - C10 Fraction** | C6_C10 | 20 | µg/L | | <20 | <20 | <20 | ---- | <20 |
| ^ **C6 - C10 Fraction minus BTEX (F1)** | C6_C10-BTEX | 20 | µg/L | | <20 | <20 | <20 | ---- | <20 |
| **>C10 - C16 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| ^ **>C10 - C16 Fraction minus Naphthalene (F2)** | ---- | 100 | µg/L | | <100 | <100 | <100 | ---- | ---- |
| **EP080: BTEXN** | | | | | | | | | |
| **Benzene** | 71-43-2 | 1 | µg/L | | <1 | <1 | <1 | ---- | <1 |
| **Toluene** | 108-88-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | <2 |
| **Ethylbenzene** | 100-41-4 | 2 | µg/L | | <2 | <2 | <2 | ---- | <2 |
| **meta- & para-Xylene** | 108-38-3 106-42-3 | 2 | µg/L | | <2 | <2 | <2 | ---- | <2 |
| **ortho-Xylene** | 95-47-6 | 2 | µg/L | | <2 | <2 | <2 | ---- | <2 |
| ^ **Total Xylenes** | ---- | 2 | µg/L | | <2 | <2 | <2 | ---- | <2 |
| ^ **Sum of BTEX** | ---- | 1 | µg/L | | <1 | <1 | <1 | ---- | <1 |
| **Naphthalene** | 91-20-3 | 5 | µg/L | | <5 | <5 | <5 | ---- | <5 |
| **EP066S: PCB Surrogate** | | | | | | | | | |
| **Decachlorobiphenyl** | 2051-24-3 | 1 | % | | **66.0** | **75.6** | **60.0** | ---- | ---- |
| **EP074S: VOC Surrogates** | | | | | | | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 5 | % | | **99.2** | **99.9** | **100** | ---- | ---- |
| **Toluene-D8** | 2037-26-5 | 5 | % | | **104** | **105** | **101** | ---- | ---- |
| **4-Bromofluorobenzene** | 460-00-4 | 5 | % | | **109** | **110** | **106** | ---- | ---- |
| **EP075(SIM)S: Phenolic Compound Surrogates** | | | | | | | | | |
| **Phenol-d6** | 13127-88-3 | 1.0 | % | | **24.7** | **28.7** | **25.2** | ---- | ---- |
| **2-Chlorophenol-D4** | 93951-73-6 | 1.0 | % | | **63.9** | **70.2** | **60.5** | ---- | ---- |
| **2.4.6-Tribromophenol** | 118-79-6 | 1.0 | % | | **92.3** | **105** | **77.2** | ---- | ---- |
| **EP075(SIM)T: PAH Surrogates** | | | | | | | | | |
| **2-Fluorobiphenyl** | 321-60-8 | 1.0 | % | | **76.5** | **80.3** | **71.0** | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | WORMBH12 | WORMBH16 | QC01 | RB_4821 | TB_4821 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 | 04-Aug-2021 00:00 |
| Compound | CAS Number | LOR | Unit | | EM2115365-001 | EM2115365-002 | EM2115365-003 | EM2115365-004 | EM2115365-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP075(SIM)T: PAH Surrogates - Continued** | | | | | | | | | |
| Anthracene-d10 | 1719-06-8 | 1.0 | % | | 82.4 | 86.5 | 72.0 | ---- | ---- |
| 4-Terphenyl-d14 | 1718-51-0 | 1.0 | % | | 81.7 | 82.1 | 69.3 | ---- | ---- |
| **EP075S: Acid Extractable Surrogates (Waste Classification)** | | | | | | | | | |
| Phenol-d6 | 13127-88-3 | 0.25 | % | | 32.2 | 34.0 | 35.2 | ---- | ---- |
| 2-Chlorophenol-D4 | 93951-73-6 | 0.25 | % | | 73.9 | 76.5 | 74.2 | ---- | ---- |
| 2.4.6-Tribromophenol | 118-79-6 | 0.25 | % | | 67.8 | 60.3 | 60.5 | ---- | ---- |
| **EP075T: Base/Neutral Extractable Surrogates (Waste Classification)** | | | | | | | | | |
| Nitrobenzene-D5 | 4165-60-0 | 0.25 | % | | 108 | 94.8 | 94.3 | ---- | ---- |
| 1.2-Dichlorobenzene-D4 | 2199-69-1 | 0.25 | % | | 93.3 | 87.7 | 87.4 | ---- | ---- |
| 2-Fluorobiphenyl | 321-60-8 | 0.25 | % | | 94.1 | 88.0 | 88.6 | ---- | ---- |
| Anthracene-d10 | 1719-06-8 | 0.25 | % | | 89.0 | 83.3 | 83.0 | ---- | ---- |
| 4-Terphenyl-d14 | 1718-51-0 | 0.25 | % | | 86.9 | 82.8 | 85.3 | ---- | ---- |
| **EP080S: TPH(V)/BTEX Surrogates** | | | | | | | | | |
| 1.2-Dichloroethane-D4 | 17060-07-0 | 2 | % | | 95.7 | 96.4 | 97.0 | ---- | 109 |
| Toluene-D8 | 2037-26-5 | 2 | % | | 104 | 106 | 102 | ---- | 93.5 |
| 4-Bromofluorobenzene | 460-00-4 | 2 | % | | 117 | 118 | 114 | ---- | 111 |

## Surrogate Control Limits

Sub-Matrix: **WATER**

| Compound | CAS Number | Recovery Limits (%) Low | High |
|---|---|---|---|
| **EP066S: PCB Surrogate** | | | |
| **Decachlorobiphenyl** | 2051-24-3 | 41 | 125 |
| **EP074S: VOC Surrogates** | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 72 | 132 |
| **Toluene-D8** | 2037-26-5 | 77 | 132 |
| **4-Bromofluorobenzene** | 460-00-4 | 67 | 131 |
| **EP075(SIM)S: Phenolic Compound Surrogates** | | | |
| **Phenol-d6** | 13127-88-3 | 10 | 51 |
| **2-Chlorophenol-D4** | 93951-73-6 | 30 | 114 |
| **2.4.6-Tribromophenol** | 118-79-6 | 26 | 133 |
| **EP075(SIM)T: PAH Surrogates** | | | |
| **2-Fluorobiphenyl** | 321-60-8 | 35 | 127 |
| **Anthracene-d10** | 1719-06-8 | 44 | 122 |
| **4-Terphenyl-d14** | 1718-51-0 | 44 | 124 |
| **EP075S: Acid Extractable Surrogates (Waste Classification)** | | | |
| **Phenol-d6** | 13127-88-3 | 13 | 57 |
| **2-Chlorophenol-D4** | 93951-73-6 | 33 | 118 |
| **2.4.6-Tribromophenol** | 118-79-6 | 28 | 135 |
| **EP075T: Base/Neutral Extractable Surrogates (Waste Classification)** | | | |
| **Nitrobenzene-D5** | 4165-60-0 | 41 | 136 |
| **1.2-Dichlorobenzene-D4** | 2199-69-1 | 42 | 134 |
| **2-Fluorobiphenyl** | 321-60-8 | 45 | 137 |
| **Anthracene-d10** | 1719-06-8 | 53 | 141 |
| **4-Terphenyl-d14** | 1718-51-0 | 43 | 136 |
| **EP080S: TPH(V)/BTEX Surrogates** | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 73 | 129 |
| **Toluene-D8** | 2037-26-5 | 70 | 125 |
| **4-Bromofluorobenzene** | 460-00-4 | 71 | 129 |

# Appendix G

## Field equipment calibration certificates

## Water Level Meter

**Instrument** **Geotech Water /L Meter (30M)**
**Serial No.** **7026**

airmet
Air-Met Scientific Pty Ltd
1300 137 067

| Item | Test | Pass | Comments |
|---|---|---|---|
| **Battery** | Compartment | ✓ | |
| | Capacity | ✓ | |
| | above 7.9v | ✓ | |
| | | | |
| **Probe** | Cleaned/Decon. | ✓ | |
| | Operation | ✓ | |
| | | | |
| **Connectors** | Condition | ✓ | |
| | | ✓ | |
| **Tape Check** | Cleaned | ✓ | |
| **Connectors** | Checked for cuts | ✓ | |
| | | | |
| | | | |
| **Instrument Test** | At surface level | ✓ | |
| | | | |
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## *Certificate of Calibration*

This is to certify that the above instrument has been cleaned and tested.

***Signed:*** **Kyeson Chin**

***Calibration date:*** **16-Sep-20**

***Next calibration due:*** **15-Mar-21**

## Oil / Water Interface Meter

**Instrument** Geotech Interface Meter (30M)
**Serial No.** 3906

airmet
Air-Met Scientific Pty Ltd
1300 137 067

| Item | Test | Pass | Comments |
|---|---|---|---|
| **Battery** | Compartment | ✓ | |
| | Capacity | ✓ | |
| | above 7.9v | ✓ | |
| | | | |
| **Probe** | Cleaned/Decon. | ✓ | |
| | Operation | ✓ | |
| | | | |
| **Connectors** | Condition | ✓ | |
| | | ✓ | |
| **Tape Check** | Cleaned | ✓ | |
| **Connectors** | Checked for cuts | ✓ | |
| | | | |
| | | | |
| **Instrument Test** | At surface level | ✓ | |
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## *Certificate of Calibration*

This is to certify that the above instrument has been cleaned and tested.

***Calibrated by:*** **Anoop Kumar**

***Calibration date:*** **20-Oct-20**

***Next calibration due:*** **18-Apr-21**

21.10.2020

**Multi Parameter Water Meter**

**Instrument** YSI Quatro Pro Plus
**Serial No.** 19D105093

airmet
Air-Met Scientific Pty Ltd
1300 137 067

| Item | Test | Pass | Comments |
|---|---|---|---|
| Battery | Charge Condition | ✓ | |
| | Fuses | ✓ | |
| | Capacity | ✓ | |
| | | | |
| Switch/keypad | Operation | ✓ | |
| Display | Intensity | ✓ | |
| | Operation (segments) | ✓ | |
| Grill Filter | Condition | ✓ | |
| | Seal | ✓ | |
| PCB | Condition | ✓ | |
| Connectors | Condition | ✓ | |
| Sensor | 1. pH | ✓ | |
| | 2. mV | ✓ | |
| | 3. EC | ✓ | |
| | 4. D.O | ✓ | |
| | 5. Temp | ✓ | |
| | | | |
| Alarms | Beeper | | |
| | Settings | | |
| Software | Version | | |
| Data logger | Operation | | |
| Download | Operation | | |
| Other tests: | | | |

## *Certificate of Calibration*

This is to certify that the above instrument has been calibrated to the following specifications:

| Sensor | Serial no | Standard Solutions | Certified | Solution Bottle Number | Instrument Reading |
|---|---|---|---|---|---|
| 1. D.O | | 0 ppm | | 347911 | 0 ppm |
| 2. Conductivity | | 2760uS | | 350510 | 2760uS |
| 3. pH7 | | pH 7.00 | | 330737 | pH 7.00 |
| 4. pH4 | | pH 4.00 | | 351412 | pH 4.00 |
| 5. ORP mV | | 234.88 | | 343851 / 343852 | 234.88 |
| 6. Temp °C | | 19.6 | | 163377 | 19.6 |

***Calibrated by:*** Edwin Caronongan

***Calibration date:*** 16-Oct-20

***Next calibration due:*** 14-Apr-21

21.10.2020

## Oil / Water Interface Meter

**Instrument** Interface Meter (30M)
**Serial No.** 312504

airmet
Air-Met Scientific Pty Ltd
1300 137 067

| Item | Test | Pass | Comments |
|---|---|---|---|
| **Battery** | Compartment | ✓ | |
| | Capacity | ✓ | |
| | | | |
| | | | |
| **Probe** | Cleaned/Decon. | ✓ | |
| | Operation | ✓ | |
| | | | |
| **Connectors** | Condition | ✓ | |
| | | ✓ | |
| **Tape Check** | Cleaned | ✓ | |
| | Checked for cuts | ✓ | |
| | | | |
| | | | |
| **Instrument Test** | At surface level | ✓ | |
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## *Certificate of Calibration*

This is to certify that the above instrument has been cleaned and tested.

***Calibrated by:*** **Anoop Kumar**

***Calibration date:*** **30/07/2020**

***Next calibration due:*** **28/09/2020**

## Multi Parameter Water Meter

**Instrument** YSI Quatro Pro Plus
**Serial No.** 18J104320

airmet
Air-Met Scientific Pty Ltd
1300 137 067

| Item | Test | Pass | Comments |
|---|---|---|---|
| **Battery** | Charge Condition | ✓ | |
| | Fuses | ✓ | |
| | Capacity | ✓ | |
| | | | |
| **Switch/keypad** | Operation | ✓ | |
| **Display** | Intensity | ✓ | |
| | Operation (segments) | ✓ | |
| **Grill Filter** | Condition | ✓ | |
| | Seal | ✓ | |
| **PCB** | Condition | ✓ | |
| **Connectors** | Condition | ✓ | |
| **Sensor** | 1. pH | ✓ | |
| | 2. mV | ✓ | |
| | 3. EC | ✓ | |
| | 4. D.O | ✓ | |
| | 5. Temp | ✓ | |
| | | | |
| **Alarms** | Beeper | | |
| | Settings | | |
| **Software** | Version | | |
| **Data logger** | Operation | | |
| **Download** | Operation | | |
| **Other tests:** | | | |

## *Certificate of Calibration*

This is to certify that the above instrument has been calibrated to the following specifications:

| Sensor | Serial no | Standard Solutions | Certified | Solution Bottle Number | Instrument Reading |
|---|---|---|---|---|---|
| 1. D.O | | 0 ppm | | 1806267729 | 0 ppm |
| 2. Conductivity | | 2760uS | | 326685 | 2760uS |
| 3. pH7 | | pH 7.00 | | 330737 | pH 7.00 |
| 4. pH4 | | pH 4.00 | | 330734 | pH 4.00 |
| 5. ORP mV | | 240.82 | | 334880 / 334881 | 240.82 |
| 6. Temp °C | | 16.9 | | 163377 | 16.9 |

***Calibrated by:*** **Edwin Caronongan**

***Calibration date:*** **30-Jul-20**

***Next calibration due:*** **26-Jan-21**

# EQUIPMENT QUALITY REPORT

## Interface Meter

**Equipment Code: MIM-8351 Serial Number: 287419 Length: 30m**

The following equipment has been issued as follows:

