Lynton Landfill Groundwater Monitoring Report

November 2024

City of Mitcham

6 March 2025
Ref: 240365R02A
EPA Licence No. 2144

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Document History and Status

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1 Introduction

1.1 Background

The City of Mitcham (Council) engaged Tonkin to conduct a groundwater monitoring event at the Lynton landfill site, located in Lynton, South Australia (the site). The site is located on Beagle Terrace and is bounded by Belair Road to the east and the Blackwood railway line to the west. The site is located in a steep sided valley that slopes westward towards the railway line (refer to Figure 1 in Appendix A).

The site was initially developed for quarrying operations from the late 1800's through to the 1950's. Council acquired the site in 1962 and developed it to its current configuration as a landfill by cut and fill. The landfill operated as a municipal waste landfill for approximately 30 years until the landfill was decommissioned and capped by Council in 1996. A smaller quarry located to the north of the main landfill was filled and capped between 2000 and 2002. The smaller landfill is now used as a waste transfer depot by Council.

In July/ August 2012, Tonkin installed five groundwater wells at the site to supplement the existing well network of two functional groundwater monitoring wells. All seven groundwater wells have been monitored biannually since installation, in accordance with the sites Groundwater Monitoring Plan (GMP)[1] and EPA Licence 2144[2]. Since the November 2017 event, the groundwater monitoring frequency has been revised to annual (from bi-annual). This report provides detailed results for the November 2024 groundwater monitoring event (GME), undertaken in accordance with the GMP.

1.2 Objectives

The objectives of the works were to meet conditions of the Lynton landfill EPA Licence requirements outlined in the sites GMP[1], and to collect sufficient groundwater data to ascertain current risk or levels of risk to adjacent sensitive ecological receptors.

1.3 Scope of Work

The scope of works for the November 2024 GME included:

- Gauging and recording of standing water levels (SWLs) and well depth in groundwater monitoring wells.
- Sampling of groundwater wells in accordance with AS/NZS 5667.11 (1998) *Water Quality – Sampling, Part 11: Guidance on Sampling of Groundwaters*.
- Submitting samples for laboratory analysis at Eurofins – MGT (MGT) and ALS Environmental (ALS) which are both National Association of Testing Authorities (NATA) accredited laboratories for the analysis undertaken.
- Interpreting groundwater flow direction within the fractured rock aquifer.
- Comparing groundwater results to current nominated criteria as referred within the SA EPA *Guidelines for the Assessment and Remediation of Site Contamination* (GAR 2018)[3].
- Determining of concentration trends in historical and recent groundwater data.
- Reporting results and interpreting any potential contamination impacts from previous land filling activities.

[1] Tonkin (2018) Groundwater Monitoring Plan, Lynton, March 2018 (Ref. No. 20170147R008)
[2] SA EPA (2018) Licence 2144, Beagle Terrace, Lynton, South Australia, Expiry 30 November 2028
[3] SA EPA (2018), Guidelines for the Assessment and Remediation of Site Contamination, October 2018 (revised November 2019)

2 Environmental Setting

2.1 Site setting

The Lynton landfill is located within the western Mount Lofty Ranges, approximately 8.2 km south of the Adelaide Central Business District (CBD). The topography at the site forms an east to west aligned valley that has a flat floor due to the placement and capping of waste and falls gently westward towards the railway line. The valley is steep sided with abundant rock outcrops.

2.2 Regional Geology and Hydrogeology

2.2.1 Geology

Geologically, the site is underlain by metasediments belonging to the Proterozoic Belair Group. These Adelaidean metasediments consist of siltstone and feldspathic quartzite, with Mitcham Quartzite present at the base.

2.2.2 Hydrogeology

Groundwater beneath the site occurs in the Belair subgroup and has a potentiometric surface that generally mimics the local topography. Groundwater flow for the region is generally towards the northwest. The fractured rock aquifer beneath the site is believed to be a source of recharge to the lower Quaternary aquifers and the deeper Tertiary aquifers of the Adelaide Plains.

A small ephemeral creek trends west from Kalyra Road/Gloucester Avenue, Belair (east of the landfill) and is diverted around the landfill cap by a series of rock lined stormwater drains to a stormwater ponding basin located at the western boundary of the site (near well LL3). The stormwater ponding basin retains surface water for short periods following large rain events.

A more detailed discussion of the site setting, geology and hydrology encountered on site is presented in previous Tonkin groundwater monitoring reports[1,4]. The locations of all monitoring wells are presented in Figure 1, Appendix A.

2.3 Surrounding Groundwater Uses

A groundwater bore search conducted through the DEW 'Water Connect' online search tool identified 134 boreholes within 2 km of the site (DEW 'Water Connect', accessed 5 December 2023). Of these boreholes, 15 are known locations associated with monitoring of groundwater and landfill gas from the Lynton landfill. Of the 119 other boreholes, 24 are for domestic purposes, eight are for drainage purposes, one is for environmental purposes, 44 are for investigation, two for irrigation, ten for monitoring and nine for observation. The remaining wells have no purpose listed.

Groundwater salinity (reported as total dissolved solids – TDS) within the vicinity of the site ranges from 443 mg/L (6628-7355) to 6,774 mg/L (6628-18123). The closest borehole (6627-7342) to the site, other than those wells installed by Tonkin or used for monitoring at the landfill, recorded a TDS value of 1,636 mg/L and is located approximately 200 m southwest of the landfill. The borehole was installed in 1985 for domestic purposes.

[4] Tonkin (2013) May 2013 Groundwater Monitoring Event, Lynton, August 2013 (Ref. No. 20100076FR11)

3 Methodology

3.1 Sampling Methodology

Sampling of all groundwater wells at Lynton landfill was undertaken by experienced Tonkin personnel in accordance with the assessment framework and sampling protocols contained in the following documents:

- AS/NZS 5667.11 (1998) Water Quality – Sampling, Part 11: *Guidance on Sampling of Groundwaters*.
- SA EPA (2007) *Guidelines: Regulatory Monitoring and Testing - Groundwater sampling*. Updated April 2016.
- EPA (2007) *Regulatory monitoring and testing, Water and wastewater sampling*, June 2007.
- National Environment Protection Council (NEPC) (1999) *National Environment Protection (Assessment of Site Contamination) Measure (NEPM)* amended 2013; and
- Tonkin (2018) *Groundwater Monitoring Plan, Lynton Landfill*, March 2018 (Ref. No. 20160147R008)[1].

3.2 Groundwater Sampling

A groundwater monitoring event (GME) encompassing the gauging and sampling of all groundwater wells occurred on 20 and 21 November 2024. The depth to groundwater in each well was measured to the nearest millimetre from the top of casing (m TOC) using a calibrated, battery-operated interface probe (IP) meter. Field observations were recorded on the field forms which are included in Appendix B.

Groundwater sampling was undertaken in accordance with AS/NZS 5667.1:1998[5] and AS/NZS 5667.11:1998[6] using passive HydraSleeve® sampling. HydraSleeve sampling was considered appropriate given the site is within a fractured aquifer and that the monitoring was ongoing.

The HydraSleeve sampler is a flexible 3 mm thick lay-flat polyethylene sleeve with a weight on the bottom and check valve on the top that was lowered into the well to the prescribed sampling depth (i.e. within the screened interval). One HydraSleeve was dedicated to each well. HydraSleeve samplers were deployed and recovered using the following methodology:

- The correct HydraSleeve size selection for each monitoring well was undertaken in line with the HydraSleeve Standard Operation Procedure.
- Prior to sampling each well, the interface probe and all other non-disposable equipment (i.e. HydraSleeve weights and clips) placed down the well were decontaminated.
- After placing the HydraSleeve down the well, it was left for a minimum of one hour to allow the water column to re-equilibrate following the minor disturbance that occurs during deployment. The groundwater sample was then collected by pulling the HydraSleeve up through the water column and to the surface. The recovered water sample was decanted into the appropriate laboratory supplied sample bottles.
- Collected groundwater samples were immediately transferred to laboratory-supplied sample containers. Groundwater samples were obtained that ensured zero headspace remained in the bottles and where appropriate were filtered in the field prior to preservation using a 0.45-micron filter.
- Each of the sample bottles were labelled only using ball point pens with the project ID, date, sampler's initials, and unique monitoring well ID (or QC sample name).
- To minimise exposure to sunlight, sample bottles were placed immediately into a pre-chilled ice chest, for transport to the testing laboratories.

[5] Australian/New Zealand Standard (1998) Water Quality Sampling, Part 1: Guidance on the Design of Sampling Programs, Sampling Techniques and the Preservation and Handling of Samples. AS/NZS 5667.1:1998.

[6] Australian/New Zealand Standard (1998) Water Quality Sampling, Part 11: Guidance on Sampling of Groundwaters. AS/NZS 5667.11:1998.

- Wells sampled via HydraSleeve methods are not purged prior to sampling, therefore, a small volume of the water recovered in the HydraSleeve was decanted for measurement of field parameters pre-sample collection. Parameters including pH, EC, Redox potential, DO and temperature were measured using a calibrated water quality meter (WQM) and sample container.
- Chain of custody documentation was completed for each batch of samples sent to the laboratory.

To avoid cross contamination between wells, all reusable equipment including the water level meter probe and water quality meter probes were decontaminated before the commencement of gauging and sampling of each well using both a phosphate-free detergent wash and a rinse with demineralised water. The HydraSleeves are a single-use sampling technique that is not intended for reuse; therefore, decontamination is not required prior to collection of the sample itself.

3.3 Laboratory Assessment

Seven primary groundwater samples were submitted to Eurofins MGT (MGT), the nominated primary laboratory, for the following analytical suite:

- pH, EC, TDS & TOC
- Nutrients, Major Cations and Anions
- TRH, BTEXN, PAHs, Phenols
- BOD, COD
- Dissolved Metals, Cyanide (Total)
- Speciated Chromium

In addition to the afore mentioned primary samples,

- Two trip blanks (TB01 and TB02) were submitted to for analysis of TRH (C_6-C_{10}).
- One rinsate sample (RINS01) was submitted to Eurofins MGT for analysis of total metals.
- One intra laboratory duplicate (DUP01) was submitted to Eurofins MGT for the same analysis as the primary samples.
- One inter-laboratory duplicate (DUP02) was submitted to ALS Environmental (ALS) for the same analysis as the primary samples.

Both primary and secondary laboratories are National Association of Testing Authorities (NATA) accredited for the requested analysis.

3.4 Assessment Criteria

The Water Quality Environmental Protection Policy (WQEPP)[7] has been developed to protect and enhance human health and aquatic ecosystems. Water quality objectives for a given water body are based on setting the environmental values that are to be protected. Environmental values are values or uses of water that are conducive to a healthy ecosystem and also contribute to public benefit, welfare, safety and health. In line with the National Water Quality Management Strategy the policy recognises that the protected environmental values or uses are:

- Aquatic ecosystems (fresh and marine).
- Recreation and aesthetics primary contact (fresh and marine).
- Drinking water for human consumption.
- Primary industries irrigation and general water uses.
- Primary industries livestock drinking water.
- Primary industries aquaculture and human consumption of aquatic foods.

[7] SA EPA (2015) Environment Protection (Water Quality) Policy 2015

3.4.1 Determination of Environmental Values

Based on the requirements of the EPA GAR (2018)[3], when determining whether there is actual or potential harm to water that is not trivial, the first step in determining the Environmental Values of groundwater at the site requires an initial groundwater assessment. This assessment will also include an assessment of groundwater salinity to apply the table within Clause 3 of Schedule 1 of the WQEPP to ascertain the environmental values.

In accordance with Section 4 of the EPA GAR (2018), when determining the environmental values of groundwater at a site, the EPA recommends the following four steps are followed:

- *Step 1: Apply Table 3 of Schedule 1 of the WQEPP based on the TDS range*

Based on laboratory data obtained as part of the investigation, TDS values were reported as between 800 mg/L and 6,500 mg/L, which, based on the lowest value indicates that the groundwater in the area may be suitable for potable purposes.

- *Step 2: Assess and identify water bodies within 2 km of the buffer area*

Based on review of online aerial imagery, a creek running through Shepherd's Hill recreation park lies within 1.5 km of the site. There is also an ephemeral creek running through the site.

- *Step 3: Review registered groundwater users (Water Connect database)*

A search of the WaterConnect SA website database has identified 24 listed domestic groundwater wells and two listed irrigation groundwater wells within a 2 km radius of the site. Due to the reported salinity of the groundwater, it is possible that some of these domestic wells may be used for potable purposes.

- *Step 4: Application of EPA recognised criteria for most sensitive*

Based on the results of Steps 1 to 4, it is possible to conclude that there are definite Environmental Values requiring protection at the site, namely the protection of potable uses, freshwater ecosystems and primary production, that may be reasonably impacted by any potential contaminated groundwater emanating from the site. The criteria shown in Table 3.1, as stated within the EPA GAR (2018) have been adopted. Current nominated environmental values are included in the groundwater analytical results presented in Table 2, Appendix C.

Table 3.1 EPA Recognised Criteria and Environmental Values of Groundwater

Environmental Value	Recognised Criteria
Drinking Water for Human Consumption	Australian Drinking Water Guidelines (ADWG) (2022) – Health and Aesthetic Criteria
Recreational/ Aesthetic	ADWG (2022) PFAS NEMP (2018) WHO (2017)
Aquatic Ecosystem – Fresh (95% Trigger Values)	ANZG (2023) PFAS NEMP (2018)
Primary Industry – Agriculture and Aquaculture (Irrigation Short Term)	AWQG – ANZECC & ARMCANZ (2000)

In the absence of criteria for some groundwater contaminants such as Total Petroleum Hydrocarbons (TPH), Total Recoverable Hydrocarbons (TRH) and chlorinated hydrocarbons, there has been comment made regarding the presence or absence of these contaminants in the groundwater. Given the anthropogenic nature of these contaminants, the laboratory's limits of reporting (LOR) have therefore been adopted as the site-specific criteria for these contaminants.