☑ Equipment is clean and mechanically undamaged.

| Calibration Results | | |
|---|---|---|
| Parameter | Standard | Result |
| Water | Intermittent beeping | ✓ |
| Oil | Consistent beep | ✓ |
| Battery | 9.0V | 9.5V |

Date: 27/10/2020

Calibrated by: Ben Buston

Please check that the following items are received and all items are returned. Please clean equipment before retuning. **A minimum $20 service/repair charge applies to any unclean or damaged items.**

| Photo Ref. | Item (See photo at the back of the form) | HT Id No. | Sent | Returned |
|---|---|---|---|---|
| 1 | Carry Case | N/A | ✓ | |
| 2 | Interface Meter | MIM-8351 | ✓ | |
| 3 | Tape Guide | N/A | ✓ | |
| 4 | Spare 9V battery. Qty 1 Voltage 9.0 v | N/A | ✓ | |
| - | Instruction leaflet | N/A | ✓ | |

Date: 27/10/2020

Calibrated by: Ben Buston

HT JOB NO: 17195 CLIENTS REF: P/O No: 12529997/08

| RETURN DATE: / / | TIME: | CONDITION ON RETURN: |
|---|---|---|


1
2
3
4
Solinst
Interface Meter
HydroTerra

# EQUIPMENT QUALITY REPORT

## Water Quality Meter:

**Equipment Code: MWQ-2560** **Serial Number: 19E102560** **Description: YSI-ProPlus**

The following equipment has been issued as follows:

✓ Equipment is clean ✓ Impeller and probe check

| **Calibration Results** | | | | | | |
|---|---|---|---|---|---|---|
| **Parameter** | **Solution Description (Brand, batch # and expire date)** | **Standard** | | **Error Range** | **Result** | |
| Temperature ($^0$C) | - | 14 | | - | 13.7 | |
| pH | Merck, HC90443677, Exp: Oct 22/ HC99926975, Exp: Jul 22 | 7.04 | 4.00 | ± 0.2 | 7.09 | 4.01 |
| Sp. Conductivity (µS/cm) | ACR, 354761, Exp: Nov 21 | 12880 | | ± 20 | 12881 | |
| DO (%) | Merck, K51377157 927, Exp: Aug 21 | 0 | 100 | ± 3 | -0.6 | 100.3 |
| Redox (mV) | ACR, 355076, Exp: Nov 21/257174, Exp: Jan 22 | 253.2 | | ± 10 | 252.8 | |

Date: 27/10/2020

Calibrated by: Ben Butson

Please check that the following items are received and all items are returned. Please clean equipment before retuning. **A minimum $20 service/repair charge applies to any unclean or damaged items.**

| Item | HT Id No. | Sent | Returned |
|---|---|---|---|
| Water Quality Meter | MWQ-2560 | ✓ | |
| Manual | N/A | ✓ | |
| Probe Cluster | N/A | ✓ | |
| In situ monitoring cage | N/A | ✓ | |
| Storage cup | N/A | ✓ | |
| Flow through Cell | N/A | ✓ | |
| Calibration cup and lid | N/A | ✓ | |
| Spare Batteries / Screwdriver | N/A | ✓ | |
| Test and Tag | N/A | ✓ | |

✓ Equipment voltage ✓ Pre-Delivery Calibration Confirmation Test

Date: 27/10/2020

Calibrated by: Ben Butson

HT JOB NO: 17195 CLIENTS REF: P/O No: 12529997/08

RETURN DATE: / / TIME: CONDITION ON RETURN:

Client APA
Project WORM
Subject Slug Test Record

Job no. 12529997
Calcs by MM
Sheet 1 of 1
Date

# In-Situ

## Calibration Report

**Report Number: 20200615163256-747491**

221 East Lincoln Avenue, Fort Collins, CO 80524 USA
1-970-498-1500, 1-800-446-7488, FAX: 1-970-498-1598
Visit us at www.in-situ.com

**Instrument Details:**

| | |
|---|---|
| Instrument Model: | **Rugged TROLL 100** |
| Full Scale Depth Range: | **0 to 30 Ft (0 to 9 m)** |
| Serial Number: | **747491** |
| Hardware Version: | 0 |
| Firmware Version: | 1.04 |

**Calibration Details:**

| | |
|---|---|
| Calibration Result: | **PASS** |
| Calibration Date: | 2020-06-15 16:32:56 (UTC) |
| Nominal Range of Applied Temperature: | 0 C to +50 C |
| Temperature Accuracy Specification: | +/- 0.3 C From 0 C to +50 C |
| Nominal Range of Applied Pressure: | 7 PSI to 30 PSI Absolute |
| Pressure Accuracy Specification: | +/- 0.05% FS From -5 C to +50 C |

**Post-Calibration Check:**

| Parameter | Applied | Reported | Deviation | Unit |
|---|---|---|---|---|
| Depth | 35.7448 | 35.7454 | 0.0007 | FT |
| Depth | 18.0587 | 18.0645 | 0.0059 | FT |
| Depth | 0.3758 | 0.3775 | 0.0017 | FT |
| Temperature | 20.0940 | 20.1078 | 0.0138 | C |

**Calibration Procedures and Equipment Used:**

Manu Agilent Model 53131A-010 SerialNo MY47002282
Manu Instrulab Model 406X-0031-01 SerialNo 31098-3
Manu Instrulab Model 3312A-14-15-24 SerialNo 31139
Manu Mensor Model CPC6000 SerialNo Unknown

**Notes:**

1. Standards used in this calibration are traceable to the National Institute of Standards and Technology.
2. This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
3. Pressure calibration is conducted in units of PSI Absolute.
4. The total range of applied pressure includes pressure due to both the water column and 1 bar of atmosphere.
5. The pressure accuracy specification is in terms of the full-scale capability of the pressure sensor (i.e. maximum water depth + 1 bar atmosphere).
6. The Post-Calibration data is expressed, for convenience, in terms of water depth. An ambient barometric pressure of 1 bar is assumed.
7. Conversion factors: 2.30666 FT/PSI, 14.50377 PSI/bar.

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Elaine S.

**Performed By:** AA

Report generated: 2020-06-16 14:25:25 UTC

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Subject Slug Test Record Checked by Date

# In-Situ

## Calibration Report

**Report Number: 20200614225055-747500**

221 East Lincoln Avenue, Fort Collins, CO 80524 USA
1-970-498-1500, 1-800-446-7488, FAX: 1-970-498-1598
Visit us at www.in-situ.com

### Instrument Details:

| | |
|---|---|
| Instrument Model: | **Rugged TROLL 100** |
| Full Scale Depth Range: | **0 to 30 Ft (0 to 9 m)** |
| Serial Number: | **747500** |
| Hardware Version: | 0 |
| Firmware Version: | 1.04 |

### Calibration Details:

| | |
|---|---|
| Calibration Result: | **PASS** |
| Calibration Date: | 2020-06-14 22:50:55 (UTC) |
| Nominal Range of Applied Temperature: | 0 C to +50 C |
| Temperature Accuracy Specification: | +/- 0.3 C From 0 C to +50 C |
| Nominal Range of Applied Pressure: | 7 PSI to 30 PSI Absolute |
| Pressure Accuracy Specification: | +/- 0.05% FS From -5 C to +50 C |

### Post-Calibration Check:

| Parameter | Applied | Reported | Deviation | Unit |
|---|---|---|---|---|
| Depth | 35.7448 | 35.7448 | 0.0000 | FT |
| Depth | 18.0598 | 18.0672 | 0.0074 | FT |
| Depth | 0.3760 | 0.3810 | 0.0050 | FT |
| Temperature | 20.0350 | 20.0320 | -0.0030 | C |

### Calibration Procedures and Equipment Used:

Manu Agilent Model 53131A-010 SerialNo MY47001136
Manu Instrulab Model 406X-0031-01 SerialNo 3-31139
Manu Instrulab Model 3312A-14-15-24 SerialNo 31099
Manu Mensor Model CPC6000 SerialNo 610206

### Notes:

1. Standards used in this calibration are traceable to the National Institute of Standards and Technology.
2. This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
3. Pressure calibration is conducted in units of PSI Absolute.
4. The total range of applied pressure includes pressure due to both the water column and 1 bar of atmosphere.
5. The pressure accuracy specification is in terms of the full-scale capability of the pressure sensor (i.e. maximum water depth + 1 bar atmosphere).
6. The Post-Calibration data is expressed, for convenience, in terms of water depth. An ambient barometric pressure of 1 bar is assumed.
7. Conversion factors: 2.30666 FT/PSI, 14.50377 PSI/bar.

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Elaine S.

**Performed By:** JA

Report generated: 2020-06-15 20:13:39 UTC

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# Calibration Report

**Report Number:** **20200128027730-719045**
221 East Lincoln Avenue, Fort Collins, CO 80524 USA
1-970-498-1500, 1-800-446-7488, FAX: 1-970-498-1598
Visit us at www.in-situ.com

**Instrument Details:**

| | |
|---|---|
| Instrument Model: | **Rugged BaroTROLL** |
| Full Scale Depth Range: | **0 to 15 Ft (0 to 1 m)** |
| Serial Number: | **719045** |
| Hardware Version: | 0 |
| Firmware Version: | 1.03 |

**Calibration Details:**

| | |
|---|---|
| Calibration Result: | **PASS** |
| Calibration Date: | 2020-01-28 02:07:30 (UTC) |
| Nominal Range of Applied Temperature: | 0 C to +50 C |
| Temperature Accuracy Specification: | +/- 0.3 C From 0 C to +50 C |
| Nominal Range of Applied Pressure: | 7 PSI to 30 PSI Absolute |
| Pressure Accuracy Specification: | +/- 0.05% FS From -5 C to +50 C |

**Post-Calibration Check:**

| Parameter | Applied | Reported | Deviation | Unit |
|---|---|---|---|---|
| Depth | 35.7450 | 35.7442 | -0.0008 | FT |
| Depth | 9.2177 | 9.2136 | -0.0042 | FT |
| Depth | -17.3088 | -17.3079 | 0.0009 | FT |
| Temperature | 19.8376 | 19.8399 | 0.0023 | C |

**Calibration Procedures and Equipment Used:**

Manu Agilent Model 53131A-010 SerialNo MY47000169
Manu Instrulab Model 406X-031-01 SerialNo 1-31127
Manu Fluke Model 1504 SerialNo B91242
Manu Mensor Model CPC6000 SerialNo 610431

**Notes:**

1. Standards used in this calibration are traceable to the National Institute of Standards and Technology.
2. This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
3. Pressure calibration is conducted in units of PSI Absolute.
4. The total range of applied pressure includes pressure due to both the water column and 1 bar of atmosphere.
5. The pressure accuracy specification is in terms of the full-scale capability of the pressure sensor (i.e. maximum water depth + 1 bar atmosphere).
6. The Post-Calibration data is expressed, for convenience, in terms of water depth. An ambient barometric pressure of 1 bar is assumed.
7. Conversion factors: 2.30666 FT/PSI, 14.50377 PSI/bar.

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Elaine S.

**Performed By:** JA

Report generated: 2020-01-28 19:33:51 UTC

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# In-Situ

## Calibration Report

**Report Number: 20200428214711-737584**

221 East Lincoln Avenue, Fort Collins, CO 80524 USA
1-970-498-1500, 1-800-446-7488, FAX: 1-970-498-1598
Visit us at www.in-situ.com

**Instrument Details:**

| | |
|---|---|
| Instrument Model: | **Rugged TROLL 100** |
| Full Scale Depth Range: | **0 to 30 Ft (0 to 9 m)** |
| Serial Number: | **737584** |
| Hardware Version: | 0 |
| Firmware Version: | 1.04 |

**Calibration Details:**

| | |
|---|---|
| Calibration Result: | **PASS** |
| Calibration Date: | 2020-04-28 21:47:11 (UTC) |
| Nominal Range of Applied Temperature: | 0 C to +50 C |
| Temperature Accuracy Specification: | +/- 0.3 C From 0 C to +50 C |
| Nominal Range of Applied Pressure: | 7 PSI to 30 PSI Absolute |
| Pressure Accuracy Specification: | +/- 0.05% FS From -5 C to +50 C |

**Post-Calibration Check:**

| Parameter | Applied | Reported | Deviation | Unit |
|---|---|---|---|---|
| Depth | 35.7443 | 35.7415 | -0.0028 | FT |
| Depth | 18.0589 | 18.0656 | 0.0067 | FT |
| Depth | 0.3760 | 0.3799 | 0.0039 | FT |
| Temperature | 20.1000 | 20.0900 | -0.0100 | C |

**Calibration Procedures and Equipment Used:**

Manu Agilent Model 53131A-010 SerialNo MY47002282
Manu Instrulab Model 406X-0031-01 SerialNo 31098-3
Manu Instrulab Model 3312A-14-15-24 SerialNo 31139
Manu Mensor Model CPC6000 SerialNo Unknown

**Notes:**

1. Standards used in this calibration are traceable to the National Institute of Standards and Technology.
2. This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
3. Pressure calibration is conducted in units of PSI Absolute.
4. The total range of applied pressure includes pressure due to both the water column and 1 bar of atmosphere.
5. The pressure accuracy specification is in terms of the full-scale capability of the pressure sensor (i.e. maximum water depth + 1 bar atmosphere).
6. The Post-Calibration data is expressed, for convenience, in terms of water depth. An ambient barometric pressure of 1 bar is assumed.
7. Conversion factors: 2.30666 FT/PSI, 14.50377 PSI/bar.

In-Situ
YOUR EYES IN THE FIELD®
Loretta Y.