4 QA & QC Analytical Data Validation

Field and laboratory quality assurance and quality control (QA/QC) results have been reviewed and verified for this phase of work. Tonkin considers the fieldwork undertaken and groundwater laboratory analysis acceptable for the purposes of confirming the reliability and repeatability of the sampling and laboratory analysis procedures.

A comprehensive review of the QA/QC results is provided in Appendix D.

5 Results

It should be noted that wells LLFG03, LLFG04, LLFG05 and LLFG08 were all found to be blocked by roots during the previous monitoring event and were unable to be sampled. Following this, the wells were all cleared by a licensed driller and were all able to be sampled during the current monitoring round. Therefore, decreases and increases for the current round of results have been compared to the previous two monitoring events (2022 and 2023), dependent on the well in question.

5.1 Groundwater Levels

Depth to groundwater was measured from the top of casing and recorded on field forms presented in Appendix B. The SWL was determined at each well relative to metres Australian Height Datum (mAHD). The SWLs recorded across the site during the November 2024 monitoring event ranged from 98.9 mAHD (LLFG08) to 104.29 mAHD (LLFG05) (Table 1, Appendix C). The SWL is observed to have decreased at all wells with the exception of LLFG04 since the previous monitoring event in November 2023.

The SWLs measured are deemed to be generally consistent with historical data and the nature of the fractured rock aquifer. Groundwater elevation within the wells at Lynton landfill have shown seasonal variability since the beginning of monitoring but have remained consistent since the November 2017 monitoring event with a very little variation in levels. LLFG04 has shown the most variability in the SWL between the seven wells.

5.2 Groundwater Field Observations

Visual and olfactory observations were made by Tonkin field personnel during gauging and sampling of groundwater and are recorded on the field forms presented in Appendix B. The only observation to note was the moderated turbidity noted at LFFG08. The turbidity was low at the other wells. No hydrocarbon sheens or odours were noted at any location. A summary of these observations is included in Table 1, Appendix C.

5.3 Field Parameters

Groundwater field measurement parameters were recorded as soon as the HydraSleeve was removed from the well and immediately following sampling. A summary of the field parameters is shown in Table 1, Appendix C.

The field derived measurements indicated the following:

- pH was mildly acidic to neutral, ranging from 6.08 (LLFG04) to 6.62 (LL3). The field pH at the site has been predominantly slightly acidic to neutral throughout the monitoring program. Field pH has been within the adopted criteria range throughout each monitoring event except at LLFG04 and LLFG05 during the August 2015 monitoring event. Field pH has decreased slightly at all wells during the current monitoring event.
- Electrical Conductivity (EC) measurements ranged from 1,147 µS/cm (LL3) to 9,099 µS/cm (LLFG04), indicating that the groundwater ranges from fresh to saline[8]. EC measurements have remained relatively consistent at each monitoring well over the years. The EC results have decreased at all wells since the previous monitoring event.
- Dissolved Oxygen (DO) ranged from 1.18 mg/L (LLFG04) to 2.88 mg/L (LLFG08) indicating low aerobic conditions. DO decreased at LL3 and LL4 but increased at LLFG10 since the previous monitoring event.

[8] Waterwatch Australia National Technical Manual Module 4 – Physical and Chemical Parameters, Environment Australia, July 2002.

- Redox Potential (ORP) readings ranged from 261.5 mV (LLFG10) to 315.2 mV (LLFG08) indicating an oxidising environment. The ORP readings have significantly increased at all wells since the previous monitoring round.

5.4 Groundwater Results

Comparison of groundwater results since 2012 are discussed below. Historical results are reported in Table 3, Appendix C.

5.4.1 Inorganics

Inorganics that exceeded the adopted criteria are summarised following:

- Nitrate (as NO_3^-) concentrations ranged from 0.05 mg/L (LLFG08) and 5.7 mg/L (LL3). Concentrations of nitrate (as NO_3^-) exceeded the freshwater criterion[9] (2.4 mg/L) at LL3 and LLFG05.
- Chloride concentrations ranged between 89 (LL3) and 3,100 mg/L (LLFG04). Concentrations of chloride exceeded the ADWG aesthetic criterion at all wells except LL3.
- Sodium concentrations were reported between 170 mg/L (LL3) and 1,500 mg/L (LLFG04). Concentrations of sodium exceeded the ADWG aesthetic criterion at all wells except LL3.
- Sulphate concentrations ranged from 57 mg/L (LL3) and 500 mg/L (LLFG04). Concentrations of sodium exceeded the ADWG aesthetic criterion only at LLFG04.
- Concentrations of TDS ranged from 800 mg/L in well LL3 to 6,500 mg/L in well LLFG04. The concentration of TDS reported at all wells exceeded the ADWG aesthetic criterion.
- The hardness as $CaCO_3$ was reported between 335 mg/L (LL3) to 1,890 mg/L (LLFG04). The hardness as $CaCO_3$ reported in all wells exceeded the ADWG aesthetic criterion.

5.4.2 Cation and Anion Geochemistry (Water Types)

The cation and anion concentrations have remained quite similar to previous groundwater monitoring events with only a slight change in water type for LL4 due to a decrease in bicarbonate concentrations and an increase in chloride and sodium concentrations. The anion and cation concentrations have remained very stable at LL3. Since the previous two monitoring events, chloride concentrations increased at LLFG03, LLFG04, LLFG08 and LLFG10 but decreased at LLFG05. Sodium and sulfate concentrations increased at LLFG03, LLFG04, LLFG05, LLFG08 and LLFG10. Calcium concentrations remained stable at all wells with magnesium concentrations slightly increasing at all wells. The bicarbonate concentration decreased at all wells with the exception of LLFG08.

Based on the cation and anion proportion reported during the current monitoring event (Figure 3, Appendix A), the water samples collected are considered to be from the following hydro-geochemical facies:

- Na – Cl (LL4, LLFG03, LLFG04, LLFg05, LLFG08, LLFG10)
- Na – HCO_3^- (LL3)

The two dominant water types have been consistent since monitoring commenced in 2012 except for the 2019 GME, where the water type for LL3 was observed as being different. The water type for LL3 during the past three monitoring events changed back to the water type consistent with historical results, being dominated by bicarbonate (Na – HCO_3^-). The water type of LL4 has changed from Na – HCO_3^- to Na – Cl in the current monitoring round. The water types have remained consistent and are likely representative of surrounding lithology and recharge mechanisms (Figure 4, Appendix A).

[9] The ANZECC/ARMCANZ (2000) default guidelines value for nitrate was erroneous. In the absence of an ANZG (2022) default guideline value, refer to the "Grading" guideline values published in the report *Updating nitrate toxicity effects on freshwater aquatic species*, which were used to inform the current New Zealand nitrate toxicity attribute.

5.4.3 Heavy Metals

Metals that exceeded the adopted criteria are summarised following:

- Cadmium concentrations ranged between 0.0003 mg/L (LL3 & LL4) and 0.0017 mg/L (LLFG04). Concentrations of cadmium exceeded the ANZG freshwater criterion on LL3, LL4 and LLFG04. All other wells recorded cadmium concentrations either at or below the laboratory LOR.
- Copper concentrations ranged between 0.003 mg/L (LLFG03) and 0.007 mg/L (LL3). Concentrations of copper exceeded the ANZG freshwater criterion at LL3 and LLFG03. Concentrations of copper were recorded below the laboratory LOR at all the other wells.
- Iron concentrations ranged between 0.99 mg/L (LLFG08) and 3.7 mg/L (LLFG04). Concentrations of iron exceeded the ADWG aesthetic criterion at LL3, LLFG04 and LLFG08. Iron concentrations reported at the other wells were all below the laboratory LOR.
- Lead concentrations ranged between 0.001 mg/L (LL3) and 0.006 m/L (LL4). Concentrations of lead exceeded the ANZG freshwater criterion only at LL4.
- Manganese concentrations ranged between 0.01 mg/L (LL4) and 1.7 mg/L (LLFG08). Concentrations of manganese exceeded the ADWG aesthetic criterion at LLFG04 and LLFG08 with the reported concentration at LLFG08 additionally exceeding the ADWG health criterion.
- Zinc concentrations ranged between 0.006 mg/L (LLFG08) and 0.043 mg/L (LLFG05). Concentrations of zinc exceeded the ANZG freshwater criterion at all wells except LL4 and LLFG08.

5.4.4 Volatile Compounds/Hydrocarbons/Halogenated Compounds

Hydrocarbon concentrations were reported below the laboratory's LOR at all wells. Detection of hydrocarbon concentrations above the laboratory LOR were last reported during the November 2022 monitoring event at wells LL3, LL4 and LLFG04.

BTEX has not been detected at the site since the October 2012 monitoring event when low concentrations of toluene and xylene were detected in well LLFG08.

5.4.5 Mann Kendall Trend Analysis

Mann-Kendall trend analysis was conducted for key landfill pollutant indicators for each groundwater location. Statistically significant increasing, decreasing or stable trends for each location are identified in Table 5.1, whilst the trend analysis graphs and outputs are presented as Appendix E. All other parameters not listed within the tables have either no significant trend or insufficient data to determine if a trend is present.

Table 5.1 Groundwater Trend Analysis

Well Location	Increasing Trends	Decreasing Trends	Stable
LL3		Chloride, TDS, Hardness, Sodium, Sulfate	Nitrate, Zinc, Cadmium, Potassium
LL4	Zinc, Copper, Lead	Ammonia, Chloride, TDS, Hardness, Manganese, Sodium, Sulfate, Iron	Nitrate, Boron
LLFG03	Manganese, Zinc, Copper, Sodium, Sulfate		Cadmium
LLFG04	Boron, Zinc	Chloride, Copper, Sulfate	Nitrate, TDS, Hardness, Cadmium, Sodium
LLFG05	Zinc	Nitrate, TDS, Hardness, Sulfate	Chloride, Copper, Potassium

Well Location	Increasing Trends	Decreasing Trends	Stable
LLFG08	Zinc, Iron, Potassium	TDS	Chloride, Hardness, Copper, Sulfate
LLFG10	Boron, Manganese, Zinc, Sulfate		Nitrate, TDS, Copper, Potassium

The results of the Mann Kendall trend analysis indicate the following:

- The plume at location LL3, is decreasing or stable, with no increasing trends observed. Concentrations of chloride, TDS, hardness, sodium and sulfate are decreasing.
- At LL4, there is a dominant decreasing trend, however, concentrations of zinc copper and lead are increasing.
- Well LLFG03 shows a dominant increasing trend, with concentrations of manganese, zinc, copper, sodium and sulfate all increasing. Cadmium concentrations appear stable, however, there are no decreasing trends observed within the well.
- Location LLFG04 shows a dominant stable and decreasing trend, however, concentrations of boron and zinc were observed to be increasing.
- Well LLFG05, the most upgradient well, shows a dominant stable and decreasing trend, however concentrations of zinc were observed to be increasing.
- The plume at the most downgradient well LLFG08 is predominantly stable, however, concentrations of zinc, iron and potassium are increasing. Only TDS was observed to be decreasing.
- There is both an increasing and stable trend observed at location LLFG10, with no decreasing trends observed. Concentrations of boron, manganese, zinc and sulfate are all increasing.
- Nitrate and cadmium have remained stable at all wells.

The two most upgradient wells LLFG05 and LL3 were found to have predominantly decreasing trends, while concentrations within the central portion of the plume area (LLFG03) shows an increasing trend. The most downgradient well LLFG08 has a predominantly stable trend, however, has some increasing trends in zinc, iron and potassium observed.

There are still a few contaminants of concern that show no discernible or identifiable trend, thus it is not yet possible to determine if they are increasing, stable or decreasing. Where a trend was able to be determined it may be concluded that the plume is predominantly stable with minor increases identified within various analytes, many of those inorganic background parameters/ analytes such as TDS, sulphate and metals. It should be noted that decreasing trends of ammonia were recorded within one well only, with no discernible trends of ammonia identified within any other bores. Zinc showed an increasing trend at all wells except LL3 with sulfate, manganese and boron also showing increasing trends at multiple wells. LLFG03 and LLFG10 have the most analytes recording increasing trends.

5.5 Criteria Exceedances

A Tier 1 Qualitative risk assessment of the data has been undertaken against the adopted assessment criteria as specified within the GAR (2018). Criteria exceedances relating to groundwater samples for the November 2024 monitoring event are presented in Appendix C and summarised in Table 5.2 below.

5.5.1 Inorganics

Concentrations of chloride, sodium, TDS and hardness exceeded the nominated criteria for the protection of human health (ADWG aesthetic) in all wells except for LL3 which only exceeded the criterion for TDS and hardness. Additionally, LLFG04 also recorded a sulphate concentration exceeding the ADWG aesthetic criterion. Nitrate concentrations were found to exceed the Tier 1 qualitative data in

LL3 and LLFG05 for the protection of ecological values (freshwater ecosystems)[9]. The following historical high concentrations were reported during the current monitoring event:

- Historical high concentrations of ammonia were recorded at LLFG04 and LLFG08.
- Historical high concentrations of sodium were recorded at LLFG03 and LLFG10.

5.5.2 Heavy Metals

Concentrations of cadmium, copper, iron, lead, manganese and zinc exceeded the nominated criteria for freshwater, aesthetic and health across multiple wells. The following historical high concentrations were reported during the current monitoring event:

- Historical high concentrations of manganese were recorded at LLFG03 and LLFG08.
- Historical high concentrations of zinc were recorded at LLFG04 and LLFG05.
- A historical high concentration of cadmium was recorded at LLFG04.
- Historical high concentrations of copper were recorded at LL4 and LLFG03.
- A historical high concentration of iron was recorded at LL3.

5.5.3 Volatile Compounds/Hydrocarbons/Halogenated Compounds

Petroleum hydrocarbon (TRH) concentrations were below the laboratory LOR at all wells. Historically, elevated concentrations of hydrocarbons have been found in all wells at the site since monitoring commenced in 2012.

Table 5.2 Summary of Groundwater Analyte Exceedances

Analyte	Assessment Criteria (mg/L)				Groundwater Concentration (mg/L)						
	ADWG Aesthetic	ADWG Health	ANZG Fresh 95%	ANZECC Irrigation Short Term	LL3	LL4	LLFG03	LLFG04	LLFG05	LLFG08	LLFG10
Chloride	*250*	-	-	-	-	290	1,200	3,100	760	760	1,000
Sodium	*180*	-	-	-	-	230	650	1,500	530	610	690
Sulphate	*250*	-	-	-	-	-	-	500	-	-	-
TDS	*600*	-	-	-	800	950	2,800	6,500	2,300	2,300	2,500
Hardness as $CaCO_3$	*200*	-	-	-	335	372	949	1,890	594	595	849
Cadmium (Filtered)	-	*0.002*	*0.0002*	*0.05*	0.0003	0.0003	-	0.0017	-	-	-
Copper (Filtered)	*1*	*2*	*0.0014*	*5*	-	0.007	0.003	-	-	-	-
Iron (Filtered)	*0.3*	-	-	*10*	0.34	-	-	3.7	-	0.99	-
Lead (Filtered)	-	*0.01*	*0.0034*	*5*	-	0.006	-	-	-	-	-
Manganese (Filtered)	*0.1*	*0.5*	*1.9*	*10*	-	-	-	0.43	-	1.7	-
Zinc (Filtered)	*3*	-	*0.008*	5	0.016	-	0.017	0.037	0.043	-	0.013

6 Discussion

6.1 Groundwater Flow Direction

Groundwater flow direction was determined from the SWLs which infers the groundwater flow direction is to the north which is consistent with previous monitoring events. An interpreted groundwater contour plan for the November 2024 monitoring event is presented as Figure 2, Appendix A. Historical gauging results are presented in Figure 5, Appendix A. The groundwater flow direction to the north is likely due to a combination of localised recharge mechanisms, topography along the Eden-Burnside Fault scarp and the spatial position of the monitoring points.

Groundwater gradients have remained reasonable consistent since the October 2012 monitoring event. The groundwater flow direction for the November 2023 GME was to the northeast which was not consistent with historical monitoring events but was due to the lack of data assessed during the monitoring event. As all seven wells were able to be monitored during the current event, the groundwater flow direction is consistent with historical events, excluding the 2023 GME.

Based on SWLs measured at the site, the inferred groundwater flow direction is to the north based on groundwater contours generated in Surfer. The EPA On-line Tools for Site Assessment Calculation suggests that groundwater flow is to the northwest which is consistent with previous results and the likely regional groundwater flow direction.

Groundwater flow direction has historically been difficult to determine due to the extent of the current network of wells and the absence of data points available between wells LLFG03 and LLFG08 (over a distance of 360 m). Based on the location of the wells and the inferred groundwater flow direction, the wells likely to be impacted by the landfill mass are LLFG08, LLFG10 and LL4, in particular.

6.2 Cation and Anion Geochemistry

The cation and anion concentrations have remained quite similar to previous groundwater monitoring events with only a slight change in water type for LL4 due to a decrease in bicarbonate concentrations and an increase in chloride and sodium concentrations. The anion and cation concentrations have remained very stable at LL3 during the current monitoring event. Chloride, sodium, sulfate and magnesium concentrations have increased at most wells during the current monitoring event whilst bicarbonate concentrations have decreased at most wells. Historical high sodium concentrations were recorded at LLFG03 and LLFG10.

The hydro-geochemical facies determined for each well during the current monitoring event is consistent with previous monitoring events except a slight change at LL4 from Na – HCO_3^- to Na – Cl. The two dominant water types have been consistent since monitoring commenced in 2012. The water types have remained consistent and are likely representative of surrounding lithology and recharge mechanisms (Figure 4, Appendix A).

6.3 Groundwater Trend Analysis

The two most upgradient wells, LLFG05 and LL3 were found to have predominantly decreasing trends, while concentrations within the central portion of the plume area (LLFG03) shows an increasing trend. The most downgradient well, LLFG08 has a predominantly stable trend, however, has some increasing trends in zinc, iron and potassium observed.

Zinc showed an increasing trend at all wells except LL3 with sulfate, manganese and boron also showing increasing trends at multiple wells. The cause of increasing zinc concentrations is currently unknown; however, the geological formation consists of shales, siltstones and sandstones of the Belair group which naturally contain zinc bearing minerals such as sphalerite. If groundwater has become more acidic (slight decrease at all wells during the current monitoring event), zinc is more likely to be dissolved and mobilised, hence, increases are observed in the central and downgradient wells.

7 Conclusions and Recommendations

7.1 Conclusions

Based on the findings of the November 2024 GME, the following conclusions are provided:

- There were multiple reported analyte concentrations with historical high results across all wells:
  - Historical high concentrations of manganese were recorded at LLFG03 and LLFG08.
  - Historical high concentrations of zinc were recorded at LLFG04 and LLFG05.
  - A historical high concentration of cadmium was recorded at LLFG04.
  - Historical high concentrations of copper were recorded at LL4 and LLFG03.
  - A historical high concentration of iron was recorded at LL3.
  - Historical high concentrations of ammonia were recorded at LLFG04 and LLFG08.
  - Historical high concentrations of sodium were recorded at LLFG03 and LLFG10.
- The inferred groundwater flow direction is to the north based on the groundwater levels and contours. The EPA On-line Tools for Site Assessment Calculation does however suggest that groundwater flow is to the northwest, consistent with historical monitoring events.
- Groundwater well, LLFG10 has been used to represent background conditions for the site as it is across hydraulic gradient of the landfill. LLFG10 has recorded increasing trends for boron, manganese, sulfate and zinc which is consistent with previous monitoring results. The concentrations of boron, manganese, zinc and sulfur in groundwater is likely to be naturally occurring through the dissolution in minerals from surrounding geology.
- Based on the salinities of groundwater beneath the site and site location, the most appropriate environmental values to be protected at the site are aquatic ecosystems (freshwater) and irrigation.
- Mann Kendall analysis identified increasing trends for multiple analytes at all wells except LL3.
- Hydrocarbon concentrations were reported below the laboratory's LOR at all wells.

7.1.1 Existence of Contamination

In South Australia, the assessment, management, and remediation of site contamination is regulated by the Environment Protection Act 1993. The EP Act defines site contamination in section 5B as follows:

(1) *For the purposes of this Act, site contamination exists at a site if—*

> *(a) chemical substances are present on or below the surface of the site in concentrations above the background concentrations (if any); and*
>
> *(b) the chemical substances have, at least in part, come to be present there as a result of an activity at the site or elsewhere; and*
>
> *(c) the presence of the chemical substances in those concentrations has resulted in—*
>
> > *(i) actual or potential harm to the health or safety of human beings that is not trivial, taking into account current or proposed land uses; or*
> >
> > *(ii) actual or potential harm to water that is not trivial; or*
> >
> > *(iii) other actual or potential environmental harm that is not trivial, taking into account current or proposed land uses.*

The results of the investigation with reference to section 103ZA of the EP Act indicates that site contamination does exist, given the historic concentrations of petroleum hydrocarbons reported in several groundwater wells as the compounds are not naturally occurring. The exceedances of nominated guidelines for nutrients and heavy metals may also indicate site contamination of groundwater, especially the increasing trends of some heavy metals, in particular zinc concentrations at multiple wells across the site.

7.2 Recommendations

Based on the assessment and conclusions detailed in this report, the following recommendations are made:

- Continued annual monitoring of groundwater conditions in accordance with the sites updated groundwater monitoring plan (GMP)[1];

All conclusions, findings, and recommendations presented in this report must be read in conjunction with the "Statement of Limitations" included in Section 8 of this report.

8 Statement of Limitations

Tonkin has prepared this groundwater monitoring report to provide an assessment of the likely impact to groundwater from landfill activity.

The report is based on our interpretation of information gathered during our investigations, undertaken in accordance with good professional practice and current requirements. The results of this process are set out in this report and any conclusions we have made must be considered in this light.

The scope of the investigations is in accordance with current standards applied by the relevant authority at the date of the report. It must be recognised that standards for environmental performance are regularly reviewed and the results indicated in the report should therefore be reviewed in the light of changing standards.

A qualified person should always be contacted to advise on any matters involving the interpretation of the groundwater monitoring report.

This report was prepared for the client, on the basis of agreed parameters. Tonkin takes no responsibility for any reliance a third-party places on this report or any of its conclusions. If a third party wants to determine the environmental conditions of the site, the services of an appropriately qualified expert should be retained.

Appendix A – Figures

tonkin

Job Number: 240365
Filename: 240365QG001M
Revision: Rev M
Date: 2025-02-13
Drawn: Ellen Tansell