**Performed By:** LY

Report generated: 2020-04-30 14:44:51 UTC

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# Calibration Report

**Report Number: 20200428235056-737849**

221 East Lincoln Avenue, Fort Collins, CO 80524 USA
1-970-498-1500, 1-800-446-7488, FAX: 1-970-498-1598
Visit us at www.in-situ.com

**Instrument Details:**

| | |
|---|---|
| Instrument Model: | **Rugged TROLL 100** |
| Full Scale Depth Range: | **0 to 30 Ft (0 to 9 m)** |
| Serial Number: | **737849** |
| Hardware Version: | 0 |
| Firmware Version: | 1.04 |

**Calibration Details:**

| | |
|---|---|
| Calibration Result: | **PASS** |
| Calibration Date: | 2020-04-28 23:50:56 (UTC) |
| Nominal Range of Applied Temperature: | 0 C to +50 C |
| Temperature Accuracy Specification: | +/- 0.3 C From 0 C to +50 C |
| Nominal Range of Applied Pressure: | 7 PSI to 30 PSI Absolute |
| Pressure Accuracy Specification: | +/- 0.05% FS From -5 C to +50 C |

**Post-Calibration Check:**

| Parameter | Applied | Reported | Deviation | Unit |
|---|---|---|---|---|
| Depth | 35.7450 | 35.7450 | 0.0000 | FT |
| Depth | 18.0589 | 18.0597 | 0.0008 | FT |
| Depth | 0.3765 | 0.3792 | 0.0027 | FT |
| Temperature | 20.0370 | 20.0400 | 0.0030 | C |

**Calibration Procedures and Equipment Used:**

Manu Agilent Model 53131A-010 SerialNo MY47001136
Manu Instrulab Model 406X-0031-01 SerialNo 3-31139
Manu Instrulab Model 3312A-14-15-24 SerialNo 31099
Manu Mensor Model CPC6000 SerialNo 610206

**Notes:**

1. Standards used in this calibration are traceable to the National Institute of Standards and Technology.
2. This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
3. Pressure calibration is conducted in units of PSI Absolute.
4. The total range of applied pressure includes pressure due to both the water column and 1 bar of atmosphere.
5. The pressure accuracy specification is in terms of the full-scale capability of the pressure sensor (i.e. maximum water depth + 1 bar atmosphere).
6. The Post-Calibration data is expressed, for convenience, in terms of water depth. An ambient barometric pressure of 1 bar is assumed.
7. Conversion factors: 2.30666 FT/PSI, 14.50377 PSI/bar.

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**Performed By:** JA

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# Calibration Report

**Report Number: 20200428022031-737864**

221 East Lincoln Avenue, Fort Collins, CO 80524 USA
1-970-498-1500, 1-800-446-7488, FAX: 1-970-498-1598
Visit us at www.in-situ.com

**Instrument Details:**

| | |
|---|---|
| Instrument Model: | **Rugged TROLL 100** |
| Full Scale Depth Range: | **0 to 30 Ft (0 to 9 m)** |
| Serial Number: | **737864** |
| Hardware Version: | 0 |
| Firmware Version: | 1.04 |

**Calibration Details:**

| | |
|---|---|
| Calibration Result: | **PASS** |
| Calibration Date: | 2020-04-28 02:20:31 (UTC) |
| Nominal Range of Applied Temperature: | 0 C to +50 C |
| Temperature Accuracy Specification: | +/- 0.3 C From 0 C to +50 C |
| Nominal Range of Applied Pressure: | 7 PSI to 30 PSI Absolute |
| Pressure Accuracy Specification: | +/- 0.05% FS From -5 C to +50 C |

**Post-Calibration Check:**

| Parameter | Applied | Reported | Deviation | Unit |
|---|---|---|---|---|
| Depth | 35.7448 | 35.7375 | -0.0072 | FT |
| Depth | 18.0591 | 18.0631 | 0.0040 | FT |
| Depth | 0.3763 | 0.3795 | 0.0032 | FT |
| Temperature | 19.8457 | 19.8444 | -0.0013 | C |

**Calibration Procedures and Equipment Used:**

Manu Agilent Model 53131A-010 SerialNo MY47000169
Manu Instrulab Model 406X-031-01 SerialNo 1-31127
Manu Fluke Model 1504 SerialNo B91242
Manu Mensor Model CPC6000 SerialNo 610431

**Notes:**

1. Standards used in this calibration are traceable to the National Institute of Standards and Technology.
2. This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
3. Pressure calibration is conducted in units of PSI Absolute.
4. The total range of applied pressure includes pressure due to both the water column and 1 bar of atmosphere.
5. The pressure accuracy specification is in terms of the full-scale capability of the pressure sensor (i.e. maximum water depth + 1 bar atmosphere).
6. The Post-Calibration data is expressed, for convenience, in terms of water depth. An ambient barometric pressure of 1 bar is assumed.
7. Conversion factors: 2.30666 FT/PSI, 14.50377 PSI/bar.

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# Calibration Report

**Report Number: 2020042421468-737878**

221 East Lincoln Avenue, Fort Collins, CO 80524 USA
1-970-498-1500, 1-800-446-7488, FAX: 1-970-498-1598
Visit us at www.in-situ.com

**Instrument Details:**

| | |
|---|---|
| Instrument Model: | **Rugged TROLL 100** |
| Full Scale Depth Range: | **0 to 30 Ft (0 to 9 m)** |
| Serial Number: | **737878** |
| Hardware Version: | 0 |
| Firmware Version: | 1.04 |

**Calibration Details:**

| | |
|---|---|
| Calibration Result: | **PASS** |
| Calibration Date: | 2020-04-24 21:46:08 (UTC) |
| Nominal Range of Applied Temperature: | 0 C to +50 C |
| Temperature Accuracy Specification: | +/- 0.3 C From 0 C to +50 C |
| Nominal Range of Applied Pressure: | 7 PSI to 30 PSI Absolute |
| Pressure Accuracy Specification: | +/- 0.05% FS From -5 C to +50 C |

**Post-Calibration Check:**

| Parameter | Applied | Reported | Deviation | Unit |
|---|---|---|---|---|
| Depth | 35.7450 | 35.7368 | -0.0082 | FT |
| Depth | 18.0591 | 18.0645 | 0.0054 | FT |
| Depth | 0.3763 | 0.3786 | 0.0023 | FT |
| Temperature | 19.8452 | 19.8439 | -0.0013 | C |

**Calibration Procedures and Equipment Used:**

Manu Agilent Model 53131A-010 SerialNo MY47000169
Manu Instrulab Model 406X-031-01 SerialNo 1-31127
Manu Fluke Model 1504 SerialNo B91242
Manu Mensor Model CPC6000 SerialNo 610431

**Notes:**

1. Standards used in this calibration are traceable to the National Institute of Standards and Technology.
2. This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
3. Pressure calibration is conducted in units of PSI Absolute.
4. The total range of applied pressure includes pressure due to both the water column and 1 bar of atmosphere.
5. The pressure accuracy specification is in terms of the full-scale capability of the pressure sensor (i.e. maximum water depth + 1 bar atmosphere).
6. The Post-Calibration data is expressed, for convenience, in terms of water depth. An ambient barometric pressure of 1 bar is assumed.
7. Conversion factors: 2.30666 FT/PSI, 14.50377 PSI/bar.

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**Performed By:** JA

Report generated: 2020-04-30 13:26:41 UTC

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# Calibration Report

**Report Number: 2020042903321-737912**

221 East Lincoln Avenue, Fort Collins, CO 80524 USA
1-970-498-1500, 1-800-446-7488, FAX: 1-970-498-1598
Visit us at www.in-situ.com

**Instrument Details:**

| | |
|---|---|
| Instrument Model: | **Rugged TROLL 100** |
| Full Scale Depth Range: | **0 to 30 Ft (0 to 9 m)** |
| Serial Number: | **737912** |
| Hardware Version: | 0 |
| Firmware Version: | 1.04 |

**Calibration Details:**

| | |
|---|---|
| Calibration Result: | **PASS** |
| Calibration Date: | 2020-04-29 03:32:01 (UTC) |
| Nominal Range of Applied Temperature: | 0 C to +50 C |
| Temperature Accuracy Specification: | +/- 0.3 C From 0 C to +50 C |
| Nominal Range of Applied Pressure: | 7 PSI to 30 PSI Absolute |
| Pressure Accuracy Specification: | +/- 0.05% FS From -5 C to +50 C |

**Post-Calibration Check:**

| Parameter | Applied | Reported | Deviation | Unit |
|---|---|---|---|---|
| Depth | 35.7450 | 35.7382 | -0.0068 | FT |
| Depth | 18.0591 | 18.0657 | 0.0066 | FT |
| Depth | 0.3765 | 0.3789 | 0.0024 | FT |
| Temperature | 20.0400 | 20.0410 | 0.0010 | C |

**Calibration Procedures and Equipment Used:**

Manu Agilent Model 53131A-010 SerialNo MY47001136
Manu Instrulab Model 406X-0031-01 SerialNo 3-31139
Manu Instrulab Model 3312A-14-15-24 SerialNo 31099
Manu Mensor Model CPC6000 SerialNo 610206

**Notes:**

1. Standards used in this calibration are traceable to the National Institute of Standards and Technology.
2. This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
3. Pressure calibration is conducted in units of PSI Absolute.
4. The total range of applied pressure includes pressure due to both the water column and 1 bar of atmosphere.
5. The pressure accuracy specification is in terms of the full-scale capability of the pressure sensor (i.e. maximum water depth + 1 bar atmosphere).
6. The Post-Calibration data is expressed, for convenience, in terms of water depth. An ambient barometric pressure of 1 bar is assumed.
7. Conversion factors: 2.30666 FT/PSI, 14.50377 PSI/bar.

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**Performed By:** JA

Report generated: 2020-04-30 16:59:59 UTC

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# Calibration Report

**Report Number: 20200429205531-738832**

221 East Lincoln Avenue, Fort Collins, CO 80524 USA
1-970-498-1500, 1-800-446-7488, FAX: 1-970-498-1598
Visit us at www.in-situ.com

**Instrument Details:**

| | |
|---|---|
| Instrument Model: | **Rugged TROLL 100** |
| Full Scale Depth Range: | **0 to 30 Ft (0 to 9 m)** |
| Serial Number: | **738832** |
| Hardware Version: | 0 |
| Firmware Version: | 1.04 |

**Calibration Details:**

| | |
|---|---|
| Calibration Result: | **PASS** |
| Calibration Date: | 2020-04-29 20:05:31 (UTC) |
| Nominal Range of Applied Temperature: | 0 C to +50 C |
| Temperature Accuracy Specification: | +/- 0.3 C From 0 C to +50 C |
| Nominal Range of Applied Pressure: | 7 PSI to 30 PSI Absolute |
| Pressure Accuracy Specification: | +/- 0.05% FS From -5 C to +50 C |

**Post-Calibration Check:**

| Parameter | Applied | Reported | Deviation | Unit |
|---|---|---|---|---|
| Depth | 35.7448 | 35.7412 | -0.0036 | FT |
| Depth | 18.0591 | 18.0654 | 0.0062 | FT |
| Depth | 0.3765 | 0.3860 | 0.0095 | FT |
| Temperature | 19.8439 | 19.8672 | 0.0233 | C |

**Calibration Procedures and Equipment Used:**

Manu Agilent Model 53131A-010 SerialNo MY47000169
Manu Instrulab Model 406X-031-01 SerialNo 1-31127
Manu Fluke Model 1504 SerialNo B91242
Manu Mensor Model CPC6000 SerialNo 610431

**Notes:**

1. Standards used in this calibration are traceable to the National Institute of Standards and Technology.
2. This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
3. Pressure calibration is conducted in units of PSI Absolute.
4. The total range of applied pressure includes pressure due to both the water column and 1 bar of atmosphere.
5. The pressure accuracy specification is in terms of the full-scale capability of the pressure sensor (i.e. maximum water depth + 1 bar atmosphere).
6. The Post-Calibration data is expressed, for convenience, in terms of water depth. An ambient barometric pressure of 1 bar is assumed.
7. Conversion factors: 2.30666 FT/PSI, 14.50377 PSI/bar.

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Loretta H.