Data Acknowledgement:
Aerial from MetroMap, 2024

City of Mitcham

Lynton Landfill
Monitoring Well Locations
November 2024

Figure 1

tonkin

0 40 80 120 m

EPSG:28354

N

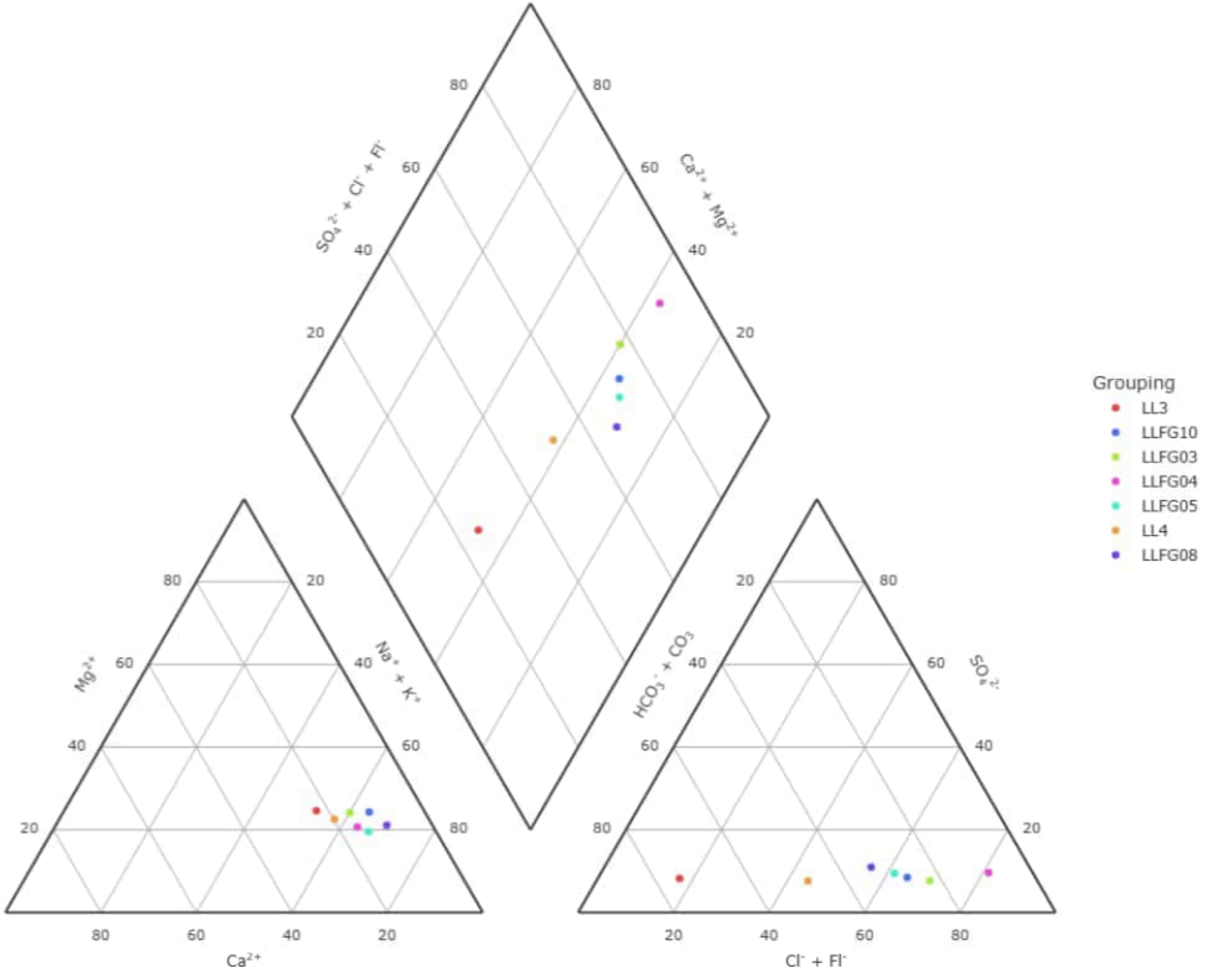
City of Mitcham

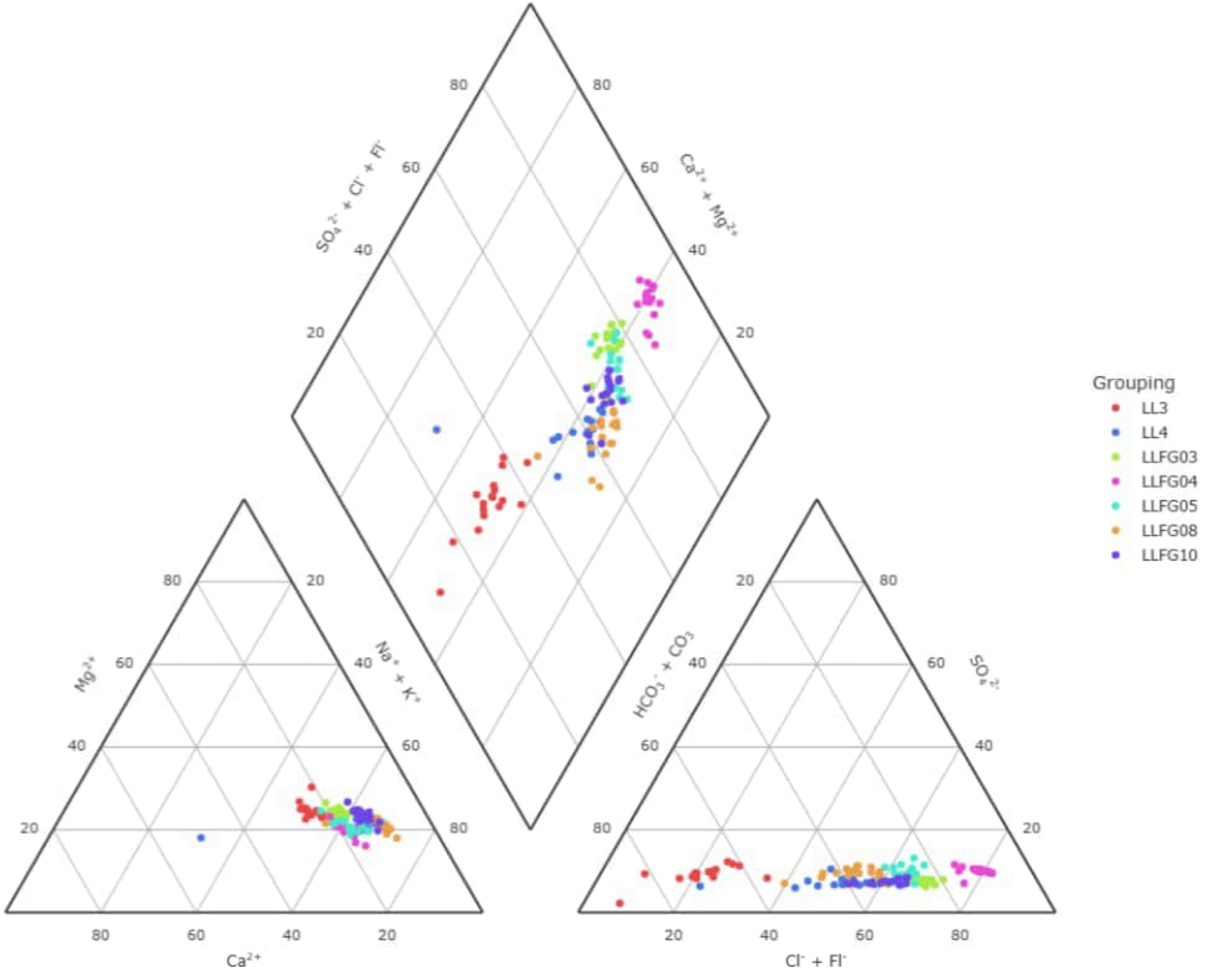
Lynton Landfill
Groundwater Contours
November 2024

Job Number:	240365
Filename:	240365QG001M
Revision:	Rev M
Date:	2025-02-13
Drawn:	Ellen Tansell

Data Acknowledgement:
Aerial from MetroMap, 2024

Figure 2


$SO_4^{2-} + Cl^- + Fl^-$
$Ca^{2+} + Mg^{2+}$
Mg^{2+}
$Na^+ + K^+$
$HCO_3^- + CO_3$
SO_4^{2-}
Ca^{2+}
$Cl^- + Fl^-$
Grouping
LL3
LLFG10
LLFG03
LLFG04
LLFG05
LL4
LLFG08


$SO_4^{2-} + Cl^- + Fl^-$
$Ca^{2+} + Mg^{2+}$
Mg^{2+}
$Na^+ + K^+$
$HCO_3^- + CO_3$
SO_4^{2-}
Ca^{2+}
$Cl^- + Fl^-$
Grouping
LL3
LL4
LLFG03
LLFG04
LLFG05
LLFG08
LLFG10

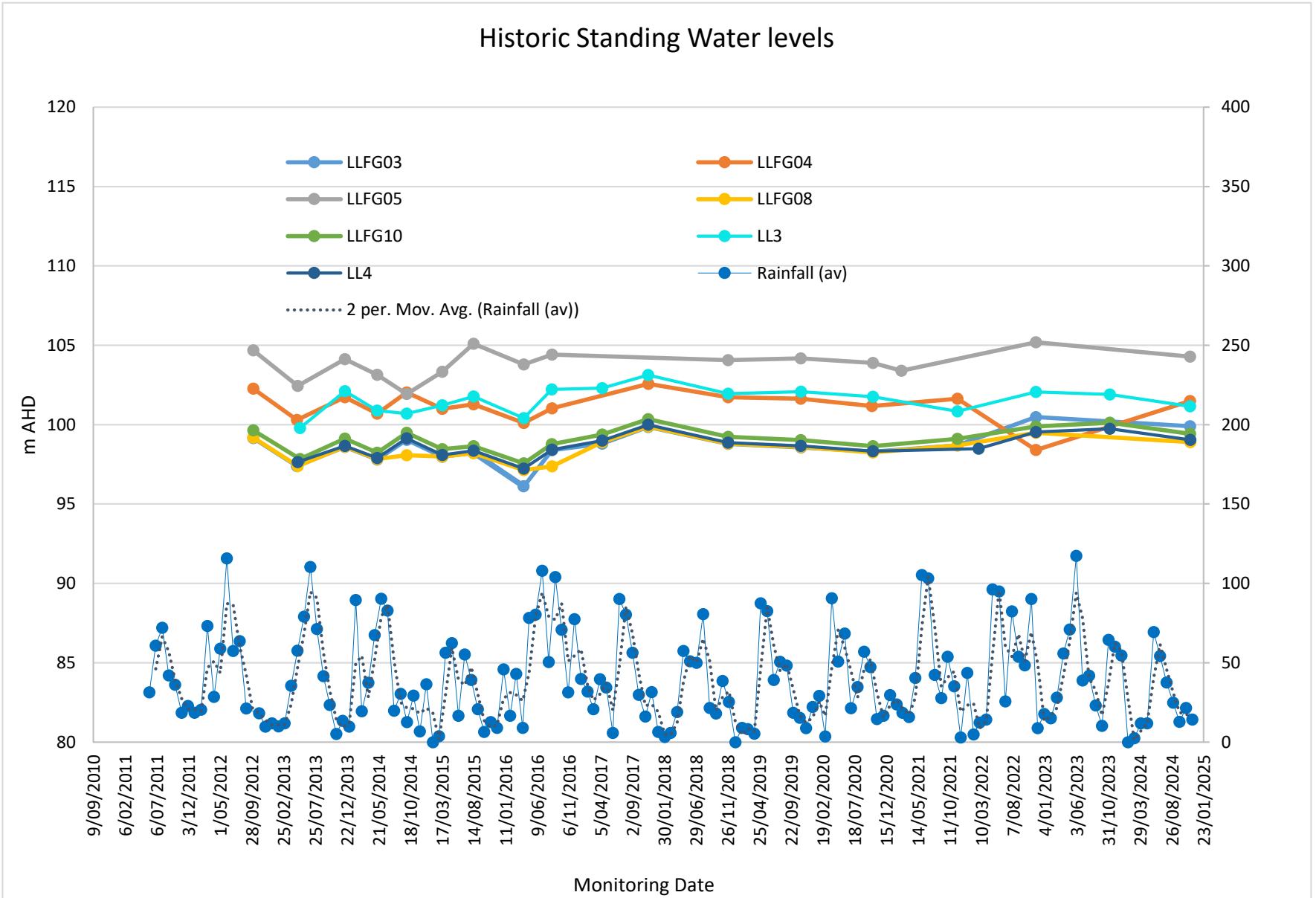


Figure 5 Lynton Landfill: Historic Gauging Data

Appendix B – Field Forms

tonkin

SF15: Groundwater Sampling Log

Job No: 240365	**E** (m)	**Well No:** LLFG3
Location: Lynton	**N** (m)	
Client: City of Mitcham	**RL casing** (m)	
Sampling Date: 20/11/24	**RL surface** (m)	

Well Information:

Well Finish: Standpipe (circled) Gatic **Well Finish Damaged?** N **Casing Diameter (mm):** 50

Well Depth (m TOC): 36.205 **Screen Interval (m):** – **Case Interval (m):** –

Depth to Free Product (m TOC): – **Product Thickness (mm):** –

Depth to Groundwater (m TOC): 23.482 **Depth to be Purged (m) (Well Depth – Depth to Groundwater):** –

Purging Information (wells should be purged of four to six well volumes or until field parameters are considered to be stable)

Casing Volume:
V = pi r^2 h = 1.96 x h (r = 0.025m) OR 1 purge volume = 2 L/m for 50mm Internal Diameter casing and 8 L/m for 100mm Internal Diameter

Purging Method: – **Tubing Material:** –

Start Time: – **Finish Time:** –

Pump Depth (m): – **Well purged dry?** – **Total Volume Purged (L):** – **Water Quality Meter Calibrated?** Y

Groundwater Observations

Colour: very pale brown **Odour:** no

Turbidity: low **Hydrocarbon Sheen:** no

Weather

Rain: no **Temperature:** 20°C **Cloud Cover:** nil

Comments:

Field Measurements: [when at least three parameters differ by the acceptable range (pH readings are within 0.1 units, electrical conductivity within 5% and temperature within 0.2°C, DO 10%, redox +/- 10 mv) for three consecutive readings at each bore volumes on volume-based method (or intervals of 5 minutes or more for low flow micro-purge sampling), the well can be considered to be stable]. Please place the pump within the screen interval for low flow micro-purge sampling. Please measure the SWL to determine drawdown for micro purge/low flow sampling. A maximum drawdown of 10 cm is allowed, and water level should stabilise for micro purge sampling. Please note that stabilisation criteria may be dictated by Auditor for Audited sites. Pump should be placed above the screen if SWL is located above the screen for high flow purging and if SWL is within the screen then pump should be placed at least 1 m above the bottom of the well.

Time	Temp (°C)	EC (uS/cm) or (mS/cm)	pH	DO (mg/L)	ORP (mV)		SWL (mTOC)		Volume Purged (L)	Purging Notes
10.14	19.9	3596	6.37	2.05	296.8				0	

Sampling Information:

Sampling Method: Hydrasleeve

Tubing Material: –

Sample No	QA/QC	Time Taken	Preservation Details							Analysis								
LLFG3	DUP01	1010				see COC								see COC				
	RIN301																	

Purged by:	[illegible] –	**Signature:**	–
Sampled by:	KL	**Signature:**	[illegible]

SF15: Groundwater Sampling Log

Job No: 240365	**E** (m)	**Well No:** LLFG4
Location: Lynton	**N** (m)	
Client: City of Mitcham	**RL casing** (m)	
Sampling Date: 20/11/24	**RL surface** (m)	

Well Information:

Well Finish: (Standpipe) Gatic **Well Finish Damaged?** N **Casing Diameter (mm):** 50

Well Depth (m TOC): 25.970 **Screen Interval (m):** **Case Interval (m):** —

Depth to Free Product (m TOC): — **Product Thickness (mm):** —

Depth to Groundwater (m TOC): 14.183 **Depth to be Purged (m) (Well Depth – Depth to Groundwater):** —

Purging Information (wells should be purged of four to six well volumes or until field parameters are considered to be stable)

Casing Volume:
V = pi r^2 h = 1.96 x h (r = 0.025m) OR 1 purge volume = 2 L/m for 50mm Internal Diameter casing and 8 L/m for 100mm Internal Diameter

Purging Method: — **Tubing Material:** —

Start Time: — **Finish Time:** —

Pump Depth (m): — **Well purged dry?** — **Total Volume Purged (L):** — **Water Quality Meter Calibrated?** Y

Groundwater Observations

Colour: pale brown **Odour:** no

Turbidity: low **Hydrocarbon Sheen:** no

Weather

Rain: no **Temperature:** 22°C **Cloud Cover:** No

Comments:

Field Measurements: [when at least three parameters differ by the acceptable range (pH readings are within 0.1 units, electrical conductivity within 5% and temperature within 0.2°C, DO 10%, redox +/- 10 mv) for three consecutive readings at each bore volumes on volume-based method (or intervals of 5 minutes or more for low flow micro-purge sampling), the well can be considered to be stable]. Please place the pump within the screen interval for low flow micro-purge sampling. Please measure the SWL to determine drawdown for micro purge/low flow sampling. A maximum drawdown of 10 cm is allowed, and water level should stabilise for micro purge sampling. Please note that stabilisation criteria may be dictated by Auditor for Audited sites. Pump should be placed above the screen if SWL is located above the screen for high flow purging and if SWL is within the screen then pump should be placed at least 1 m above the bottom of the well.

Time	Temp (°C)	EC (uS/cm) or (mS/cm)	pH	DO (mg/L)	ORP (mV)		SWL (mTOC)		Volume Purged (L)	Purging Notes
10.45	19.8	9099	6.08	1.18	295.4		14.183		—	

Sampling Information:

Sampling Method: Hydrasleeve

Tubing Material: —

Sample No	QA/QC	Time Taken	Preservation Details	Analysis
LLFG4	—	10.40	See COC	See COC

Purged by: — **Signature:** —

Sampled by: ML **Signature:** ~~ML~~

SF15: Groundwater Sampling Log

Job No: 240365	**E** (m)	**Well No:**
Location: Lynton	**N** (m)	LLFGS
Client: City of Mitcham	**RL casing** (m)	
Sampling Date: 2024/1/24	**RL surface** (m)	

Well Information:

Well Finish: Standpipe (Gatic) **Well Finish Damaged?** N **Casing Diameter (mm):** 50

Well Depth (m TOC): 32.640 **Screen Interval (m):** — **Case Interval (m):** —

Depth to Free Product (m TOC): — **Product Thickness (mm):** —

Depth to Groundwater (m TOC): 23.427 **Depth to be Purged (m) (Well Depth – Depth to Groundwater):** —

Purging Information (wells should be purged of four to six well volumes or until field parameters are considered to be stable)

Casing Volume:
V = pi r^2 h = 1.96 x h (r = 0.025m) OR 1 purge volume = 2 L/m for 50mm Internal Diameter casing and 8 L/m for 100mm Internal Diameter

Purging Method: — **Tubing Material:** —

Start Time: — **Finish Time:** —

Pump Depth (m): — **Well purged dry?** — **Total Volume Purged (L):** — **Water Quality Meter Calibrated?** Y

Groundwater Observations

Colour: Very pale grey/brown **Odour:** NO

Turbidity: low **Hydrocarbon Sheen:** NO

Weather

Rain: NO **Temperature:** 22°C **Cloud Cover:** NO

Comments:

Field Measurements: [when at least three parameters differ by the acceptable range (pH readings are within 0.1 units, electrical conductivity within 5% and temperature within 0.2°C, DO 10%, redox +/- 10 mv) for three consecutive readings at each bore volumes on volume-based method (or intervals of 5 minutes or more for low flow micro-purge sampling), the well can be considered to be stable]. Please place the pump within the screen interval for low flow micro-purge sampling. Please measure the SWL to determine drawdown for micro purge/low flow sampling. A maximum drawdown of 10 cm is allowed, and water level should stabilise for micro purge sampling. Please note that stabilisation criteria may be dictated by Auditor for Audited sites. Pump should be placed above the screen if SWL is located above the screen for high flow purging and if SWL is within the screen then pump should be placed at least 1 m above the bottom of the well.

Time	Temp (°C)	EC (uS/cm) or (mS/cm)	pH	DO (mg/L)	ORP (mV)		SWL (mTOC)		Volume Purged (L)	Purging Notes
11.14	21.5	2827	6.25	1.22	277.0		23.427		—	

Sampling Information:

Sampling Method: Hydrasleeve

Tubing Material: —

Sample No	QA/QC	Time Taken	Preservation Details							Analysis								
LLFGS	—	11.10			See COC							Metals						

Purged by: — **Signature:** —

Sampled by: KC **Signature:**

SF15: Groundwater Sampling Log

Job No: 240365	**E** (m)	**Well No:**
Location: Lynton	**N** (m)	LLFG8
Client: City of Mitcham	**RL casing** (m)	
Sampling Date: 21/11/24	**RL surface** (m)	

Well Information:

Well Finish: Standpipe / Gatic **Well Finish Damaged?** N **Casing Diameter (mm):** 50

Well Depth (m TOC): 40.660 **Screen Interval (m):** — **Case Interval (m):** —

Depth to Free Product (m TOC): — **Product Thickness (mm):** —

Depth to Groundwater (m TOC): 29.972 **Depth to be Purged (m) (Well Depth – Depth to Groundwater):** —

Purging Information (wells should be purged of four to six well volumes or until field parameters are considered to be stable)

Casing Volume:
V = pi r^2 h = 1.96 x h (r = 0.025m) OR 1 purge volume = 2 L/m for 50mm Internal Diameter casing and 8 L/m for 100mm Internal Diameter

Purging Method: — **Tubing Material:** —

Start Time: — **Finish Time:** —

Pump Depth (m): — **Well purged dry?** — **Total Volume Purged (L):** — **Water Quality Meter Calibrated?** Y

Groundwater Observations

Colour: pale brown / yellow **Odour:** no

Turbidity: mod **Hydrocarbon Sheen:** no

Weather

Rain: no **Temperature:** 26°C **Cloud Cover:** no

Comments:

Field Measurements: [when at least three parameters differ by the acceptable range (pH readings are within 0.1 units, electrical conductivity within 5% and temperature within 0.2°C, DO 10%, redox +/- 10 mv) for three consecutive readings at each bore volumes on volume-based method (or intervals of 5 minutes or more for low flow micro-purge sampling), the well can be considered to be stable]. Please place the pump within the screen interval for low flow micro-purge sampling. Please measure the SWL to determine drawdown for micro purge/low flow sampling. A maximum drawdown of 10 cm is allowed, and water level should stabilise for micro purge sampling. Please note that stabilisation criteria may be dictated by Auditor for Audited sites. Pump should be placed above the screen if SWL is located above the screen for high flow purging and if SWL is within the screen then pump should be placed at least 1 m above the bottom of the well.

Time	Temp (°C)	EC (uS/cm) or (mS/cm)	pH	DO (mg/L)	ORP (mV)		SWL (mTOC)		Volume Purged (L)	Purging Notes
9:46	21.9	1795	6.61	2.88	315.2		29.772		—	

Sampling Information:

Sampling Method: Hydrasleeve

Tubing Material: —

Sample No	QA/QC	Time Taken	Preservation Details	Analysis
LLFG8	—	9:44	see COC	see COC

Purged by: — **Signature:** —

Sampled by: — **Signature:** —

SF15: Groundwater Sampling Log

Job No: 240365	**E** (m)	**Well No:**
Location: Lynton	**N** (m)	
Client: City of Mitcham	**RL casing** (m)	LLFG10
Sampling Date: 20/11/24	**RL surface** (m)	

Well Information:

Well Finish: (Standpipe) Gatic **Well Finish Damaged?** N **Casing Diameter (mm):** 50

Well Depth (m TOC): 4.610 **Screen Interval (m):** — **Case Interval (m):** —

Depth to Free Product (m TOC): — **Product Thickness (mm):** —

Depth to Groundwater (m TOC): 2.300 **Depth to be Purged (m) (Well Depth – Depth to Groundwater):** —

Purging Information (wells should be purged of four to six well volumes or until field parameters are considered to be stable)

Casing Volume:
V = pi r^2 h = 1.96 x h (r = 0.025m) OR 1 purge volume = 2 L/m for 50mm Internal Diameter casing and 8 L/m for 100mm Internal Diameter

Purging Method: — **Tubing Material:** —

Start Time: — **Finish Time:** —

Pump Depth (m): — **Well purged dry?** — **Total Volume Purged (L):** — **Water Quality Meter Calibrated?** Y

Groundwater Observations

Colour: Very pale brown **Odour:** NV

Turbidity: low **Hydrocarbon Sheen:** NO

Weather

Rain: NO **Temperature:** 25°C **Cloud Cover:** NO

Comments:

Field Measurements: [when at least three parameters differ by the acceptable range (pH readings are within 0.1 units, electrical conductivity within 5% and temperature within 0.2°C, DO 10%, redox +/- 10 mv) for three consecutive readings at each bore volumes on volume-based method (or intervals of 5 minutes or more for low flow micro-purge sampling), the well can be considered to be stable]. Please place the pump within the screen interval for low flow micro-purge sampling. Please measure the SWL to determine drawdown for micro purge/low flow sampling. A maximum drawdown of 10 cm is allowed, and water level should stabilise for micro purge sampling. Please note that stabilisation criteria may be dictated by Auditor for Audited sites. Pump should be placed above the screen if SWL is located above the screen for high flow purging and if SWL is within the screen then pump should be placed at least 1 m above the bottom of the well.

Time	Temp (°C)	EC (uS/cm) or (mS/cm)	pH	DO (mg/L)	ORP (mV)		SWL (mTOC)		Volume Purged (L)	Purging Notes
12:50	24	3805	6.56	2.14	261.5		2.300		—	

Sampling Information:

Sampling Method: Hydrasleeve

Tubing Material: —

Sample No	QA/QC	Time Taken	Preservation Details							Analysis								
LLFGW	DUP02	12:45			See COC								See COC					

Purged by: — **Signature:**

Sampled by: RL **Signature:**

SF15: Groundwater Sampling Log

Job No: 240365	**E** (m)	**Well No:** LL3
Location: Lynton	**N** (m)	
Client: City of Mitcham	**RL casing** (m)	
Sampling Date: 20/11/24	**RL surface** (m)	

Well Information:

Well Finish: (Standpipe) Gatic **Well Finish Damaged?** N **Casing Diameter (mm):** 50

Well Depth (m TOC): 3.910 **Screen Interval (m):** — **Case Interval (m):** —

Depth to Free Product (m TOC): — **Product Thickness (mm):** —

Depth to Groundwater (m TOC): 23.774 **Depth to be Purged (m) (Well Depth – Depth to Groundwater):** —

Purging Information (wells should be purged of four to six well volumes or until field parameters are considered to be stable)

Casing Volume:
V = pi r^2 h = 1.96 x h (r = 0.025m) OR 1 purge volume = 2 L/m for 50mm Internal Diameter casing and 8 L/m for 100mm Internal Diameter

Purging Method: — **Tubing Material:** —

Start Time: — **Finish Time:** —

Pump Depth (m): — **Well purged dry?** — **Total Volume Purged (L):** — **Water Quality Meter Calibrated?** Y

Groundwater Observations

Colour: clear – pale brown **Odour:** no

Turbidity: very clear **Hydrocarbon Sheen:** no

Weather

Rain: no **Temperature:** 25C **Cloud Cover:** no

Comments:

Field Measurements: [when at least three parameters differ by the acceptable range (pH readings are within 0.1 units, electrical conductivity within 5% and temperature within 0.2°C, DO 10%, redox +/- 10 mv) for three consecutive readings at each bore volumes on volume-based method (or intervals of 5 minutes or more for low flow micro-purge sampling), the well can be considered to be stable]. Please place the pump within the screen interval for low flow micro-purge sampling. Please measure the SWL to determine drawdown for micro purge/low flow sampling. A maximum drawdown of 10 cm is allowed, and water level should stabilise for micro purge sampling. Please note that stabilisation criteria may be dictated by Auditor for Audited sites. Pump should be placed above the screen if SWL is located above the screen for high flow purging and if SWL is within the screen then pump should be placed at least 1 m above the bottom of the well.

Time	Temp (°C)	EC (uS/cm) or (mS/cm)	pH	DO (mg/L)	ORP (mV)		SWL (mTOC)		Volume Purged (L)	Purging Notes
11:48	23.0	1.37	6.62	1.54	296.0		23.774		—	

Sampling Information:

Sampling Method: Hydrasleeve

Tubing Material: —

Sample No	QA/QC	Time Taken	Preservation Details							Analysis								
LL3	~~DUP~~	11:43			Iced								Recoc					

Purged by: — **Signature:** —

Sampled by: LC **Signature:** LC

SF15: Groundwater Sampling Log

Job No: 240365	**E** (m)	**Well No:** LL4
Location: Lynton	**N** (m)	
Client: City of Mitcham	**RL casing** (m)	
Sampling Date: 24/4/24	**RL surface** (m)	

Well Information:

Well Finish: (Standpipe) Gatic **Well Finish Damaged?** N **Casing Diameter (mm):** 50

Well Depth (m TOC): 38.40 **Screen Interval (m):** — **Case Interval (m):** —

Depth to Free Product (m TOC): — **Product Thickness (mm):** —

Depth to Groundwater (m TOC): 28.877 **Depth to be Purged (m) (Well Depth – Depth to Groundwater):** —

Purging Information (wells should be purged of four to six well volumes or until field parameters are considered to be stable)

Casing Volume:
V = pi r^2 h = 1.96 x h (r = 0.025m) OR 1 purge volume = 2 L/m for 50mm Internal Diameter casing and 8 L/m for 100mm Internal Diameter

Purging Method: — **Tubing Material:** —

Start Time: — **Finish Time:** —

Pump Depth (m): — **Well purged dry?** — **Total Volume Purged (L):** — **Water Quality Meter Calibrated?** Y

Groundwater Observations

Colour: pale yellow **Odour:** NO

Turbidity: Nil **Hydrocarbon Sheen:** NO

Weather

Rain: **Temperature:** **Cloud Cover:**

Comments:

Field Measurements: [when at least three parameters differ by the acceptable range (pH readings are within 0.1 units, electrical conductivity within 5% and temperature within 0.2°C, DO 10%, redox +/- 10 mv) for three consecutive readings at each bore volumes on volume-based method (or intervals of 5 minutes or more for low flow micro-purge sampling), the well can be considered to be stable]. Please place the pump within the screen interval for low flow micro-purge sampling. Please measure the SWL to determine drawdown for micro purge/low flow sampling. A maximum drawdown of 10 cm is allowed, and water level should stabilise for micro purge sampling. Please note that stabilisation criteria may be dictated by Auditor for Audited sites. Pump should be placed above the screen if SWL is located above the screen for high flow purging and if SWL is within the screen then pump should be placed at least 1 m above the bottom of the well.

Time	Temp (°C)	EC (uS/cm) or (mS/cm)	pH	DO (mg/L)	ORP (mV)		SWL (mTOC)		Volume Purged (L)	Purging Notes
13.41	24	1513	6.46	2.01	276.7					

Sampling Information:

Sampling Method: Hydrasleeve

Tubing Material:

Sample No	QA/QC	Time Taken	Preservation Details							Analysis								
LL4	—					see COC							see COC					

Purged by: — **Signature:** —

Sampled by: KL **Signature:** KLee

Multi Parameter Water Meter 79.0 14112024A

Instrument **YSI Pro Plus**
Serial No. **18G103308**

Air-Met Scientific Pty Ltd
1800 000 744

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		0ppm		416791	0ppm
2. Conductivity		2760µS		424499	2760µS
3. pH7		pH 7		419529	pH 7
4. pH4		pH 4		422643	pH 4
5. Temp °C		20.7°C		MultTherm	20.7°C
6. ORP mV		232.46mV		MultTherm	232.46mV

Calibrated by: Jaspher Olanio

Calibration date: **14-Nov-24**

Next calibration due: **13-May-25**

Gas Calibration Certificate 159.0 14112024A

Instrument **GA5000**
Serial No. **G506381**
Sensors **O2 CO H2S CH4 CO2**

Air-Met Scientific Pty Ltd
1800 000 744

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
	Recharge OK?	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
Pump	Operation	✓	
	Filter	✓	
	Flow	✓	
	Valves, Diaphragm	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	O2	✓	
	CO	✓	
	H2S	✓	
	CH4	✓	
	CO2	✓	
Alarms	Beeper	✓	
	Settings	✓	
Software	Version		
Datalogger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Diffusion mode Aspirated mode

Sensor	Serial no	Calibration gas and concentration	Certified	Gas bottle No	Instrument Reading
O2		20.9% O2		Fresh Air	20.9% O2
CO		100ppm CO	NIST	SA048	100ppm CO
H2S		25ppm H2S	NIST	SA048	25ppm H2S
CH4		60% CH4	NIST	SA047	60% CH4
CO2		40% CO2	NIST	SA047	40% CO2

Calibrated by: Jaspher Olanio

Calibration date: **14/11/2024**

Next calibration due: **13/05/2025**

Oil / Water Interface Meter 3.0 14112024A

Instrument **Solinst Interface Meter (100m)**
Serial No. **348965**

airmet
Air-Met Scientific Pty Ltd
1800 000 744

Item	Test	Pass	Comments
Battery	Compartment	✓	
	Capacity	✓	
Probe	Cleaned/Decon.	✓	
	Operation	✓	
Connectors	Condition	✓	
		✓	
Tape Check	Cleaned	✓	
	Checked for cuts	✓	
Instrument Test	At surface level	✓	

Certificate of Calibration

This is to certify that the above instrument has been cleaned and tested.