**Performed By:** JA

Report generated: 2020-04-30 14:01:36 UTC

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# Appendix H

## Groundwater QA/QC results

| | Lab Report Number | EM2015808 | EM2015808 | | EM2101443 | EM2101443 | | EM2109616 | EM2109616 | | EM2115365 | EM2115365 | | EM2109616 | 797967 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Field ID | WORMBH09 | QC01 | RPD | WORMBH12 | DUP01 | RPD | WORM-BH23A | QC1 | RPD | WORMBH12 | QC01 | RPD | WORM-BH23A | QC2 | RPD |
| **Field duplicates - water** | Sampled Date/Time | 9/09/2020 15:00 | 9/09/2020 15:00 | | 2/02/2021 10:08 | 2/02/2021 10:08 | | 24/05/2021 15:00 | 24/05/2021 15:00 | | 4/08/2021 16:21 | 4/08/2021 16:21 | | 24/05/2021 15:00 | 24/05/2021 15:00 | |
| **ChemName** | **Units** | **EQL** | **ALS** | | **ALS** | | | **ALS** | | | **ALS** | | | **Eurofins** | | |
| pH (Lab) | pH Units | 0.01 - 0.1 (Interlab) | 7.12 | 7.14 | 0 | 7.65 | 7.5 | 2 | 6.98 | 7.12 | 2 | 7.71 | 7.67 | 1 | 6.98 | 7.9 | 12 |
| Electrical conductivity (lab) | uS/cm | 1 - 10 (Interlab) | 10300 | 10300 | 0 | 3890 | 3870 | 1 | 7040 | 7100 | 1 | 4540 | 4550 | 0 | 7040 | 8300 | 11 |
| Total Dissolved Solids | mg/L | 10 | 5300 | 5280 | 0 | | | | | | | 2550 | 2450 | 4 | | | |
| Total Dissolved Solids (est.) | mg/L | 1 | | | | 2530 | 2520 | 0 | 4580 | 4620 | 1 | | | | 4580 | | |
| Escherichia coli (Colilert) | orgs/100ml | 1 | | | | 0.0E0 | 0.0E0 | 0 | | | | | | | | | |
| Cyanide (Total) | mg/L | 0.004 | | | | <0.004 | <0.004 | 0 | | | | <0.004 | <0.004 | 0 | | | |
| Alkalinity (Carbonate as CaCO3) | mg/L | 1 - 10 (Interlab) | <1 | <1 | 0 | <1 | <1 | 0 | <1 | <1 | 0 | <1 | <1 | 0 | <1 | <10 | 0 |
| Alkalinity (Bicarbonate as CaCO3) | mg/L | 1 - 20 (Interlab) | 478 | 480 | 0 | 355 | 359 | 1 | 552 | 558 | 1 | 415 | 410 | 1 | 552 | 640 | 15 |
| Alkalinity (Hydroxide as CaCO3) | mg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 | <1 | 0 | <1 | <1 | 0 | <1 | | |
| Alkalinity (total as CaCO3) | mg/L | 1 | 478 | 480 | 0 | 355 | 359 | 1 | 552 | 558 | 1 | 415 | 410 | 1 | 552 | | |
| Calcium (Filtered) | mg/L | 1 | 87 | 86 | 1 | 72 | 68 | 6 | 132 | 131 | 1 | 85 | 85 | 0 | 132 | | |
| Magnesium (Filtered) | mg/L | 1 | 413 | 408 | 2 | 212 | 221 | 4 | 241 | 240 | 0 | 251 | 254 | 1 | 241 | | |
| Potassium (Filtered) | mg/L | 1 | 11 | 11 | 0 | 14 | 14 | 0 | 44 | 44 | 0 | 14 | 14 | 0 | 44 | | |
| Sodium (Filtered) | mg/L | 1 | 1340 | 1320 | 2 | 330 | 346 | 5 | 931 | 930 | 0 | 358 | 361 | 1 | 931 | | |
| Chloride | mg/L | 1 | 3440 | 3430 | 0 | 1090 | 1090 | 0 | 1730 | 1750 | 1 | 1150 | 1160 | 1 | 1730 | 2000 | 14 |
| Sulfate (Filtered) | mg/L | 1 | 312 | 310 | 1 | 113 | 111 | 2 | 385 | 381 | 1 | 120 | 125 | 4 | 385 | | |
| Fluoride | mg/L | 0.1 | | | | <0.1 | <0.1 | 0 | | | | 0.3 | 0.2 | 40 | | | |
| Cations Total | meq/L | 0.01 | 96.9 | 95.4 | 2 | 35.8 | 37 | 3 | 68 | 67.9 | 0 | 40.8 | 41.2 | 1 | 68 | | |
| Anions Total | meq/L | 0.01 | 113 | 113 | 0 | 40.2 | 40.2 | 0 | 67.8 | 68.4 | 1 | 43.2 | 43.5 | 1 | 67.8 | | |
| Ionic Balance | % | 0.01 | 7.71 | 8.36 | 8 | 5.84 | 4.2 | 33 | **0.14** | **0.42** | **100** | 2.86 | 2.72 | 5 | 0.14 | | |
| Ammonia as N | mg/L | 0.01 | 0.02 | 0.02 | 0 | <0.01 | <0.01 | 0 | 0.63 | 0.62 | 2 | <0.01 | <0.01 | 0 | 0.63 | 0.57 | 10 |
| Nitrate (as N) | mg/L | 0.01 - 0.02 (Interlab) | 0.92 | 0.93 | 1 | 0.63 | 0.63 | 0 | 0.01 | <0.01 | 0 | 0.44 | 0.43 | 2 | **0.01** | **0.22** | **183** |
| Nitrite (as N) | mg/L | 0.01 - 0.02 (Interlab) | <0.01 | <0.01 | 0 | 0.01 | <0.01 | 0 | <0.01 | <0.01 | 0 | <0.01 | <0.01 | 0 | <0.01 | <0.02 | 0 |
| Nitrogen (Total Oxidised) (as N) | mg/L | 0.01 | 0.92 | 0.93 | 1 | 0.64 | 0.63 | 2 | 0.01 | <0.01 | 0 | 0.44 | 0.43 | 2 | 0.01 | | |
| Nitrogen (Total) | mg/L | 0.1 - 0.2 (Interlab) | 1.1 | 1.2 | 9 | 0.9 | 0.9 | 0 | 0.8 | 0.8 | 0 | 0.6 | 0.6 | 0 | 0.8 | 0.2 | 120 |
| Kjeldahl Nitrogen Total | mg/L | 0.1 - 0.2 (Interlab) | 0.2 | 0.3 | 40 | 0.3 | 0.3 | 0 | 0.8 | 0.8 | 0 | 0.2 | 0.2 | 0 | 0.8 | 1 | 22 |
| Phosphorus (Total) | mg/L | 0.01 | 0.39 | 0.37 | 5 | 0.07 | 0.05 | 33 | 0.05 | 0.05 | 0 | 0.04 | 0.04 | 0 | 0.05 | 0.02 | 86 |
| Arsenic (Filtered) | mg/L | 0.001 | <0.001 | <0.001 | 0 | | | | <0.001 | <0.001 | 0 | <0.001 | <0.001 | 0 | <0.001 | <0.001 | 0 |
| Cadmium (Filtered) | mg/L | 0.0001 - 0.0002 (Interlab) | <0.0001 | <0.0001 | 0 | | | | <0.0001 | <0.0001 | 0 | <0.0001 | <0.0001 | 0 | <0.0001 | <0.0002 | 0 |
| Chromium (III+VI) (Filtered) | mg/L | 0.001 | 0.003 | 0.003 | 0 | | | | <0.001 | <0.001 | 0 | | | | <0.001 | <0.001 | 0 |
| Chromium (hexavalent) (Filtered) | mg/L | 0.01 | | | | | | | | | | <0.01 | <0.01 | 0 | | | |
| Copper (Filtered) | mg/L | 0.001 | 0.014 | 0.012 | 15 | | | | <0.001 | <0.001 | 0 | 0.004 | 0.005 | 22 | <0.001 | <0.001 | 0 |
| Lead (Filtered) | mg/L | 0.001 | <0.001 | <0.001 | 0 | | | | <0.001 | <0.001 | 0 | <0.001 | <0.001 | 0 | <0.001 | <0.001 | 0 |
| Mercury (Filtered) | mg/L | 0.0001 | <0.0001 | <0.0001 | 0 | | | | <0.0001 | <0.0001 | 0 | <0.0001 | <0.0001 | 0 | <0.0001 | 0.0002 | 67 |
| Molybdenum (Filtered) | mg/L | 0.001 | | | | | | | | | | 0.001 | 0.001 | 0 | | | |
| Nickel (Filtered) | mg/L | 0.001 | 0.011 | 0.009 | 20 | | | | 0.004 | 0.004 | 0 | 0.003 | 0.004 | 29 | 0.004 | 0.004 | 0 |
| Selenium (Filtered) | mg/L | 0.01 | | | | | | | | | | <0.01 | <0.01 | 0 | | | |
| Silver (Filtered) | mg/L | 0.001 | | | | | | | | | | <0.001 | 0.001 | 0 | | | |
| Tin (Filtered) | mg/L | 0.001 | | | | | | | | | | <0.001 | <0.001 | 0 | | | |
| Zinc (Filtered) | mg/L | 0.005 | 0.042 | 0.036 | 15 | | | | <0.005 | <0.005 | 0 | 0.017 | 0.019 | 11 | <0.005 | <0.005 | 0 |
| Benzene | ug/L | 1 | | | | | | | <1 | <1 | 0 | <1 | <1 | 0 | <1 | <1 | 0 |
| Toluene | ug/L | 2 - 1 (Interlab) | | | | | | | <2 | <2 | 0 | <2 | <2 | 0 | <2 | <1 | 0 |
| Ethylbenzene | ug/L | 2 - 1 (Interlab) | | | | | | | <2 | <2 | 0 | <2 | <2 | 0 | <2 | <1 | 0 |
| Xylene (o) | ug/L | 2 - 1 (Interlab) | | | | | | | <2 | <2 | 0 | <2 | <2 | 0 | <2 | <1 | 0 |
| Xylene (m & p) | ug/L | 2 | | | | | | | <2 | <2 | 0 | <2 | <2 | 0 | <2 | <2 | 0 |
| Xylene Total | ug/L | 2 - 3 (Interlab) | | | | | | | <2 | <2 | 0 | <2 | <2 | 0 | <2 | <3 | 0 |
| BTEX (Sum of Total) - Lab Calc | ug/L | | | | | | | | <1 | <1 | 0 | <1 | <1 | 0 | <1 | | |
| Naphthalene | ug/L | 5 - 10 (Interlab) | | | | | | | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <10 | 0 |
| Naphthalene | ug/L | 2 - 10 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <10 | 0 |
| Naphthalene | ug/L | 1 | | | | <1 | <1 | 0 | | | | <1 | <1 | 0 | | | |
| F1 (C6-C10 minus BTEX) | ug/L | 20 | | | | | | | <20 | <20 | 0 | <20 | <20 | 0 | <20 | <20 | 0 |
| C6-C10 Fraction | ug/L | 20 | | | | | | | <20 | <20 | 0 | <20 | <20 | 0 | <20 | <20 | 0 |
| F2 (>C10-C16 minus Naphthalene) | ug/L | 100 - 50 (Interlab) | | | | | | | <100 | <100 | 0 | <100 | <100 | 0 | <100 | <50 | 0 |
| >C10-C16 Fraction | ug/L | 100 - 50 (Interlab) | | | | | | | <100 | <100 | 0 | <100 | <100 | 0 | <100 | <50 | 0 |
| F3 (>C16-C34 Fraction) | ug/L | 100 | | | | | | | <100 | <100 | 0 | <100 | <100 | 0 | <100 | <100 | 0 |
| F4 (>C34-C40 Fraction) | ug/L | 100 | | | | | | | <100 | <100 | 0 | <100 | <100 | 0 | <100 | <100 | 0 |
| >C10-C40 (Sum of Total) | ug/L | 100 | | | | | | | <100 | <100 | 0 | <100 | <100 | 0 | <100 | <100 | 0 |
| C6-C9 Fraction | ug/L | 20 | | | | | | | <20 | <20 | 0 | <20 | <20 | 0 | <20 | <20 | 0 |
| C10-C14 Fraction | ug/L | 50 | | | | | | | <50 | <50 | 0 | <50 | <50 | 0 | <50 | <50 | 0 |
| C15-C28 Fraction | ug/L | 100 | | | | | | | <100 | <100 | 0 | <100 | <100 | 0 | <100 | <100 | 0 |
| C29-C36 Fraction | ug/L | 50 - 100 (Interlab) | | | | | | | <50 | <50 | 0 | <50 | <50 | 0 | <50 | <100 | 0 |
| C10-C36 (Sum of Total) | ug/L | 50 - 100 (Interlab) | | | | | | | <50 | <50 | 0 | <50 | <50 | 0 | <50 | <100 | 0 |
| Acenaphthene | ug/L | 2 - 1 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <1 | 0 |
| Acenaphthene | ug/L | 1 | | | | <1 | <1 | 0 | | | | <1 | <1 | 0 | | | |
| Acenaphthylene | ug/L | 2 - 1 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <1 | 0 |
| Acenaphthylene | ug/L | 1 | | | | <1 | <1 | 0 | | | | <1 | <1 | 0 | | | |
| Anthracene | ug/L | 2 - 1 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <1 | 0 |
| Anthracene | ug/L | 1 | | | | <1 | <1 | 0 | | | | <1 | <1 | 0 | | | |
| Benz[a]anthracene | ug/L | 2 - 1 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <1 | 0 |
| Benz[a]anthracene | ug/L | 1 | | | | <1 | <1 | 0 | | | | <1 | <1 | 0 | | | |
| Benzo[a]pyrene | ug/L | 2 - 1 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <1 | 0 |
| Benzo[a]pyrene | ug/L | 0.5 | | | | <0.5 | <0.5 | 0 | | | | <0.5 | <0.5 | 0 | | | |
| Benzo(b+j)fluoranthene | ug/L | 1 | | | | <1 | <1 | 0 | | | | <1 | <1 | 0 | | | |
| Benzo(k)fluoranthene | ug/L | 1 | | | | <1 | <1 | 0 | | | | <1 | <1 | 0 | | | |
| Benzo(g,h,i)perylene | ug/L | 2 - 1 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <1 | 0 |
| Benzo(g,h,i)perylene | ug/L | 1 | | | | <1 | <1 | 0 | | | | <1 | <1 | 0 | | | |
| Chrysene | ug/L | 2 - 1 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <1 | 0 |
| Chrysene | ug/L | 1 | | | | <1 | <1 | 0 | | | | <1 | <1 | 0 | | | |
| Dibenz[a,h]anthracene | ug/L | 2 - 1 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <1 | 0 |
| Dibenz[a,h]anthracene | ug/L | 1 | | | | <1 | <1 | 0 | | | | <1 | <1 | 0 | | | |
| Fluoranthene | ug/L | 2 - 1 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <1 | 0 |
| Fluoranthene | ug/L | 1 | | | | <1 | <1 | 0 | | | | <1 | <1 | 0 | | | |
| Fluorene | ug/L | 2 - 1 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <1 | 0 |
| Fluorene | ug/L | 1 | | | | <1 | <1 | 0 | | | | <1 | <1 | 0 | | | |
| Indeno(1,2,3-c,d)pyrene | ug/L | 2 - 1 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <1 | 0 |
| Indeno(1,2,3-c,d)pyrene | ug/L | 1 | | | | <1 | <1 | 0 | | | | <1 | <1 | 0 | | | |
| Phenanthrene | ug/L | 2 - 1 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <1 | 0 |
| Phenanthrene | ug/L | 1 | | | | <1 | <1 | 0 | | | | <1 | <1 | 0 | | | |
| Pyrene | ug/L | 2 - 1 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <1 | 0 |
| Pyrene | ug/L | 1 | | | | <1 | <1 | 0 | | | | <1 | <1 | 0 | | | |
| PAHs (Sum of total) - Lab calc | ug/L | 2 - 1 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <1 | 0 |
| PAHs (Sum of total) - Lab calc | ug/L | 0.5 | | | | <0.5 | <0.5 | 0 | | | | <0.5 | <0.5 | 0 | | | |
| Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc | ug/L | 2 | | | | | | | <2 | <2 | 0 | | | | <2 | | |
| Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc | ug/L | 0.5 | | | | <0.5 | <0.5 | 0 | | | | <0.5 | <0.5 | 0 | | | |
| 2-methylnaphthalene | ug/L | 2 - 5 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| 3-methylcholanthrene | ug/L | 2 - 5 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| 7,12-dimethylbenz(a)anthracene | ug/L | 2 - 5 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| Benzo(b+j+k)fluoranthene | ug/L | 4 | | | | | | | <4 | <4 | 0 | | | | <4 | | |
| 2-Chlorophenol | ug/L | 2 - 3 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <3 | 0 |
| 2-Chlorophenol | ug/L | 2 | | | | <2 | <2 | 0 | | | | <2 | <2 | 0 | | | |
| 2,4-Dichlorophenol | ug/L | 2 - 3 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <3 | 0 |
| 2,4-Dichlorophenol | ug/L | 2 | | | | <2 | <2 | 0 | | | | <2 | <2 | 0 | | | |
| 2,4,5-Trichlorophenol | ug/L | 2 - 10 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <10 | 0 |
| 2,4,5-Trichlorophenol | ug/L | 2 | | | | <2 | <2 | 0 | | | | <2 | <2 | 0 | | | |
| 2,4,6-Trichlorophenol | ug/L | 2 - 10 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <10 | 0 |
| 2,4,6-Trichlorophenol | ug/L | 2 | | | | <2 | <2 | 0 | | | | <2 | <2 | 0 | | | |
| 2,6-Dichlorophenol | ug/L | 2 - 3 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <3 | 0 |
| 2,6-Dichlorophenol | ug/L | 2 | | | | <2 | <2 | 0 | | | | <2 | <2 | 0 | | | |
| 4-Chloro-3-methylphenol | ug/L | 4 | | | | <4 | <4 | 0 | | | | <4 | <4 | 0 | | | |
| 4-Chloro-3-methylphenol | ug/L | 2 - 10 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <10 | 0 |
| Pentachlorophenol | ug/L | 4 - 10 (Interlab) | | | | | | | <4 | <4 | 0 | | | | <4 | <10 | 0 |
| Pentachlorophenol | ug/L | 2 | | | | <2 | <2 | 0 | | | | <2 | <2 | 0 | | | |
| Phenol | ug/L | 4 | | | | <4 | <4 | 0 | | | | <4 | <4 | 0 | | | |
| Phenol | ug/L | 2 - 3 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <3 | 0 |
| 2-Nitrophenol | ug/L | 4 | | | | <4 | <4 | 0 | | | | <4 | <4 | 0 | | | |
| 2-Nitrophenol | ug/L | 2 - 10 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <10 | 0 |
| 3-Methylphenol (o-Cresol) | ug/L | 4 | | | | <4 | <4 | 0 | | | | <4 | <4 | 0 | | | |
| 3-Methylphenol (o-Cresol) | ug/L | 2 - 3 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <3 | 0 |
| 3,4-Methylphenol (m,o-cresol) | ug/L | 4 - 8 (Interlab) | | | | | | | <4 | <4 | 0 | | | | <4 | <8 | 0 |
| 3,4-Methylphenol (m,o-cresol) | ug/L | 4 | | | | <4 | <4 | 0 | | | | <4 | <4 | 0 | | | |
| 2,4-Dimethylphenol | ug/L | 4 | | | | <4 | <4 | 0 | | | | <4 | <4 | 0 | | | |
| 2,4-Dimethylphenol | ug/L | 2 - 3 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <3 | 0 |
| 2,4-Dinitrophenol | ug/L | 100 | | | | <100 | <100 | 0 | | | | <100 | <100 | 0 | | | |
| 4,6-Dinitro-2-methylphenol | ug/L | 50 | | | | <50 | <50 | 0 | | | | <50 | <50 | 0 | | | |
| 4,6-Dinitro-o-cyclohexyl phenol | ug/L | 50 | | | | <50 | <50 | 0 | | | | <50 | <50 | 0 | | | |
| 4-Nitrophenol | ug/L | 50 | | | | <50 | <50 | 0 | | | | <50 | <50 | 0 | | | |
| 2,3,5,6-Tetrachlorophenol | ug/L | 2 | | | | <2 | <2 | 0 | | | | <2 | <2 | 0 | | | |
| 2,3,4,5 & 2,3,4,6-Tetrachlorophenol | ug/L | 2 | | | | <2 | <2 | 0 | | | | <2 | <2 | 0 | | | |
| 4,4'-DDE | ug/L | 2 - 5 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <0.2 | 0 |
| 4,4'-DDE | ug/L | 0.5 - 5 (Interlab) | | | | | | | <0.5 | <0.5 | 0 | | | | <0.5 | <0.2 | 0 |
| 4,4'-DDE | ug/L | 0.5 | | | | | | | | | | <0.5 | <0.5 | 0 | | | |
| a-BHC | ug/L | 2 - 5 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <0.2 | 0 |
| a-BHC | ug/L | 0.5 - 5 (Interlab) | | | | | | | <0.5 | <0.5 | 0 | | | | <0.5 | <0.2 | 0 |
| a-BHC | ug/L | 0.5 | | | | | | | | | | <0.5 | <0.5 | 0 | | | |
| Aldrin | ug/L | 2 - 5 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <0.2 | 0 |
| Aldrin | ug/L | 0.5 - 5 (Interlab) | | | | | | | <0.5 | <0.5 | 0 | | | | <0.5 | <0.2 | 0 |
| Aldrin | ug/L | 0.5 | | | | | | | | | | <0.5 | <0.5 | 0 | | | |
| Aldrin + Dieldrin | ug/L | 4 - 0.2 (Interlab) | | | | | | | <4 | <4 | 0 | | | | <4 | <0.2 | 0 |
| Aldrin + Dieldrin | ug/L | 0.5 - 0.2 (Interlab) | | | | | | | <0.5 | <0.5 | 0 | | | | <0.5 | <0.2 | 0 |
| b-BHC | ug/L | 2 - 5 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <0.2 | 0 |
| b-BHC | ug/L | 0.5 - 5 (Interlab) | | | | | | | <0.5 | <0.5 | 0 | | | | <0.5 | <0.2 | 0 |
| Chlordane | ug/L | 0.5 - 2 (Interlab) | | | | | | | <0.5 | <0.5 | 0 | | | | <0.5 | <2 | 0 |
| Chlordane (cis) | ug/L | 0.5 | | | | | | | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 | | |
| Chlordane (trans) | ug/L | 0.5 | | | | | | | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 | | |
| d-BHC | ug/L | 2 - 5 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <0.2 | 0 |
| d-BHC | ug/L | 0.5 - 5 (Interlab) | | | | | | | <0.5 | <0.5 | 0 | | | | <0.5 | <0.2 | 0 |
| 4,4 DDD | ug/L | 2 - 5 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <0.2 | 0 |
| 4,4 DDD | ug/L | 0.5 - 5 (Interlab) | | | | | | | <0.5 | <0.5 | 0 | | | | <0.5 | <0.2 | 0 |
| 4,4 DDD | ug/L | 0.5 | | | | | | | | | | <0.5 | <0.5 | 0 | | | |
| 4,4 DDT | ug/L | 4 - 5 (Interlab) | | | | | | | <4 | <4 | 0 | | | | <4 | <0.2 | 0 |
| 4,4 DDT | ug/L | 2 - 5 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <0.2 | 0 |
| 4,4 DDT | ug/L | 0.5 | | | | | | | | | | <0.5 | <0.5 | 0 | | | |
| DDT+DDE+DDD - Lab Calc | ug/L | 4 - 0.2 (Interlab) | | | | | | | <4 | <4 | 0 | | | | <4 | <0.2 | 0 |
| DDT+DDE+DDD - Lab Calc | ug/L | 0.5 - 0.2 (Interlab) | | | | | | | <0.5 | <0.5 | 0 | | | | <0.5 | <0.2 | 0 |
| Dieldrin | ug/L | 2 - 5 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <0.2 | 0 |
| Dieldrin | ug/L | 0.5 - 5 (Interlab) | | | | | | | <0.5 | <0.5 | 0 | | | | <0.5 | <0.2 | 0 |
| Dieldrin | ug/L | 0.5 | | | | | | | | | | <0.5 | <0.5 | 0 | | | |
| Endosulfan I (alpha) | ug/L | 2 - 5 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <0.2 | 0 |
| Endosulfan I (alpha) | ug/L | 0.5 - 5 (Interlab) | | | | | | | <0.5 | <0.5 | 0 | | | | <0.5 | <0.2 | 0 |
| Endosulfan II (beta) | ug/L | 2 - 5 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <0.2 | 0 |
| Endosulfan II (beta) | ug/L | 0.5 - 5 (Interlab) | | | | | | | <0.5 | <0.5 | 0 | | | | <0.5 | <0.2 | 0 |
| Endosulfan Sulfate | ug/L | 2 - 5 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <0.2 | 0 |
| Endosulfan Sulfate | ug/L | 0.5 - 5 (Interlab) | | | | | | | <0.5 | <0.5 | 0 | | | | <0.5 | <0.2 | 0 |
| Endrin | ug/L | 2 - 5 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <0.2 | 0 |
| Endrin | ug/L | 0.5 - 5 (Interlab) | | | | | | | <0.5 | <0.5 | 0 | | | | <0.5 | <0.2 | 0 |
| Endrin aldehyde | ug/L | 0.5 - 5 (Interlab) | | | | | | | <0.5 | <0.5 | 0 | | | | <0.5 | <0.2 | 0 |
| Endrin ketone | ug/L | 0.5 - 5 (Interlab) | | | | | | | <0.5 | <0.5 | 0 | | | | <0.5 | <0.2 | 0 |
| g-BHC (Lindane) | ug/L | 2 - 5 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <0.2 | 0 |
| g-BHC (Lindane) | ug/L | 0.5 - 5 (Interlab) | | | | | | | <0.5 | <0.5 | 0 | | | | <0.5 | <0.2 | 0 |
| Heptachlor | ug/L | 2 - 5 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <0.2 | 0 |
| Heptachlor | ug/L | 0.5 - 5 (Interlab) | | | | | | | <0.5 | <0.5 | 0 | | | | <0.5 | <0.2 | 0 |
| Heptachlor | ug/L | 0.5 | | | | | | | | | | <0.5 | <0.5 | 0 | | | |
| Heptachlor epoxide | ug/L | 2 - 5 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <0.2 | 0 |
| Heptachlor epoxide | ug/L | 0.5 - 5 (Interlab) | | | | | | | <0.5 | <0.5 | 0 | | | | <0.5 | <0.2 | 0 |
| Hexachlorobenzene | ug/L | 4 - 5 (Interlab) | | | | | | | <4 | <4 | 0 | | | | <4 | <0.2 | 0 |
| Hexachlorobenzene | ug/L | 0.5 - 5 (Interlab) | | | | | | | <0.5 | <0.5 | 0 | | | | <0.5 | <0.2 | 0 |
| Methoxychlor | ug/L | 2 - 5 (Interlab) | | | | | | | <2 | <2 | 0 | | | | <2 | <0.2 | 0 |