Calibrated by: Trent Chase

Calibration date: **14/11/2024**

Next calibration due: **13/05/2025**

Appendix C – Tables

Table 1
Lynton Landfill Groundwater
Gauging Results November 2024

Location ID	Sampling Method	Field Sampling Date	TOC (mAHD)	Screened Interval (m below ground level)	Well Depth (mTOC)	SWL (mTOC)	Groundwater Level (mAHD)	Field pH	Dissolved Oxygen (mg/L)	Electrical Conductivity (µS/cm)	Temperature (°C)	ORP (mV)	Colour	Turbidity	Odour	Hydrocarbon Sheen
LLFG03	Hydrasleeve	20/11/2024	123.39	2.0 - 35.0	36.21	23.48	99.90	6.37	2.05	3596	19.9	296.8	Very Pale Brown	Low	None	None
LLFG04	Hydrasleeve	20/11/2024	115.67	1.0 - 25.0	25.97	14.18	101.49	6.08	1.18	9099	19.8	295.4	Pale Brown	Low	None	None
LLFG05	Hydrasleeve	20/11/2024	127.72	1.0 - 40.0	39.64	23.43	104.29	6.25	1.22	2827	21.5	297.0	Very Pale Grey/Brown	Low	None	None
LLFG08	Hydrasleeve	21/11/2024	128.87	1.0 - 40.0	40.66	29.97	98.90	6.61	2.88	1795	21.9	315.2	Pale Brown/Yellow	Mod	None	None
LLFG10	Hydrasleeve	20/11/2024	123.72	1.0 - 40.0	40.61	24.30	99.42	6.56	2.14	3805	24.0	261.5	Very Pale Brown	Low	None	None
LL3	Hydrasleeve	20/11/2024	124.92	34 - 39	39.10	23.77	101.15	6.62	1.54	1147	23.0	296	Clear/Pale Brown	Very Low	None	None
LL4	Hydrasleeve	21/11/2024	127.95	20 - 40	38.40	28.90	99.05	6.46	2.01	1513	24.0	276.7	Pale Yellow	Nil	None	None

TOC = top of casing
mAHD = meters Australian Height Datum
mbgl = meters below ground level
mTOC = meters below top of casing
mg/L = miligrams per litre
µS/cm = microsiemens per centimeter
°C = degrees celcius
mV = milivolts
L = Litre

				Metals																				TPH						
				Arsenic (filtered)	Barium (filtered)	Beryllium (filtered)	Boron (filtered)	Cadmium (filtered)	Calcium (filtered)	Chromium (hexavalent)	Chromium (III+VI)	Chromium (III+VI) (filtered)	Chromium (Trivalent)	Cobalt (filtered)	Copper (filtered)	Iron (filtered)	Lead (filtered)	Magnesium (filtered)	Manganese (filtered)	Mercury (filtered)	Nickel (filtered)	Potassium (filtered)	Selenium (filtered)	Vanadium (filtered)	Zinc (filtered)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum)	C6-C10 Fraction (F1)
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				0.001	0.001	0.001	0.05	0.0001	0.5	0.005	0.001	0.001	0.005	0.001	0.001	0.05	0.001	0.5	0.001	0.0001	0.001	0.5	0.001	0.005	0.005	20	50	100	50	50	20
ADWG 2022 Aesthetic															1	0.3			0.1						3						
ADWG 2022 Health				0.01	2	0.06	4	0.002		0.05					2		0.01		0.5	0.001	0.02		0.01								
ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)							0.94	0.0002		0.001					0.0014		0.0034		1.9	0.0006	0.011		0.011		0.008						
ANZECC 2000 Irrigation Short Term				2		0.5		0.05			1	1		0.1	5	10	5		10	0.002	2		0.05	0.5	5						
Location Code	**Date**	**Field ID**	**Sample Type**																												
	20 Nov 2024	RINS01	Rinsate	<0.001	<0.02	<0.001	<0.05	<0.0002			<0.001			<0.001	<0.001	<0.05	<0.001		<0.005	<0.0001	<0.001		<0.001	<0.005	<0.005						
	20 Nov 2024	TB01	Trip_B																												<20
	21 Nov 2024	TB02	Trip_B																												<20
LL3	20 Nov 2024	LL3	Normal	<0.001	<0.02	<0.001	<0.5	0.0003	65	<0.005	<0.001	<0.001	<0.005	<0.001	<0.001	0.34	0.001	42	0.071	<0.0001	<0.001	4	0.003	<0.005	0.016	<20	<50	<100	<100	<100	<20
LL4	21 Nov 2024	LL4	Normal	0.001	0.04	<0.001	<0.5	0.0003	70	<0.005	<0.001	<0.001	<0.005	0.001	0.007	<0.05	0.006	48	0.01	<0.0001	0.001	7.7	<0.001	<0.005	0.008	<20	<50	<100	<100	<100	<20
LLFG03	20 Nov 2024	DUP01	Field_D	<0.001	0.07	<0.001	<0.5	0.0002	150	<0.005	<0.001		<0.005	0.001	<0.001	<0.05	<0.001	140	0.093	<0.0001	<0.001	9.3	0.002	<0.005	0.006	<20	<50	<100	<100	<100	<20
RPD% Difference Between LLFG03 & DUP01				-	0	-	-	0	0	-	-	-	-	-	-	-	-	0	3	-	-	7	67	-	96	-	-	-	-	-	-
LLFG03	20 Nov 2024	LLFG3	Normal	<0.001	0.07	<0.001	0.51	0.0002	150	<0.005	0.002	<0.001	<0.005	<0.001	0.003	<0.05	<0.001	140	0.096	<0.0001	0.009	10	0.001	<0.005	0.017	<20	<50	<100	<100	<100	<20
LLFG04	20 Nov 2024	LLFG4	Normal	0.003	0.09	<0.001	0.55	0.0017	330	<0.005	<0.001	<0.001	<0.005	0.009	<0.001	3.7	<0.001	260	0.43	<0.0001	0.006	15	<0.001	<0.005	0.037	<20	<50	<100	<100	<100	<20
LLFG05	20 Nov 2024	LLFG5	Normal	<0.001	<0.02	<0.001	<0.5	<0.0002	100	<0.005	0.005	<0.001	0.005	<0.001	<0.001	<0.05	<0.001	84	0.082	<0.0001	0.001	12	<0.001	<0.005	0.043	<20	<50	<100	<100	<100	<20
LLFG08	21 Nov 2024	LLFG8	Normal	0.002	0.12	<0.001	0.73	<0.0002	74	<0.005	<0.001	<0.001	<0.005	0.007	<0.001	0.99	<0.001	100	1.7	<0.0001	0.002	14	<0.001	<0.005	0.006	<20	<50	<100	<100	<100	<20
LLFG10	20 Nov 2024	DUP02	Interlab_D	<0.001	0.034	<0.001	0.54	0.0001	131	<0.01		<0.001	<0.01	<0.001	<0.001	0.06	<0.001	119	0.028	<0.0001	<0.001	14	<0.01	<0.01	0.013	<20	<50	<100	<50	<50	<20
RPD% Difference Between LLFG10 & DUP02				-	13	-	31	-	17	-	-	-	-	-	-	-	-	16	7	-	-	15	-	-	0	-	-	-	-	-	-
LLFG10	20 Nov 2024	LLFG10	Normal	<0.001	0.03	<0.001	0.74	<0.0002	110	<0.005	<0.001	<0.001	<0.005	<0.001	<0.001	<0.05	<0.001	140	0.03	<0.0001	<0.001	12	0.001	<0.005	0.013	<20	<50	<100	<100	<100	<20

Environmental Standards

NHMRC, September 2022, ADWG 2022 Aesthetic
NHMRC, May 2022, ADWG 2022 Health
ANZG, July 2023, ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)
DoE, 2000, ANZECC 2000 Irrigation Short Term

	TRH						BTEX							PAH															
	C6-C10 (F1 minus BTEX)	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (Sum)	Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a) pyrene	Benzo(b+j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	PAHs (Sum of total)
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	20	50	50	100	100	100	0.005	1	1	1	2	1	2	1	1	1	1	0.5	0.001	1	1	1	1	1	1	1	1	1	0.5
ADWG 2022 Aesthetic									25	3			20																
ADWG 2022 Health								1	800	300			600					0.01											
ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)							0.016	950	180	80		350				0.4		0.2						1.4			16	2	
ANZECC 2000 Irrigation Short Term																													
Location Code	**Date**	**Field ID**	**Sample Type**																											
	20 Nov 2024	RINS01	Rinsate																											
	20 Nov 2024	TB01	Trip_B																											
	21 Nov 2024	TB02	Trip_B																											
LL3	20 Nov 2024	LL3	Normal	<20	<50	<50	<100	<100	<100	<0.01	<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL4	21 Nov 2024	LL4	Normal	<20	<50	<50	<100	<100	<100	<0.01	<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG03	20 Nov 2024	DUP01	Field_D	<20	<50	<50	<100	<100	<100	<0.01	<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
RPD% Difference Between LLFG03 & DUP01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LLFG03	20 Nov 2024	LLFG3	Normal	<20	<50	<50	<100	<100	<100	<0.01	<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG04	20 Nov 2024	LLFG4	Normal	<20	<50	<50	<100	<100	<100	<0.01	<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG05	20 Nov 2024	LLFG5	Normal	<20	<50	<50	<100	<100	<100	<0.01	<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG08	21 Nov 2024	LLFG8	Normal	<20	<50	<50	<100	<100	<100	<0.01	<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG10	20 Nov 2024	DUP02	Interlab_D	<20	<100	<100	<100	<100	<100	<0.005	<1	<2	<2	<2	<2	<2	<1.0	<1.0	<1.0	<1.0	<0.5	<0.0010	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5
RPD% Difference Between LLFG10 & DUP02				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LLFG10	20 Nov 2024	LLFG10	Normal	<20	<50	<50	<100	<100	<100	<0.01	<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

Environmental Standards

NHMRC, September 2022, ADWG 2022 Aesthetic
NHMRC, May 2022, ADWG 2022 Health
ANZG, July 2023, ANZG Freshwater Toxicant DGVs LOSP 95% (July 20
DoE, 2000, ANZECC 2000 Irrigation Short Term

				Phenols																								
				3&4-Methylphenol (m&p-cresol)	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dichlorophenol	2,4-Dimethylphenol	2,4-Dinitrophenol	2,6-Dichlorophenol	2-Chlorophenol	2-Methylphenol	2-Nitrophenol	4,6-Dinitro-2-methylphenol	4,6-Dinitro-o-cyclohexyl phenol	4-chloro-3-methylphenol	4-Nitrophenol	Cresol Total	Pentachlorophenol	Tetrachlorophenols	Phenol	Phenols (Total Halogenated)	Phenols (Total Non Halogenated)	Total Phosphorus as P (Organic Phosphate as P)	Nitrite + Nitrate as N	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Ammonia as N
				µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL				2	1	1	1	1	0.03	1	1	1	1	30	100	1	30	0.01	2	30	1	0.01	0.1	0.01	0.01	1	1	1	1	0.01
ADWG 2022 Aesthetic						2	0.3				0.1																			
ADWG 2022 Health						20	200				300								10											
ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)						20	160		0.045		490								10		320								0.9
ANZECC 2000 Irrigation Short Term																														
Location Code	**Date**	**Field ID**	**Sample Type**																											
	20 Nov 2024	RINS01	Rinsate																											
	20 Nov 2024	TB01	Trip_B																											
	21 Nov 2024	TB02	Trip_B																											
LL3	20 Nov 2024	LL3	Normal	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	0.05	5.7	540	<10	<20	540	0.01
LL4	21 Nov 2024	LL4	Normal	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	0.01	1.7	440	<10	<20	440	0.02
LLFG03	20 Nov 2024	DUP01	Field_D	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	0.05	2.2	530	<10	<20	530	0.02
RPD% Difference Between LLFG03 & DUP01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	2	-	-	2	86
LLFG03	20 Nov 2024	LLFG3	Normal	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	0.05	2.2	540	<10	<20	540	0.05
LLFG04	20 Nov 2024	LLFG4	Normal	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	0.01	0.51	490	<10	<20	490	0.14
LLFG05	20 Nov 2024	LLFG5	Normal	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	0.02	3.5	500	<10	<20	500	0.02
LLFG08	21 Nov 2024	LLFG8	Normal	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	<0.01	<0.05	630	<10	<20	630	0.2
LLFG10	20 Nov 2024	DUP02	Interlab_D	<2.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0			<1.0			<2.0		<1.0			0.1	0.14	646	<1	<1	646	<0.01
RPD% Difference Between LLFG10 & DUP02				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	86	13	11	-	-	11	-
LLFG10	20 Nov 2024	LLFG10	Normal	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	0.04	0.16	580	<10	<20	580	0.02

Environmental Standards

NHMRC, September 2022, ADWG 2022 Aesthetic
NHMRC, May 2022, ADWG 2022 Health
ANZG, July 2023, ANZG Freshwater Toxicant DGVs LOSP 95% (July 20
DoE, 2000, ANZECC 2000 Irrigation Short Term