| | Lab Report Number | EM2015808 | EM2015808 | | EM2101443 | EM2101443 | | EM2109616 | EM2109616 | | EM2115365 | EM2115365 | | EM2109616 | 797967 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Field ID | WORMBH09 | QC01 | RPD | WORMBH12 | DUP01 | RPD | WORM-BH23A | QC1 | RPD | WORMBH12 | QC01 | RPD | WORM-BH23A | QC2 | RPD |
| **Field duplicates - water** | Sampled Date/Time | 9/09/2020 15:00 | 9/09/2020 15:00 | | 2/02/2021 10:08 | 2/02/2021 10:08 | | 24/05/2021 15:00 | 24/05/2021 15:00 | | 4/08/2021 16:21 | 4/08/2021 16:21 | | 24/05/2021 15:00 | 24/05/2021 15:00 | |
| **ChemName** | **Units** | **EQL** | **ALS** | | **ALS** | | | **ALS** | | | **ALS** | | | **Eurofins** | | |
| Chlorfenvinphos | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| Chlorpyrifos | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| Chlorpyrifos-methyl | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| Diazinon | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| Dichlorvos | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| Dimethoate | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| Ethion | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| Fenthion | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| Malathion | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| Pirimphos-ethyl | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| Prothiofos | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| | | | | | | | | | | | | | | | | |
| 1,1,1,2-tetrachloroethane | µg/L | 5 : 1 (Interlab) | | | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <1 | 0 |
| 1,1,1-trichloroethane | µg/L | 5 : 1 (Interlab) | | | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <1 | 0 |
| 1,1,2,2-tetrachloroethane | µg/L | 5 : 1 (Interlab) | | | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <1 | 0 |
| 1,1,2-trichloroethane | µg/L | 5 : 1 (Interlab) | | | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <1 | 0 |
| 1,1-dichloroethene | µg/L | 5 : 1 (Interlab) | | | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <1 | 0 |
| 1,1-dichloropropene | µg/L | 5 | | | | | | <5 | <5 | 0 | | | | <5 | | |
| 1,2,4-trichlorobenzene | µg/L | 5 | | | <5 | <5 | 0 | | | | <5 | <5 | 0 | | | |
| 1,2,4-trichlorobenzene | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| 1,2-dibromo-3-chloropropane | µg/L | 5 | | | | | | <5 | <5 | 0 | | | | <5 | | |
| 1,2-dichlorobenzene | µg/L | 5 | | | <5 | <5 | 0 | | | | <5 | <5 | 0 | | | |
| 1,2-dichlorobenzene | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <1 | 0 |
| 1,2-dichloroethane | µg/L | 5 : 1 (Interlab) | | | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <1 | 0 |
| 1,2-dichloropropane | µg/L | 5 : 1 (Interlab) | | | | | | <5 | <5 | 0 | | | | <5 | <1 | 0 |
| 1,3-dichloropropane | µg/L | 5 : 1 (Interlab) | | | | | | <5 | <5 | 0 | | | | <5 | <1 | 0 |
| 1,4-dichlorobenzene | µg/L | 5 | | | <5 | <5 | 0 | | | | <5 | <5 | 0 | | | |
| 1,4-dichlorobenzene | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <1 | 0 |
| 2,2-dichloropropane | µg/L | 5 | | | | | | <5 | <5 | 0 | | | | <5 | | |
| 2-chloronaphthalene | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| 2-chlorotoluene | µg/L | 5 | | | | | | <5 | <5 | 0 | | | | <5 | | |
| 4-chlorotoluene | µg/L | 5 : 1 (Interlab) | | | | | | <5 | <5 | 0 | | | | <5 | <1 | 0 |
| Bromobenzene | µg/L | 5 : 1 (Interlab) | | | | | | <5 | <5 | 0 | | | | <5 | <1 | 0 |
| Carbon tetrachloride | µg/L | 5 : 1 (Interlab) | | | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <1 | 0 |
| Chlorobenzene | µg/L | 5 : 1 (Interlab) | | | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <1 | 0 |
| Chloroform | µg/L | 5 | | | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <5 | 0 |
| Chloromethane | µg/L | 50 : 1 (Interlab) | | | | | | <50 | <50 | 0 | | | | <50 | <1 | 0 |
| cis-1,2-dichloroethene | µg/L | 5 : 1 (Interlab) | | | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <1 | 0 |
| Methylene chloride | µg/L | 5 | | | <5 | <5 | 0 | | | | <5 | <5 | 0 | | | |
| Hexachlorobutadiene | µg/L | 5 | | | <5 | <5 | 0 | | | | <5 | <5 | 0 | | | |
| Hexachlorobutadiene | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| Vinyl chloride | µg/L | 50 : 1 (Interlab) | | | <50 | <50 | 0 | <50 | <50 | 0 | <50 | <50 | 0 | <50 | <1 | 0 |
| | | | | | | | | | | | | | | | | |
| 1,3,5-Trinitrobenzene | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| 2,4-Dinitrotoluene | µg/L | 4 : 5 (Interlab) | | | | | | <4 | <4 | 0 | | | | <4 | <5 | 0 |
| 2,6-dinitrotoluene | µg/L | 4 : 5 (Interlab) | | | | | | <4 | <4 | 0 | | | | <4 | <5 | 0 |
| Nitrobenzene | µg/L | 2 : 50 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <50 | 0 |
| | | | | | | | | | | | | | | | | |
| Bromomethane | µg/L | 50 : 1 (Interlab) | | | | | | <50 | <50 | 0 | | | | <50 | <1 | 0 |
| Dichlorodifluoromethane | µg/L | 50 : 1 (Interlab) | | | | | | <50 | <50 | 0 | | | | <50 | <1 | 0 |
| | | | | | | | | | | | | | | | | |
| Dinoseb | µg/L | 50 | | | <50 | <50 | 0 | | | | <50 | <50 | 0 | | | |
| Pronamide | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| | | | | | | | | | | | | | | | | |
| 2-Picoline | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| 4-aminobiphenyl | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| Azobenzene | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| N-Nitrosodiphenyl & Diphenylamine | µg/L | 4 | | | | | | <4 | <4 | 0 | | | | <4 | | |
| Pentachloronitrobenzene | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| | | | | | | | | | | | | | | | | |
| 2-hexanone (MBK) | µg/L | 50 | | | | | | <50 | <50 | 0 | | | | <50 | | |
| Carbon disulfide | µg/L | 5 : 1 (Interlab) | | | | | | <5 | <5 | 0 | | | | <5 | 1 | 0 |
| Isophorone | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| Vinyl acetate | µg/L | 50 | | | | | | <50 | <50 | 0 | | | | <50 | | |
| | | | | | | | | | | | | | | | | |
| PCBs (Total) | µg/L | 1 | | | <1 | <1 | 0 | <1 | <1 | 0 | <1 | <1 | 0 | <1 | <1 | 0 |
| | | | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/L | 10 : 5 (Interlab) | | | | | | <10 | <10 | 0 | | | | <10 | <5 | 0 |
| Butyl benzyl phthalate | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| Diethylphthalate | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| Dimethyl phthalate | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| Di-n-butyl phthalate | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| Di-n-octyl phthalate | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| | | | | | | | | | | | | | | | | |
| 1,2,4-trimethylbenzene | µg/L | 5 : 1 (Interlab) | | | | | | <5 | <5 | 0 | | | | <5 | <1 | 0 |
| 1,3,5-trimethylbenzene | µg/L | 5 : 1 (Interlab) | | | | | | <5 | <5 | 0 | | | | <5 | <1 | 0 |
| Isopropylbenzene | µg/L | 5 : 1 (Interlab) | | | | | | <5 | <5 | 0 | | | | <5 | <1 | 0 |
| Styrene | µg/L | 5 : 1 (Interlab) | | | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <1 | 0 |
| n-butylbenzene | µg/L | 5 | | | | | | <5 | <5 | 0 | | | | <5 | | |
| n-propylbenzene | µg/L | 5 | | | | | | <5 | <5 | 0 | | | | <5 | | |
| sec-butylbenzene | µg/L | 5 | | | | | | <5 | <5 | 0 | | | | <5 | | |
| tert-butylbenzene | µg/L | 5 | | | | | | <5 | <5 | 0 | | | | <5 | | |
| p-isopropyltoluene | µg/L | 5 | | | | | | <5 | <5 | 0 | | | | <5 | | |
| | | | | | | | | | | | | | | | | |
| 1-naphthylamine | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| 2-(acetylamino) fluorene | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| 2-nitroaniline | µg/L | 4 : 5 (Interlab) | | | | | | <4 | <4 | 0 | | | | <4 | <5 | 0 |
| 3,3-Dichlorobenzidine | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| 3-nitroaniline | µg/L | 4 | | | | | | <4 | <4 | 0 | | | | <4 | | |
| 4-(dimethylamino) azobenzene | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| 4-bromophenyl phenyl ether | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| 4-chloroaniline | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| 4-chlorophenyl phenyl ether | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| 4-nitroaniline | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| 4-Nitroquinoline-N-oxide | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| 5-nitro-o-toluidine | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| Aniline | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| Azobenzene | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| Bis(2-chloroethoxy) methane | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| Bis(2-chloroethyl)ether | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| Carbazole | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| Chlorobenzilate | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| Dibenzofuran | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| Hexachlorocyclopentadiene | µg/L | 10 : 5 (Interlab) | | | | | | <10 | <10 | 0 | | | | <10 | <5 | 0 |
| Hexachloroethane | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| Hexachloropropene | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| Methapyrilene | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| N-nitrosodiethylamine | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| N-nitrosodi-n-butylamine | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| N-nitrosodi-n-propylamine | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| N-Nitrosomethylethylamine | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| N-nitrosomorpholine | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| N-nitrosopiperidine | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| N-nitrosopyrrolidine | µg/L | 4 | | | | | | <4 | <4 | 0 | | | | <4 | | |
| Pentachlorobenzene | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <5 | 0 |
| Phenacetin | µg/L | 2 | | | | | | <2 | <2 | 0 | | | | <2 | | |
| | | | | | | | | | | | | | | | | |
| 1,1-dichloroethane | µg/L | 5 : 1 (Interlab) | | | | | | <5 | <5 | 0 | | | | <5 | <1 | 0 |
| 1,2,3-trichlorobenzene | µg/L | 5 : 1 (Interlab) | | | | | | <5 | <5 | 0 | | | | <5 | <5 | 0 |
| 1,2,3-trichloropropane | µg/L | 5 : 1 (Interlab) | | | | | | <5 | <5 | 0 | | | | <5 | <1 | 0 |
| 1,2-dibromoethane | µg/L | 5 : 1 (Interlab) | | | | | | <5 | <5 | 0 | | | | <5 | <1 | 0 |
| 1,3-dichlorobenzene | µg/L | 2 : 5 (Interlab) | | | | | | <2 | <2 | 0 | | | | <2 | <1 | 0 |
| 2-butanone (MEK) | µg/L | 50 : 1 (Interlab) | | | | | | <50 | <50 | 0 | | | | <50 | <1 | 0 |
| 4-methyl-2-pentanone (MIBK) | µg/L | 50 : 1 (Interlab) | | | | | | <50 | <50 | 0 | | | | <50 | <1 | 0 |
| Bromodichloromethane | µg/L | 5 : 1 (Interlab) | | | | | | <5 | <5 | 0 | | | | <5 | <1 | 0 |
| Bromoform | µg/L | 5 : 1 (Interlab) | | | | | | <5 | <5 | 0 | | | | <5 | <1 | 0 |
| Chlorodibromomethane | µg/L | 5 : 1 (Interlab) | | | | | | <5 | <5 | 0 | | | | <5 | <1 | 0 |
| Chloroethane | µg/L | 50 : 1 (Interlab) | | | | | | <50 | <50 | 0 | | | | <50 | <1 | 0 |
| cis-1,3-dichloropropene | µg/L | 5 : 1 (Interlab) | | | | | | <5 | <5 | 0 | | | | <5 | <1 | 0 |
| cis-1,4-Dichloro-2-butene | µg/L | 5 | | | | | | <5 | <5 | 0 | | | | <5 | | |
| Dibromomethane | µg/L | 5 : 1 (Interlab) | | | | | | <5 | <5 | 0 | | | | <5 | <1 | 0 |
| Iodomethane | µg/L | 5 : 1 (Interlab) | | | | | | <5 | <5 | 0 | | | | <5 | <1 | 0 |
| Pentachloroethane | µg/L | 5 | | | | | | <5 | <5 | 0 | | | | <5 | | |
| Trichloroethene | µg/L | 5 : 1 (Interlab) | | | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <1 | 0 |
| Tetrachloroethene | µg/L | 5 : 1 (Interlab) | | | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <1 | 0 |
| trans-1,3-dichloropropene | µg/L | 5 : 1 (Interlab) | | | | | | <5 | <5 | 0 | | | | <5 | <1 | 0 |
| trans-1,2-dichloroethene | µg/L | 5 : 1 (Interlab) | | | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <5 | 0 | <5 | <1 | 0 |
| trans-1,4-Dichloro-2-butene | µg/L | 5 | | | | | | <5 | <5 | 0 | | | | <5 | | |
| Trichlorofluoromethane | µg/L | 50 : 1 (Interlab) | | | | | | <50 | <50 | 0 | | | | <50 | <1 | 0 |

| | | Lab Report Number | EM2003567 | EM2015606 | EM2019188 | EM2019594 | EM2105701 | EM2108304 | EM2109232 | EM2109616 | EM2110167 | EM2113365 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Field ID | QC01_030320 | QC03 | RB01 | RB01 | QC05 | QC06 | QC02 | RB01 | RB_3821 | RB_4821 |
| | | Sampled_Date/Time | 3/03/2020 13:32 | 9/09/2020 15:00 | 30/10/2020 15:00 | 3/02/2021 15:00 | 31/03/2021 15:00 | 7/05/2021 15:00 | 18/05/2021 15:00 | 24/05/2021 15:00 | 3/08/2021 15:00 | 4/08/2021 15:00 |
| **Field blanks - water** | | Sample Type | Rinsate | Rinsate | Rinsate | Rinsate | Rinsate | Rinsate | Rinsate | Rinsate | Rinsate | Rinsate |
| **ChemName** | **Units** | **EQL** | | | | | | | | | | |
| Alkalinity (Carbonate as CaCO3) | mg/L | 1 | <1 | <1 | | | | | | | | |
| Alkalinity (Bicarbonate as CaCO3) | mg/L | 1 | 3 | 2 | | | | | | | | |
| Alkalinity (Hydroxide as CaCO3) | mg/L | 1 | <1 | <1 | | | | | | | | |
| Alkalinity (total as CaCO3) | mg/L | 1 | 3 | 2 | | | | | | | | |
| | | | | | | | | | | | | |
| Escherichia coli (Colilert) | orgs/100mL | 1 | | | | | | | | | | |
| | | | | | | | | | | | | |
| Benzene | µg/L | 1 | | | | | <1 | <1 | | | | |
| Toluene | µg/L | 1 | | | | | <2 | <2 | | | | |
| Ethylbenzene | µg/L | 1 | | | | | <2 | <2 | | | | |
| Xylene (o) | µg/L | 1 | | | | | <2 | <2 | | | | |
| Xylene (m & p) | µg/L | 2 | | | | | <2 | <2 | | | | |
| Xylene Total | µg/L | 2 | | | | | <4 | <4 | | | | |
| BTEX (Sum of Total) - Lab Calc | µg/L | 1 | | | | | <1 | <1 | | | | |
| Naphthalene | µg/L | 1 | | | | | <5 | <5 | | | | |
| | | | | | | | | | | | | |
| Chlorinated hydrocarbons EPAVic | µg/l | 5 | | | | | | | | | | |
| Other chlorinated hydrocarbons (Total) | µg/l | 5 | | | | | | | | | | |
| 1,1,1,2-tetrachloroethane | µg/L | 1 | | | | | <5 | | | | | |
| 1,1,1-trichloroethane | µg/L | 1 | | | | | <5 | | | | | |
| 1,1,2,2-tetrachloroethane | µg/L | 1 | | | | | <5 | | | | | |
| 1,1,2-trichloroethane | µg/L | 1 | | | | | <5 | | | | | |
| 1,1-dichloroethene | µg/l | 1 | | | | | <5 | | | | | |
| 1,1-dichloropropene | µg/L | 5 | | | | | | | | | | |
| 1,2,4-trichlorobenzene | µg/L | 2 | | | | | <5 | | | | | |
| 1,2-dibromo-3-chloropropane | µg/L | 5 | | | | | | | | | | |
| 1,2-dichlorobenzene | µg/L | 1 | | | | | <5 | | | | | |
| 1,2-dichloroethane | µg/L | 1 | | | | | <5 | | | | | |
| 1,2-dichloropropane | µg/L | 1 | | | | | | | | | | |
| 1,3-dichloropropane | µg/L | 1 | | | | | | | | | | |
| 1,4-dichlorobenzene | µg/L | 1 | | | | | <5 | | | | | |
| 2,2-dichloropropane | µg/L | 5 | | | | | | | | | | |
| 2-chloronaphthalene | µg/L | 2 | | | | | | | | | | |
| 2-chlorotoluene | µg/L | 5 | | | | | | | | | | |
| 4-chlorotoluene | µg/L | 1 | | | | | | | | | | |
| Bromobenzene | µg/L | 1 | | | | | | | | | | |
| Bromochloromethane | µg/l | 1 | | | | | | | | | | |
| Carbon tetrachloride | µg/L | 1 | | | | | <5 | | | | | |
| Chlorobenzene | µg/L | 1 | | | | | <5 | | | | | |
| Chloroform | µg/L | 5 | | | | | <5 | | | | | |
| Chloromethane | µg/L | 1 | | | | | | | | | | |
| cis-1,2-dichloroethene | µg/L | 1 | | | | | <5 | | | | | |
| Methylene chloride | µg/L | 1 | | | | | <5 | | | | | |
| Hexachlorobutadiene | µg/L | 2 | | | | | <5 | | | | | |
| Vinyl chloride | µg/L | 1 | | | | | <50 | | | | | |
| | | | | | | | | | | | | |
| Cyanide (Total) | mg/L | 0.004 | | | | | <0.004 | | | | | |
| | | | | | | | | | | | | |
| 1,3,5-Trinitrobenzene | µg/L | 2 | | | | | | | | | | |
| 2,4-Dinitrotoluene | µg/L | 4 | | | | | | | | | | |
| 2,6-dinitrotoluene | µg/L | 4 | | | | | | | | | | |
| Nitrobenzene | µg/L | 2 | | | | | | | | | | |
| | | | | | | | | | | | | |
| Bromomethane | µg/L | 1 | | | | | | | | | | |
| Dichlorodifluoromethane | µg/L | 1 | | | | | | | | | | |
| | | | | | | | | | | | | |
| Dinoseb | µg/L | 50 | | | | | <50 | | | | | |
| Procamide | µg/L | 2 | | | | | | | | | | |
| Trifluralin | µg/l | 5 | | | | | | | | | | |
| | | | | | | | | | | | | |
| pH (Lab) | pH Units | 0.01 | **6.44** | **6.47** | | | **6.77** | | | | | |
| Electrical conductivity (lab) | µS/cm | 1 | **2** | **1** | | | | | | | | |
| Total Dissolved Solids | mg/L | 10 | | <10 | | | | | | | | |
| Total Dissolved Solids (sat.) | mg/L | 1 | **1** | | | | | | | | | |
| Total Suspended Solids | mg/L | 5 | | | | | | | | | | |
| Turbidity | mg/L | 0.00001 | | | | | | | | | | |
| COLA | mg/L | 10 | | | | | | | | | | |
| | | | | | | | | | | | | |
| 1,2,4-trimethylbenzene | µg/L | 1 | | | | | | | | | | |
| 1,3,5-trimethylbenzene | µg/l | 1 | | | | | | | | | | |
| Isopropylbenzene | µg/L | 1 | | | | | | | | | | |
| Styrene | µg/L | 1 | | | | | <5 | | | | | |
| n-butylbenzene | µg/L | 5 | | | | | | | | | | |
| n-propylbenzene | µg/L | 5 | | | | | | | | | | |
| sec-butylbenzene | µg/L | 5 | | | | | | | | | | |
| tert-butylbenzene | µg/L | 5 | | | | | | | | | | |
| p-isopropyltoluene | µg/L | 5 | | | | | | | | | | |
| Total MAH | µg/l | 3 | | | | | | | | | | |
| | | | | | | | | | | | | |
| Calcium | mg/L | 0.5 | | | | | | | | | | |
| Calcium (Filtered) | mg/L | 1 | <1 | <1 | | | | | | | | |
| Magnesium | mg/L | 0.5 | | | | | | | | | | |
| Magnesium (Filtered) | mg/L | 1 | <1 | <1 | | | | | | | | |
| Potassium | mg/L | 0.5 | | | | | | | | | | |
| Potassium (Filtered) | mg/L | 1 | <1 | <1 | | | | | | | | |
| Sodium | mg/L | 0.5 | | | | | | | | | | |
| Sodium (Filtered) | mg/L | 1 | <1 | <1 | | | | | | | | |
| Chloride | mg/L | 1 | <1 | <1 | | | | | | | | |
| Sulfate | mg/L | 1 | | | | | | | | | | |
| Sulfate (Filtered) | mg/L | 1 | <1 | <1 | | | | | | | | |
| Fluoride | mg/L | 0.1 | | | | | <0.1 | | | | | |
| Cations Total | meq/L | 0.01 | <0.01 | <0.01 | | | | | | | | |
| Anions Total | meq/L | 0.01 | **0.06** | **0.04** | | | | | | | | |
| Ionic Balance | % | 0.01 | | | | | | | | | | |
| | | | | | | | | | | | | |
| Arsenic | mg/L | 0.001 | <0.001 | <0.001 | | | | <0.001 | | | | |
| Arsenic (Filtered) | mg/L | 0.001 | | | | | <0.001 | | | | | |
| Cadmium | mg/L | 0.0001 | <0.0001 | <0.0001 | | | | <0.0001 | | | | |
| Cadmium (Filtered) | mg/L | 0.0001 | | | | | <0.0001 | | | | | |
| Chromium (III+VI) | mg/L | 0.001 | <0.001 | <0.001 | | | | <0.001 | | | | |
| Chromium (III+VI) (Filtered) | mg/L | 0.001 | | | | | | | | | | |
| Chromium (hexavalent) (Filtered) | mg/L | 0.01 | | | | | <0.01 | | | | | |
| Copper | mg/L | 0.001 | <0.001 | <0.001 | | | | <0.001 | | | | |
| Copper (Filtered) | mg/L | 0.001 | | | | | <0.001 | | | | | |
| Lead | mg/L | 0.001 | <0.001 | <0.001 | | | | <0.001 | | | | |
| Lead (Filtered) | mg/L | 0.001 | | | | | <0.001 | | | | | |
| Mercury | mg/L | 0.0001 | <0.0001 | <0.0001 | | | | <0.0001 | | | | |
| Mercury (Filtered) | mg/L | 0.0001 | | | | | <0.0001 | | | | | |
| Molybdenum (Filtered) | mg/L | 0.001 | | | | | <0.001 | | | | | |
| Nickel | mg/L | 0.001 | <0.001 | <0.001 | | | | <0.001 | | | | |
| Nickel (Filtered) | mg/L | 0.001 | | | | | <0.001 | | | | | |
| Selenium (Filtered) | mg/L | 0.001 | | | | | <0.01 | | | | | |
| Silver (Filtered) | mg/L | 0.001 | | | | | <0.001 | | | | | |
| Tin (Filtered) | mg/L | 0.001 | | | | | <0.001 | | | | | |
| Zinc | mg/L | 0.005 | <0.005 | <0.005 | | | | <0.005 | | | | |
| Zinc (Filtered) | mg/L | 0.005 | | | | | <0.005 | | | | | |
| | | | | | | | | | | | | |
| 2-Picoline | µg/L | 2 | | | | | | | | | | |
| 4-aminobiphenyl | µg/L | 2 | | | | | | | | | | |
| Acetophenone | µg/L | 2 | | | | | | | | | | |
| N-Nitrosodiphenyl & Diphenylamine | µg/L | 4 | | | | | | | | | | |
| Pentachloronitrobenzene | µg/L | 2 | | | | | | | | | | |
| | | | | | | | | | | | | |
| Ammonia as N | mg/L | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 | | | <0.01 | | <0.01 | <0.01 |
| Nitrate (as N) | mg/L | 0.01 | <0.01 | <0.01 | | | | | <0.01 | | | |
| Nitrite (as N) | mg/L | 0.01 | <0.01 | <0.01 | | | | | <0.01 | | | |
| Nitrogen (Total Oxidised) (as N) | mg/L | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 | | | <0.01 | <0.01 | <0.01 | <0.01 |
| Nitrogen (Total) | mg/L | 0.1 | <0.1 | <0.1 | | <0.1 | | | <0.1 | <0.1 | <0.1 | <0.1 |
| Kjeldahl Nitrogen Total | mg/L | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | | | <0.1 | <0.1 | <0.1 | <0.1 |
| Phosphorus (Total) | mg/L | 0.01 | <0.01 | <0.01 | <0.01 | | | | | | | |
| | | | | | | | | | | | | |
| Organochlorine pesticides EPAVic | µg/l | 2 | | | | | | | | | | |
| Other organochlorine pesticides EPAVic | µg/l | 2 | | | | | | | | | | |
| 4,4'-DDE | µg/L | 0.2 | | | | | <0.5 | | | | | |
| a-BHC | µg/L | 0.2 | | | | | <0.5 | | | | | |
| Aldrin | µg/L | 0.2 | | | | | <0.5 | | | | | |
| Aldrin + Dieldrin | µg/L | 0.2 | | | | | | | | | | |
| b-BHC | µg/L | 0.2 | | | | | | | | | | |
| Chlordane | µg/L | 0.5 | | | | | | | | | | |
| Chlordane (cis) | µg/L | 0.5 | | | | | <0.5 | | | | | |
| Chlordane (trans) | µg/L | 0.5 | | | | | <0.5 | | | | | |
| d-BHC | µg/L | 0.2 | | | | | | | | | | |
| 4,4 DDD | µg/L | 0.2 | | | | | <0.5 | | | | | |
| 4,4 DDT | µg/L | 0.2 | | | | | <0.5 | | | | | |
| DDT+DDE+DDD - Lab Calc | µg/L | 0.2 | | | | | | | | | | |
| Dieldrin | µg/L | 0.2 | | | | | <0.5 | | | | | |
| Endosulfan I (alpha) | µg/L | 0.2 | | | | | | | | | | |
| Endosulfan II (beta) | µg/L | 0.2 | | | | | | | | | | |
| Endosulfan Sulfate | µg/L | 0.2 | | | | | | | | | | |
| Endrin | µg/L | 0.2 | | | | | | | | | | |
| Endrin aldehyde | µg/L | 0.2 | | | | | | | | | | |
| Endrin ketone | µg/L | 0.2 | | | | | | | | | | |
| g-BHC (Lindane) | µg/L | 0.2 | | | | | | | | | | |
| Heptachlor | µg/L | 0.2 | | | | | <0.5 | | | | | |
| Heptachlor epoxide | µg/L | 0.2 | | | | | | | | | | |
| Hexachlorobenzene | µg/L | 0.2 | | | | | | | | | | |
| Methoxychlor | µg/L | 0.2 | | | | | | | | | | |
| Toxaphene | µg/l | 1 | | | | | | | | | | |
| | | | | | | | | | | | | |
| Chlorfenvinphos | µg/L | 2 | | | | | | | | | | |
| Chlorpyrifos | µg/L | 2 | | | | | | | | | | |
| Chlorpyrifos-methyl | µg/L | 2 | | | | | | | | | | |
| Diazinon | µg/L | 2 | | | | | | | | | | |
| Dichlorvos | µg/L | 2 | | | | | | | | | | |
| Dimethoate | µg/L | 2 | | | | | | | | | | |
| Ethion | µg/L | 2 | | | | | | | | | | |
| Fenthion | µg/L | 2 | | | | | | | | | | |
| Malathion | µg/L | 2 | | | | | | | | | | |
| Pirimphos-ethyl | µg/L | 2 | | | | | | | | | | |
| Prothiofos | µg/L | 2 | | | | | | | | | | |
| | | | | | | | | | | | | |
| BCD | mg/L | 2 | | | | | | | | | | |
| | | | | | | | | | | | | |
| 2-methylnaphthalene | µg/L | 2 | | | | | | | | | | |
| 3-methylcholanthrene | µg/L | 2 | | | | | | | | | | |
| 7,12-dimethylbenz(a)anthracene | µg/L | 2 | | | | | | | | | | |
| Benzo(b+j+k)fluoranthene | µg/L | 4 | | | | | | | | | | |
| | | | | | | | | | | | | |
| Acenaphthene | µg/L | 1 | | | | | <1 | <1 | | | | |
| Acenaphthylene | µg/L | 1 | | | | | <1 | <1 | | | | |
| Anthracene | µg/L | 1 | | | | | <1 | <1 | | | | |
| Benz(a)anthracene | µg/L | 1 | | | | | <1 | <1 | | | | |
| Benzo(a)pyrene | µg/L | 0.5 | | | | | <0.5 | <0.5 | | | | |
| Benzo(b+j)fluoranthene | µg/L | 1 | | | | | <1 | <1 | | | | |
| Benzo(k)fluoranthene | µg/L | 1 | | | | | <1 | <1 | | | | |
| Benzo(g,h,i)perylene | µg/L | 1 | | | | | <1 | <1 | | | | |
| Chrysene | µg/L | 1 | | | | | <1 | <1 | | | | |
| Dibenz(a,h)anthracene | µg/L | 1 | | | | | <1 | <1 | | | | |
| Fluoranthene | µg/L | 1 | | | | | <1 | <1 | | | | |
| Fluorene | µg/L | 1 | | | | | <1 | <1 | | | | |
| Indeno(1,2,3-c,d)pyrene | µg/L | 1 | | | | | <1 | <1 | | | | |
| Naphthalene (PAH) | µg/L | 1 | | | | | | | | | | |
| Phenanthrene | µg/L | 1 | | | | | <1 | <1 | | | | |
| Pyrene | µg/L | 1 | | | | | <1 | <1 | | | | |
| PAHs (Sum of total) - Lab calc | µg/L | 0.5 | | | | | <0.5 | <0.5 | | | | |
| Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc | µg/L | 0.5 | | | | | <0.5 | <0.5 | | | | |