				Inorganics														Herbicides	Organic
				Biochemical Oxygen Demand	Chloride	Chemical Oxygen Demand	Cyanide Total	Electrical Conductivity (Lab)	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Organic Nitrogen as N	Nitrogen (Total)	pH (Lab)	Sodium (filtered)	Sulphate	Total Dissolved Solids (Lab)	Hardness as CaCO3	Dinoseb	Total Organic Carbon
				mg/L	mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	-	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L
EQL				2	1	10	0.004	1	0.1	0.01	0.01	0.2	0.1	0.01	0.5	5	10		100	1
ADWG 2022 Aesthetic					250									6.5-8.5	180	250	600	200		
ADWG 2022 Health							0.08													
ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)																				
ANZECC 2000 Irrigation Short Term																				
Location Code	**Date**	**Field ID**	**Sample Type**																	
	20 Nov 2024	**RINS01**	**Rinsate**																	
	20 Nov 2024	**TB01**	**Trip_B**																	
	21 Nov 2024	**TB02**	**Trip_B**																	
LL3	**20 Nov 2024**	**LL3**	**Normal**	<5	89	<25	<0.005	1,200	0.8	5.7	<0.02	0.79	6.5	8	170	57	800	335	<100	<5
LL4	**21 Nov 2024**	**LL4**	**Normal**	<5	290	59	<0.005	1,700	1.1	1.7	<0.02	1.08	2.8	7.7	230	67	950	372	<100	33
LLFG03	**20 Nov 2024**	**DUP01**	**Field_D**	<5	1,200	<25	<0.005	4,400	0.3	2.2	<0.02	0.28	2.5	7.7	630	180	2,800		<100	<5
RPD% Difference Between LLFG03 & DUP01				-	0	-	-	0	67	0	-	65	11	3	3	0	0	-	-	-
LLFG03	**20 Nov 2024**	**LLFG3**	**Normal**	<5	1,200	<25	<0.005	4,400	0.6	2.2	0.02	0.55	2.8	7.9	650	180	2,800	949	<100	<5
LLFG04	**20 Nov 2024**	**LLFG4**	**Normal**	<5	3,100	42	<0.005	9,900	0.6	0.27	0.24	0.46	1.1	7.7	1,500	500	6,500	1,890	<100	16
LLFG05	**20 Nov 2024**	**LLFG5**	**Normal**	<5	760	<25	<0.005	3,300	0.8	3.2	0.33	0.78	4.3	7.7	530	160	2,300	594	<100	<5
LLFG08	**21 Nov 2024**	**LLFG8**	**Normal**	7.4	760	230	<0.005	1,900	0.4	<0.02	<0.02	0.2	0.4	7.9	610	200	2,300	595	<100	12
LLFG10	**20 Nov 2024**	**DUP02**	**Interlab_D**	<2	1,020	33	<0.004	3,910	0.3	0.13	0.01		0.4	7.74	642	163	2,120			2
RPD% Difference Between LLFG10 & DUP02				-	2	-	-	60	40	8	100	-	0	2	7	10	16	-	-	-
LLFG10	**20 Nov 2024**	**LLFG10**	**Normal**	<5	1,000	<25	<0.005	2,100	0.2	0.12	0.03	<0.2	0.4	7.9	690	180	2,500	849	<100	<5

Environmental Standards

NHMRC, September 2022, ADWG 2022 Aesthetic
NHMRC, May 2022, ADWG 2022 Health
ANZG, July 2023, ANZG Freshwater Toxicant DGVs LOSP 95% (July 20
DoE, 2000, ANZECC 2000 Irrigation Short Term

					Metals																									
					Arsenic (filtered)	Barium (filtered)	Beryllium (filtered)	Boron (filtered)	Cadmium (filtered)	Calcium	Chromium (hexavalent)	Chromium (hexavalent) (filtered)	Chromium (III+VI)	Chromium (III+VI) (filtered)	Chromium (Trivalent)	Cobalt (filtered)	Copper (filtered)	Iron (filtered)	Lead (filtered)	Magnesium	Manganese (filtered)	Mercury (filtered)	Nickel (filtered)	Potassium	Selenium (filtered)	Vanadium (filtered)	Zinc (filtered)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L
EQL					0.001	0.001	0.001	0.05	0.0001	0.5	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.05	0.001	0.5	0.001	0.0001	0.001	0.5	0.001	0.005	0.001	20	50	100	50
ADWG 2022 Aesthetic																	1	0.3			0.1						3				
ADWG 2022 Health					0.01	2	0.06	4	0.002		0.05	0.05					2		0.01		0.5	0.001	0.02		0.01						
ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)								0.94	0.0002		0.001	0.001					0.0014		0.0034		1.9	0.0006	0.011		0.011		0.008				
ANZECC 2000 Irrigation Short Term					2		0.5		0.05				1	1		0.1	5	10	5		10	0.002	2		0.05	0.5	5				
Location Code	**Date**	**Field ID**	**Sample Type**																												
LL3	02 May 2013	LL3	Normal		<0.001	0.018	<0.001		0.0003	84				<0.001		0.001	0.001	<0.05	<0.001	52	0.087	<0.0001	0.001	5	<0.01	<0.01	0.026	<20	<50	<100	<50
LL3	12 Dec 2013	LL3	Normal		<0.001	<0.02	<0.001		<0.0002	72				<0.001		<0.001	<0.001	<0.05	<0.001	46	0.086	<0.0001	<0.001	2.6	<0.001	<0.005	0.018	<20	<50	<100	<100
LL3	13 May 2014	LL3	Normal		0.001	<0.02	<0.001		0.0002	68				<0.001		0.001	0.002	<0.05	<0.001	40	0.092	<0.0001	0.001	5	0.005	<0.005	0.022	<20	<50	<100	<100
LL3	30 Sep 2014	LL3	Normal		<0.001	0.018	<0.001	0.31	0.0003	76				<0.001		0.001	0.001	<0.05	<0.001	46	0.099	<0.0001	<0.001	5	<0.01	<0.01	0.021	<20	<50	<100	<50
LL3	17 Mar 2015	LL3	Normal		<0.001	<0.02	<0.001	0.33	0.0003	82	<0.001					0.001	<0.001	<0.05	<0.001	54	0.1	<0.0001	<0.001	5.8	0.003	<0.005	0.016	<20	<50	<100	<100
LL3	12 Aug 2015	LL3	Normal		<0.001	<0.02	<0.001	0.25	0.0003	72	<0.001					0.001	<0.001	<0.05	<0.001	42	0.098	<0.0001	<0.001	5.7	0.003	<0.005	0.009	<20	<50	200	<100
LL3	06 Apr 2016	LL3	Normal		<0.001	<0.02	<0.001	0.34	0.0002	66	<0.001					<0.001	<0.001	<0.05	<0.001	40	0.058	<0.0001	<0.001	4.2	0.002	<0.005	0.012	<20	<50	<100	<100
LL3	16 Aug 2016	LL3	Normal		<0.001	<0.02	<0.001	0.48	0.0003	76	<0.001					0.001	<0.001	<0.05	<0.001	47	0.11	<0.0001	<0.001	5.8	0.002	<0.005	0.009	<20	<50	<100	<100
LL3	12 Apr 2017	LL3	Normal		<0.001	<0.02	<0.001	0.38	0.0003	74	<0.001					0.001	<0.001	<0.05	<0.001	44	0.12	<0.0001	0.001	4.7	0.003	<0.005	0.014	<20	<50	<100	<100
LL3	14 Nov 2017	LL3	Normal		<0.001	0.02	<0.001	0.34	0.0003	81		<0.001		<0.001	<0.001	0.001	0.002	<0.05	0.001	43	0.11	<0.0001	0.001	6.2	0.002	<0.005	0.02	<20	<50	<100	<100
LL3	29 Nov 2018	LL3	Normal		<0.001	0.02	<0.001	0.3	0.0003	51		<0.005		<0.001	<0.001	<0.001	<0.001	<0.05	<0.001	41	0.11	<0.0001	0.005	4.5	0.002	<0.005	0.016	<20	<50	<100	<100
LL3	07 Nov 2019	LL3	Normal		<0.001	0.02	<0.001	0.34	0.0003	68		<0.005		<0.001	<0.005	<0.001	0.001	<0.05	<0.001	42	0.12	<0.0001	0.003	5.5	0.002	<0.005	0.031	<20	<50	<100	<100
LL3	12 Oct 2020	LL3	Normal		<0.001	<0.02	<0.001	0.32	0.0003	61	<0.005		0.002	<0.001	0.002	<0.001	<0.001	<0.05	<0.001	40	0.092	<0.0001	<0.001	<5	0.002	<0.005	0.013	<20	<50	<100	<100
LL3	15 Nov 2021	LL3	Normal		<0.001	0.02	<0.001	0.31	0.0002	61		<0.005		<0.001	<0.005	<0.001	0.002	<0.05	<0.001	53	0.069	<0.0001	0.005	5.3	0.002	<0.005	0.092	<20	<50	<100	<100
LL3	22 Nov 2022	LL3	Normal		<0.001	<0.02	<0.001	0.28	0.0002	61	<0.005		<0.001	<0.001	<0.005	<0.001	<0.001	<0.05	<0.001	37	0.077	<0.0001	<0.001	3.9	0.002	<0.005	0.01	<20	<50	300	<100
LL3	07 Nov 2023	LL3	Normal		<0.001	<0.02	<0.001	<0.5	0.0003	67		<0.005		<0.001	<0.005	<0.001	<0.001	<0.05	<0.001	39	0.061	<0.0001	<0.001	5.1	0.003	<0.005	0.013	<20	<50	<100	<100
LL3	20 Nov 2024	LL3	Normal		<0.001	<0.02	<0.001	<0.5	0.0003	65	<0.005		<0.001	<0.001	<0.005	<0.001	<0.001	0.34	0.001	42	0.071	<0.0001	<0.001	4	0.003	<0.005	0.016	<20	<50	<100	<100
LL4	21 May 2013	LL4	Normal		0.004	0.075	<0.001		<0.0001	91				<0.001		0.004	0.001	<0.05	0.001	69	1.27	<0.0001	<0.001	12	<0.01	<0.01	0.012	<20	<50	<100	<50
LL4	11 Dec 2013	LL4	Normal		0.002	0.05	<0.001		<0.0002	76				<0.001		0.006	<0.001	0.32	0.014	74	1.5	<0.0001	<0.001	7	<0.001	<0.005	0.007	<20	<50	<100	<100
LL4	13 May 2014	LL4	Normal		0.003	0.04	<0.001		<0.0002	66				<0.001		0.005	<0.001	0.46	0.004	61	1.1	<0.0001	<0.001	7.2	0.004	<0.005	0.005	<20	<50	<100	<100
LL4	30 Sep 2014	LL4	Normal		0.002	0.049	<0.001	0.33	<0.0001	78				<0.001		0.006	<0.001	0.44	0.009	77	1.24	<0.0001	<0.001	9	<0.01	<0.01	0.006	<20	<50	<100	<50
LL4	17 Mar 2015	LL4	Normal		0.002	0.04	<0.001	0.37	<0.0002	84	<0.001					0.006	<0.001	0.48	0.002	87	1.3	<0.0001	<0.001	10	<0.001	<0.005	0.007	<20	<50	<100	<100
LL4	12 Aug 2015	LL4	Normal		0.002	0.04	<0.001	0.27	<0.0002	76	<0.001					0.006	<0.001	0.43	0.008	72	2.6	<0.0001	<0.001	10	<0.001	<0.005	0.006	<20	<50	<100	<100
LL4	06 Apr 2016	LL4	Normal		0.003	0.11	<0.001	0.4	<0.0002	78	<0.001					0.002	0.001	<0.05	0.001	50	0.31	<0.0001	<0.001	8.6	<0.001	<0.005	0.011	<20	<50	<100	<100
LL4	17 Aug 2016	LL4	Normal		<0.001	0.04	<0.001	0.97	<0.0002	71	<0.001					<0.001	<0.001	<0.05	<0.001	88	0.034	<0.0001	<0.001	13	<0.001	<0.005	0.006	<20	<50	<100	<100
LL4	11 Apr 2017	LL4	Normal		0.001	0.08	<0.001	0.39	0.0003	78	<0.001					0.003	<0.001	<0.05	<0.001	70	0.28	<0.0001	<0.001	11	<0.001	<0.005	0.012	<20	<50	<100	<100
LL4	14 Nov 2017	LL4	Normal		<0.001	0.07	<0.001	0.4	0.0004	80		<0.001		<0.001	<0.001	<0.001	<0.001	<0.05	<0.001	72	0.061	<0.0001	<0.001	9.8	<0.001	<0.005	0.009	<20	<50	<100	<100
LL4	29 Nov 2018	LL4	Normal		0.001	0.06	<0.001	0.32	<0.0002	70		<0.005		<0.001	<0.001	0.002	0.002	<0.05	0.018	66	0.095	<0.0001	0.005	9.4	<0.001	<0.005	0.013	<20	<50	<100	<100
LL4	06 Nov 2019	LL4	Normal		<0.001	0.04	<0.001	0.34	<0.0002	79		<0.005		<0.001	<0.005	0.004	<0.001	<0.05	0.016	74	0.18	<0.0001	0.002	9.8	<0.001	<0.005	0.019	<20	<50	<100	<100
LL4	12 Oct 2020	LL4	Normal		<0.001	0.06	<0.001	0.28	<0.0002	100	<0.005		0.003	<0.001	0.003	0.003	0.002	<0.05	0.021	67	0.11	<0.0001	<0.001	10	<0.001	<0.005	0.008	<20	<50	<100	<100
LL4	24 Feb 2022	LL4	Normal		<0.001	0.06	<0.001	0.2	<0.0002	64		<0.005		<0.001	<0.005	0.006	0.001	<0.05	0.03	71	0.23	<0.0001	0.51	41	<0.001	<0.005	0.068	<20	<50	<100	<100
LL4	22 Nov 2022	LL4	Normal		0.002	0.07	<0.001	0.11	<0.0002	72	<0.005		0.002	<0.001	<0.005	<0.001	0.006	<0.05	0.003	16	0.008	<0.0001	0.002	8	0.001	<0.005	0.008	<20	<50	100	<100
LL4	07 Nov 2023	LL4	Normal		<0.001	0.06	<0.001	<0.5	0.0005	75		<0.005		<0.001	<0.005	<0.001	<0.001	<0.05	0.001	80	0.007	<0.0001	<0.001	9.4	<0.001	<0.005	0.013	<20	<50	<100	<100
LL4	21 Nov 2024	LL4	Normal		0.001	0.04	<0.001	<0.5	0.0003	70	<0.005		<0.001	<0.001	<0.005	0.001	0.007	<0.05	0.006	48	0.01	<0.0001	0.001	7.7	<0.001	<0.005	0.008	<20	<50	<100	<100
LLFG03	04 Oct 2012	LLFG03	Normal		<0.001	0.086	<0.001		0.0003	162				<0.001		<0.001	<0.001	<0.05	0.002	124	0.066	<0.0001	<0.001	10	<0.01	<0.01	<0.005	<20	<50	<100	<50
LLFG03	29 Apr 2013	LLFG03	Normal		<0.001	0.086	<0.001		0.0003	176				<0.001		<0.001	0.001	<0.05	0.001	129	0.014	<0.0001	<0.001	10	<0.01	<0.01	<0.005	<20	<50	<100	<50
LLFG03	11 Dec 2013	LLFG03	Normal		<0.001	0.08	<0.001		<0.0002	140				<0.001		<0.001	<0.001	<0.05	<0.001	110	0.007	<0.0001	<0.001	5.6	<0.001	<0.005	0.001	<20	<50	<100	<100
LLFG03	13 May 2014	LLFG03	Normal		0.001	0.04	<0.001		<0.0002	150				<0.001		<0.001	<0.001	<0.05	<0.001	110	0.011	<0.0001	0.001	14	0.007	<0.005	0.003	<20	<50	<100	<100
LLFG03	30 Sep 2014	LLFG03	Normal		<0.001	0.079	<0.001	0.31	0.0002	156				<0.001		<0.001	<0.001	<0.05	<0.001	118	0.011	<0.0001	<0.001	9	<0.01	<0.01	0.005	<20	<50	<100	<50
LLFG03	17 Mar 2015	LLFG03	Normal		<0.001	0.08	<0.001	0.4	0.0003	170	<0.001					<0.001	<0.001	<0.05	<0.001	140	0.008	<0.0001	<0.001	9.6	0.002	<0.005	0.004	<20	<50	<100	<100
LLFG03	13 Aug 2015	LLFG03	Normal		<0.001	0.07	<0.001		0.0002	140				<0.001		<0.001	<0.001	<0.05	<0.001	100	<0.005	<0.0001	<0.001	7.9	<0.001	<0.005	0.002	<20	<50	<100	<100
LLFG03	07 Apr 2016	LLFG03	Normal		<0.001	0.08	<0.001	0.55	0.0002	170	<0.001					<0.001	<0.001	<0.05	<0.001	130	0.008	<0.0001	<0.001	8.3	<0.001	<0.005	0.006	<20	<50	<100	<100
LLFG03	18 Aug 2016	LLFG03	Normal		<0.001	0.07	<0.001	0.25	0.0002	150	<0.001					<0.001	<0.001	<0.05	<0.001	110	0.007	<0.0001	<0.001	7.5	<0.001	<0.005	0.004	<20	<50	<100	<100
LLFG03	12 Apr 2017	LLFG03	Normal		<0.001	0.07	<0.001	0.43	0.0002	140	<0.001					<0.001	<0.001	<0.05	<0.001	110	0.011	<0.0001	<0.001	8	<0.001	<0.005	<0.005	<20	<50	<100	<100
LLFG03	14 Nov 2017	LLFG03	Normal		0.001	0.08	<0.001	0.41	<0.0002	180		<0.001		<0.001	<0.001	<0.001	<0.001	0.13	<0.001	120	0.063	<0.0001	<0.001	9.7	0.001	<0.005	0.006	<20	<50	<100	<100
LLFG03	29 Nov 2018	LLFG03	Normal		<0.001	0.08	<0.001	0.37	<0.0002	160		<0.001		<0.001	<0.001	<0.001	<0.001	<0.05	<0.001	140	0.009	<0.0001	<0.001	11	0.002	<0.005	0.011	<20	<50	<100	<100
LLFG03	05 Nov 2019	LLFG03	Normal		<0.001	0.06	<0.001	0.37	0.0004	150		<0.005		<0.001	<0.005	<0.001	0.002	<0.05	<0.001	120	0.026	<0.0001	0.011	12	0.002	<0.005	0.035	<20	60	<100	<100
LLFG03	12 Oct 2020	LLFG03	Normal		<0.001	0.08	<0.001	0.39	<0.0002	170	<0.005		0.053	<0.001	0.053	<0.001	<0.001	0.2	<0.001	150	0.034	<0.0001	<0.001	10	0.002	<0.005	<0.005	<20	<50	<100	<100
LLFG03	15 Nov 2021	LLFG03	Normal		<0.001	0.08	<0.001	0.45	<0.0002	150		<0.005		<0.001	<0.005	<0.001	0.002	0.06	<0.001	120	0.034	<0.0001	0.031	22	0.002	<0.005	0.074	<20	<50	<100	<100
LLFG03	22 Nov 2022	LLFG3	Normal		<0.001	0.07	<0.001	0.37	<0.0002	130	<0.005		0.002	<0.001	<0.005	<0.001	<0.001	0.06	<0.001	110	0.023	<0.0001	<0.001	8	0.002	<0.005	0.005	<20	<50	<100	<100
LLFG03	20 Nov 2024	LLFG3	Normal		<0.001	0.07	<0.001	0.51	0.0002	150	<0.005		0.002	<0.001	<0.005	<0.001	0.003	<0.05	<0.001	140	0.096	<0.0001	0.009	10	0.001	<0.005	0.017	<20	<50	<100	<100
LLFG04	04 Oct 2012	LLFG04	Normal		0.007	0.072	<0.001		<0.0001	366				<0.001		0.009	0.002	0.6	<0.001	246	0.253	<0.0001	<0.001	12	<0.01	<0.01	0.006	<20	<90	<100	<50