| | | Lab Report Number | EM2003957 | EM2015806 | EM2019188 | EM2019504 | EM2105701 | EM2108304 | EM2109252 | EM2109616 | EM2115167 | EM2113365 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Field ID | QC01_030320 | QC03 | RB01 | RB01 | QC05 | QC06 | QC02 | RB1 | RB_3821 | RB_4821 |
| | | Sampled_Date/Time | 3/03/2020 13:32 | 9/09/2020 15:00 | 30/10/2020 15:00 | 3/02/2021 15:00 | 31/03/2021 15:00 | 7/05/2021 15:00 | 18/05/2021 15:00 | 24/05/2021 15:00 | 3/08/2021 15:00 | 4/08/2021 15:00 |
| **Field blanks - water** | | Sample Type | Rinsate | Rinsate | Rinsate | Rinsate | Rinsate | Rinsate | Rinsate | Rinsate | Rinsate | Rinsate |
| Anochlor 1015 | µg/l | 1 | | | | | | | | | | |
| Anochlor 1221 | µg/l | 1 | | | | | | | | | | |
| Anochlor 1232 | µg/l | 1 | | | | | | | | | | |
| Anochlor 1242 | µg/l | 1 | | | | | | | | | | |
| Anochlor 1248 | µg/l | 1 | | | | | | | | | | |
| Anochlor 1254 | µg/l | 1 | | | | | | | | | | |
| Anochlor 1260 | µg/l | 1 | | | | | | | | | | |
| PCBs (Total) | µg/L | 1 | | | | | =1 | | | | | |
| | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | µg/L | 0.005 | | | | | =0.05 | | | | | |
| 6:2 Fluorotelomer Sulfonate (6:2 FTS) | µg/L | 0.005 | | | | | =0.05 | | | | | |
| 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | µg/L | 0.005 | | | | | =0.05 | | | | | |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | µg/L | 0.005 | | | | | =0.05 | | | | | |
| | | | | | | | | | | | | |
| Perfluorobutanoic acid (PFBA) | µg/L | 0.01 | | | | | =0.1 | | | | | |
| Perfluoropentanoic acid (PFPeA) | µg/L | 0.002 | | | | | =0.02 | | | | | |
| Perfluorohexanoic acid (PFHxA) | µg/L | 0.002 | | | | | =0.02 | | | | | |
| Perfluoroheptanoic acid (PFHpA) | µg/L | 0.002 | | | | | =0.02 | | | | | |
| Perfluorooctanoic acid (PFOA) | µg/L | 0.002 | | | | | =0.01 | | | | | |
| Perfluorononanoic acid (PFNA) | µg/L | 0.002 | | | | | =0.02 | | | | | |
| Perfluorodecanoic acid (PFDA) | µg/L | 0.002 | | | | | =0.02 | | | | | |
| Perfluoroundecanoic acid (PFUnDA) | µg/L | 0.002 | | | | | =0.02 | | | | | |
| Perfluorododecanoic acid (PFDoDA) | µg/L | 0.002 | | | | | =0.02 | | | | | |
| Perfluorotridecanoic acid (PFTrDA) | µg/L | 0.002 | | | | | =0.02 | | | | | |
| Perfluorotetradecanoic acid (PFTeDA) | µg/L | 0.005 | | | | | =0.05 | | | | | |
| | | | | | | | | | | | | |
| Perfluorooctane sulfonamide (FOSA) | µg/L | 0.002 | | | | | =0.02 | | | | | |
| N-Methyl perfluorooctane sulfonamide (NMFOSA) | µg/L | 0.005 | | | | | =0.05 | | | | | |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA) | µg/L | 0.005 | | | | | =0.05 | | | | | |
| N-Methyl perfluorooctane sulfonamidoacetic acid (NMFOSAA) | µg/L | 0.002 | | | | | =0.02 | | | | | |
| N-Methyl perfluorooctane sulfonamidoethanol (NMFOSE) | µg/L | 0.005 | | | | | =0.05 | | | | | |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | µg/L | 0.005 | | | | | =0.05 | | | | | |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | µg/L | 0.002 | | | | | =0.02 | | | | | |
| | | | | | | | | | | | | |
| Perfluorobutane sulfonic acid (PFBS) | µg/L | 0.002 | | | | | =0.02 | | | | | |
| Perfluoropentane sulfonic acid (PFPeS) | µg/L | 0.002 | | | | | =0.02 | | | | | |
| Perfluorohexane sulfonic acid (PFHxS) | µg/L | 0.002 | | | | | =0.02 | | | | | |
| Perfluoroheptane sulfonic acid (PFHpS) | µg/L | 0.002 | | | | | =0.02 | | | | | |
| Perfluorooctane sulfonic acid (PFOS) | µg/L | 0.002 | | | | | =0.01 | | | | | |
| Perfluorodecanesulfonic acid (PFDS) | µg/L | 0.002 | | | | | =0.02 | | | | | |
| | | | | | | | | | | | | |
| Sum of PFHxS and PFOS | µg/L | 0.002 | | | | | =0.01 | | | | | |
| PFAS (Sum of Total) | µg/L | 0.002 | | | | | =0.01 | | | | | |
| PFAS (Sum of Total)(WA DER List) | µg/L | 0.002 | | | | | =0.01 | | | | | |
| | | | | | | | | | | | | |
| 2,3,4,6-Tetrachlorophenol | µg/l | 10 | | | | | | | | | | |
| 2,3,5,6-Tetrachlorophenol | µg/L | 2 | | | | | =2 | | | | | |
| 2,3,4,5 & 2,3,4,6-Tetrachlorophenol | µg/L | 2 | | | | | =2 | | | | | |
| | | | | | | | | | | | | |
| 2-Chlorophenol | µg/L | 1 | | | | | =2 | =1 | | | | |
| 2,4-Dichlorophenol | µg/L | 1 | | | | | =2 | =1 | | | | |
| 2,4,5-Trichlorophenol | µg/L | 1 | | | | | =2 | =1 | | | | |
| 2,4,6-Trichlorophenol | µg/L | 1 | | | | | =2 | =1 | | | | |
| 2,6-Dichlorophenol | µg/L | 1 | | | | | =2 | =1 | | | | |
| 4-Chloro-3-methylphenol | µg/L | 1 | | | | | =4 | =1 | | | | |
| Pentachlorophenol | µg/L | 2 | | | | | =2 | =2 | | | | |
| Phenols(halogenated) - Lab Calc | µg/L | 2 | | | | | | | | | | |
| | | | | | | | | | | | | |
| Phenol | µg/L | 1 | | | | | =4 | =1 | | | | |
| 2-Nitrophenol | µg/L | 1 | | | | | =4 | =1 | | | | |
| 2-Methylphenol (o-Cresol) | µg/L | 1 | | | | | =4 | =1 | | | | |
| 3,4-Methylphenol (m,p-cresol) | µg/L | 2 | | | | | =4 | =2 | | | | |
| 2,4-Dimethylphenol | µg/L | 1 | | | | | =4 | =1 | | | | |
| 2,4-Dinitrophenol | µg/L | 10 | | | | | =100 | | | | | |
| 4,6-Dinitro-2-methylphenol | µg/L | 30 | | | | | =50 | | | | | |
| 4,6-Dinitro-o-cyclohexyl phenol | µg/L | 50 | | | | | =50 | | | | | |
| 4-Nitrophenol | µg/L | 30 | | | | | =50 | | | | | |
| Phenols (Total Non Halogenated) | µg/L | 4 | | | | | | | | | | |
| | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/L | 5 | | | | | | | | | | |
| Butyl benzyl phthalate | µg/L | 2 | | | | | | | | | | |
| Diethylphthalate | µg/L | 2 | | | | | | | | | | |
| Dimethyl phthalate | µg/L | 2 | | | | | | | | | | |
| Di-n-butyl phthalate | µg/L | 2 | | | | | | | | | | |
| Di-n-octyl phthalate | µg/L | 2 | | | | | | | | | | |
| | | | | | | | | | | | | |
| 2-hexanone (MBK) | µg/L | 50 | | | | | | | | | | |
| Carbon disulfide | µg/L | 1 | | | | | | | | | | |
| Isophorone | µg/L | 2 | | | | | | | | | | |
| Vinyl acetate | µg/L | 50 | | | | | | | | | | |
| | | | | | | | | | | | | |
| Anionic Surfactants as MBAS | µg/l | 50 | | | | | | | | | | |
| | | | | | | | | | | | | |
| 1,2,3,4-tetrachlorobenzene | µg/l | 5 | | | | | | | | | | |
| 1,2,3,5- Tetrachlorobenzene | µg/l | 5 | | | | | | | | | | |
| 1,2,4,5-tetrachlorobenzene | µg/l | 5 | | | | | | | | | | |
| 1,3,5-Trichlorobenzene | µg/l | 5 | | | | | | | | | | |
| 1-Chloronaphthalene | µg/l | 5 | | | | | | | | | | |
| 1-naphthylamine | µg/L | 2 | | | | | | | | | | |
| 2-(methylamino) fluorene | µg/L | 5 | | | | | | | | | | |
| 2-naphthylamine | µg/L | 5 | | | | | | | | | | |
| 2-nitroaniline | µg/L | 4 | | | | | | | | | | |
| 3,3-Dichlorobenzidine | µg/L | 2 | | | | | | | | | | |
| 3-nitroaniline | µg/L | 4 | | | | | | | | | | |
| 4-(dimethylamino) azobenzene | µg/L | 2 | | | | | | | | | | |
| 4-bromophenyl phenyl ether | µg/L | 2 | | | | | | | | | | |
| 4-chloroaniline | µg/L | 2 | | | | | | | | | | |
| 4-chlorophenyl phenyl ether | µg/L | 2 | | | | | | | | | | |
| 4-nitroaniline | µg/L | 2 | | | | | | | | | | |
| 4-Nitrosopyridine-N-oxide | µg/L | 2 | | | | | | | | | | |
| 5-nitro-o-toluidine | µg/L | 2 | | | | | | | | | | |
| Aniline | µg/L | 2 | | | | | | | | | | |
| Azobenzene | µg/L | 2 | | | | | | | | | | |
| Benzyl chloride | µg/l | 5 | | | | | | | | | | |
| Bis(2-chloroethoxy) methane | µg/L | 2 | | | | | | | | | | |
| Bis(2-chloroethyl)ether | µg/L | 2 | | | | | | | | | | |
| Bis(2-chloroisopropyl) ether | µg/l | 5 | | | | | | | | | | |
| Carbazole | µg/L | 2 | | | | | | | | | | |
| Chlorobenzilate | µg/L | 2 | | | | | | | | | | |
| Dibenz(a,h)acridine | µg/l | 5 | | | | | | | | | | |
| Dibenzofuran | µg/L | 2 | | | | | | | | | | |
| Diphenylamine | µg/l | 5 | | | | | | | | | | |
| Hexachlorocyclopentadiene | µg/L | 5 | | | | | | | | | | |
| Hexachloroethane | µg/L | 4 | | | | | | | | | | |
| Hexachloropropene | µg/L | 2 | | | | | | | | | | |
| Isobenzan-8 | µg/L | 2 | | | | | | | | | | |
| N-nitrosodiethylamine | µg/L | 2 | | | | | | | | | | |
| N-nitrosodi-n-butylamine | µg/L | 2 | | | | | | | | | | |
| N-nitrosodi-n-propylamine | µg/L | 2 | | | | | | | | | | |
| N-Nitrosomethylethylamine | µg/L | 2 | | | | | | | | | | |
| N-nitrosomorpholine | µg/L | 2 | | | | | | | | | | |
| N-nitrosopiperidine | µg/L | 2 | | | | | | | | | | |
| N-nitrosopyrrolidine | µg/L | 4 | | | | | | | | | | |
| Pentachlorobenzene | µg/L | 2 | | | | | | | | | | |
| Phenacetin | µg/L | 2 | | | | | | | | | | |
| | | | | | | | | | | | | |
| Oil & Grease | µg/l | 5000 | | | | | | | | | | |
| | | | | | | | | | | | | |
| C6-C9 Fraction | µg/L | 20 | | | | | =20 | =20 | | | | |
| C10-C14 Fraction | µg/L | 50 | | | | | =50 | =50 | | | | |
| C15-C28 Fraction | µg/L | 100 | | | | | =100 | =100 | | | | |
| C29-C36 Fraction | µg/L | 50 | | | | | =50 | =50 | | | | |
| C10-C36 (Sum of Total) | µg/L | 50 | | | | | =50 | =50 | | | | |
| | | | | | | | | | | | | |
| F1 (C6-C10 minus BTEX) | µg/L | 20 | | | | | =20 | =20 | | | | |
| C6-C10 Fraction | µg/L | 20 | | | | | =20 | =20 | | | | |
| F2 (>C10-C16 minus Naphthalene) | µg/L | 50 | | | | | =100 | =100 | | | | |
| >C10-C16 Fraction | µg/L | 50 | | | | | =100 | =100 | | | | |
| F3 (>C16-C34 Fraction) | µg/L | 100 | | | | | =100 | =100 | | | | |
| >C16-C34 Fraction | µg/L | 100 | | | | | =100 | =100 | | | | |
| F4 (>C34-C40 Fraction) | µg/L | 100 | | | | | =100 | =100 | | | | |
| >C10-C40 (Sum of Total) | µg/L | 100 | | | | | =100 | =100 | | | | |
| | | | | | | | | | | | | |
| 1,1-dichloroethane | µg/L | 1 | | | | | | | | | | |
| 1,2,3-trichlorobenzene | µg/L | 5 | | | | | | | | | | |
| 1,2,3-trichloropropane | µg/L | 1 | | | | | | | | | | |
| 1,2-dibromoethane | µg/L | 1 | | | | | | | | | | |
| 1,3-dichloropropane | µg/L | 1 | | | | | | | | | | |
| 2-butanone (MEK) | µg/L | 1 | | | | | | | | | | |
| 4-methyl-2-pentanone (MIBK) | µg/L | 1 | | | | | | | | | | |
| Acetone | µg/l | 1 | | | | | | | | | | |
| Allyl chloride | µg/l | 1 | | | | | | | | | | |
| Bromodichloromethane | µg/L | 1 | | | | | | | | | | |
| Bromoform | µg/L | 1 | | | | | | | | | | |
| Chlorodibromomethane | µg/L | 1 | | | | | | | | | | |
| Chloroethane | µg/L | 1 | | | | | | | | | | |
| cis-1,3-dichloropropene | µg/L | 1 | | | | | | | | | | |
| cis-1,4-Dichloro-2-butene | µg/L | 5 | | | | | | | | | | |
| Dibromomethane | µg/L | 1 | | | | | | | | | | |
| Iodomethane | µg/L | 1 | | | | | | | | | | |
| Pentachloroethane | µg/L | 5 | | | | | | | | | | |
| Trichloroethene | µg/L | 1 | | | | | =5 | | | | | |
| Tetrachloroethene | µg/L | 1 | | | | | =5 | | | | | |
| trans-1,3-dichloropropene | µg/L | 1 | | | | | | | | | | |
| trans-1,2-dichloroethene | µg/L | 1 | | | | | =5 | | | | | |
| trans-1,4-Dichloro-2-butene | µg/L | 5 | | | | | | | | | | |
| Trichlorofluoromethane | µg/L | 1 | | | | | | | | | | |

| EM2015608<br>QC04<br>9/09/2020 15:00<br>Trip_B | EM2101604<br>TB01<br>3/02/2021 15:00<br>Trip_B | EM2105701<br>QC06<br>31/03/2021 15:00<br>Trip_B | EM2107082<br>QC03<br>21/04/2021 15:00<br>Trip_B | EM2108304<br>QC03<br>5/05/2021 15:00<br>Trip_B | EM2109232<br>QC01<br>18/05/2021 15:00<br>Trip_B | EM2109616<br>TB1<br>24/05/2021 15:00<br>Trip_B | EM2115167<br>TB_3821<br>3/08/2021 15:00<br>Trip_B | EM2115365<br>TB_4821<br>4/08/2021 15:00<br>Trip_B |
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| EM2015608<br>QC04<br>9/09/2020 15:00<br>Trip_B | EM2101604<br>TB01<br>3/02/2021 15:00<br>Trip_B | EM2105701<br>QC06<br>31/03/2021 15:00<br>Trip_B | EM2107082<br>QC03<br>21/04/2021 15:00<br>Trip_B | EM2108304<br>QC03<br>5/05/2021 15:00<br>Trip_B | EM2109232<br>QC01<br>18/05/2021 15:00<br>Trip_B | EM2109616<br>TB1<br>24/05/2021 15:00<br>Trip_B | EM2115167<br>TB_3821<br>3/08/2021 15:00<br>Trip_B | EM2115365<br>TB_4821<br>4/08/2021 15:00<br>Trip_B |
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