				Metals																										
				Arsenic (filtered)	Barium (filtered)	Beryllium (filtered)	Boron (filtered)	Cadmium (filtered)	Calcium	Chromium (hexavalent)	Chromium (hexavalent) (filtered)	Chromium (III+VI)	Chromium (III+VI) (filtered)	Chromium (Trivalent)	Cobalt (filtered)	Copper (filtered)	Iron (filtered)	Lead (filtered)	Magnesium	Manganese (filtered)	Mercury (filtered)	Nickel (filtered)	Potassium	Selenium (filtered)	Vanadium (filtered)	Zinc (filtered)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L
EQL				0.001	0.001	0.001	0.05	0.0001	0.5	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.05	0.001	0.5	0.001	0.0001	0.001	0.5	0.001	0.005	0.001	20	50	100	50
ADWG 2022 Aesthetic																1	0.3			0.1						3				
ADWG 2022 Health				0.01	2	0.06	4	0.002		0.05	0.05					2		0.01		0.5	0.001	0.02		0.01						
ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)							0.94	0.0002		0.001	0.001					0.0014		0.0034		1.9	0.0006	0.011		0.011		0.008				
ANZECC 2000 Irrigation Short Term				2		0.5		0.05				1	1		0.1	5	10	5		10	0.002	2		0.05	0.5	5				
Location Code	**Date**	**Field ID**	**Sample Type**																											
LLFG04	29 Apr 2013	LLFG04	Normal	0.006	0.136	<0.001		<0.0001	460				<0.001		0.011	0.002	1.81	<0.001	316	0.428	<0.0001	0.005	10	<0.01	<0.01	0.009	<20	<50	110	690
LLFG04	29 Apr 2013	LLFG04	Normal	0.006	0.136	<0.001		<0.0001	460				<0.001		0.011	0.002	1.81	<0.001	316	0.428	<0.0001	0.005	10	<0.01	<0.01	0.009	<20	<50	110	690
LLFG04	29 Apr 2013	LLFG04	Normal	0.006	0.136	<0.001		<0.0001	460				<0.001		0.011	0.002	1.81	<0.001	316	0.428	<0.0001	0.005	10	<0.01	<0.01	0.009	<20	<50	110	690
LLFG04	12 Dec 2013	LLFG04	Normal	0.003	0.07	<0.001		<0.0002	330				<0.001		0.004	<0.001	0.1	0.002	220	0.25	<0.0001	0.003	6.2	<0.001	<0.005	0.01	<20	<50	<100	<100
LLFG04	13 May 2014	LLFG04	Normal	0.003	0.04	<0.001		0.0004	320				<0.001		0.004	0.002	<0.05	<0.001	190	0.11	<0.0001	0.004	5.9	0.019	<0.005	0.009	<20	<50	<100	<100
LLFG04	30 Sep 2014	LLFG04	Normal	<0.001	0.069	<0.001	0.31	0.0007	401				<0.001		0.006	0.002	<0.05	<0.001	266	0.12	<0.0001	<0.001	9	<0.01	<0.01	0.008	<20	<50	<100	<50
LLFG04	17 Mar 2015	LLFG04	Normal	0.001	0.09	<0.001	0.42	0.0014	540	<0.001					0.008	0.002	<0.05	<0.001	370	0.28	<0.0001	0.002	11	<0.001	<0.005	0.016	<20	<50	<100	<100
LLFG04	12 Aug 2015	LLFG04	Normal	<0.001	0.07	<0.001	0.31	0.0002	320	<0.001					0.003	<0.001	<0.05	<0.001	200	0.11	<0.0001	0.002	9.6	<0.001	<0.005	0.01	<20	<50	<100	<100
LLFG04	05 Apr 2016	LLFG04	Normal	<0.001	0.08	<0.001	0.39	0.0006	380	<0.001					0.004	<0.001	<0.05	<0.001	240	0.16	<0.0001	0.002	9.7	<0.001	<0.005	0.016	<20	<50	<100	<100
LLFG04	17 Aug 2016	LLFG04	Normal	0.001	0.06	<0.001	0.62	0.0005	300	<0.001					0.003	<0.001	<0.05	<0.001	190	0.1	<0.0001	0.002	7.3	<0.001	<0.005	0.011	<20	<50	<100	<100
LLFG04	16 Nov 2017	LLFG04	Normal	<0.001	0.06	<0.001	0.65	<0.0002	230		<0.001		<0.001	<0.001	0.01	<0.001	0.15	<0.001	130	0.17	<0.0001	0.002	6.5	<0.001	<0.005	0.009	<20	100	<100	<100
LLFG04	28 Nov 2018	LLFG04	Normal	0.002	0.13	<0.001	0.46	0.0004	400		<0.005		<0.001	<0.005	0.009	<0.001	0.5	<0.001	250	0.39	<0.0001	0.011	16	<0.001	<0.005	0.023	<20	<50	<100	<100
LLFG04	06 Nov 2019	LLFG04	Normal	0.001	0.1	<0.001	0.51	0.0006	360		<0.005		<0.001	<0.005	0.006	<0.001	0.06	<0.001	220	0.45	<0.0001	0.009	12	0.002	<0.005	0.033	<20	<50	<100	<100
LLFG04	08 Oct 2020	LLFG04	Normal	<0.001	0.08	<0.001	0.56	0.0006	320	<0.005		<0.001		<0.005	0.005	<0.001	<0.05	<0.001	210	0.14	<0.0001	0.003	6.9	<0.001	<0.005	0.018	<20	110	<100	<100
LLFG04	15 Nov 2021	LLFG04	Normal	<0.001	0.09	<0.001	0.55	0.0004	350		<0.005		<0.001	<0.005	0.005	<0.001	0.25	<0.001	230	0.14	<0.0001	0.003	7.6	0.001	<0.005	0.011	<20	<50	<100	<100
LLFG04	22 Nov 2022	LLFG4	Normal	0.018	0.16	<0.001	0.48	<0.0002	260	<0.005		0.012	<0.001	0.012	0.003	<0.001	13	<0.001	200	0.66	<0.0001	0.004	22	<0.001	<0.005	0.008	<20	<50	100	<100
LLFG04	20 Nov 2024	LLFG4	Normal	0.003	0.09	<0.001	0.55	0.0017	330	<0.005		<0.001	<0.001	<0.005	0.009	<0.001	3.7	<0.001	260	0.43	<0.0001	0.006	15	<0.001	<0.005	0.037	<20	<50	<100	<100
LLFG05	04 Oct 2012	LLFG05	Normal	0.003	0.036	<0.001		<0.0001	94				<0.001		0.004	<0.001	0.11	<0.001	80	0.656	<0.0001	0.013	13	<0.01	<0.01	<0.005	<20	<50	120	440
LLFG05	02 May 2013	LLFG05	Normal	<0.001	0.012	<0.001		<0.0001	115				<0.001		<0.001	0.002	<0.05	<0.001	79	0.057	<0.0001	0.002	11	<0.01	<0.01	<0.005	<20	<50	<100	170
LLFG05	12 Dec 2013	LLFG05	Normal	<0.001	<0.02	<0.001		<0.0002	150				<0.001		<0.001	<0.001	<0.05	<0.001	100	0.025	<0.0001	<0.001	8.5	<0.001	<0.005	0.004	<20	<50	<100	<100
LLFG05	13 May 2014	LLFG05	Normal	0.001	<0.02	<0.001		<0.0002	150				<0.001		<0.001	<0.001	<0.05	<0.001	93	0.008	<0.0001	0.002	14	0.006	<0.005	0.002	<20	<50	<100	<100
LLFG05	30 Sep 2014	LLFG05	Normal	<0.001	0.003	<0.001	0.3	0.0002	156				<0.001		<0.001	<0.001	<0.05	<0.001	99	0.004	<0.0001	<0.001	11	<0.01	<0.01	<0.005	<20	<50	<100	<50
LLFG05	17 Mar 2015	LLFG05	Normal	<0.001	<0.02	<0.001	0.35	<0.0002	160	<0.001					<0.001	<0.001	<0.05	<0.001	110	0.018	<0.0001	<0.001	12	0.001	<0.005	0.006	<20	<50	<100	<100
LLFG05	12 Aug 2015	LLFG05	Normal	<0.001	<0.02	<0.001	0.25	<0.0002	130	<0.001					<0.001	<0.001	<0.05	<0.001	90	<0.005	<0.0001	<0.001	12	0.002	<0.005	0.004	<20	<50	<100	<100
LLFG05	07 Apr 2016	LLFG05	Normal	<0.001	<0.02	<0.001	0.43	<0.0002	150	<0.001					<0.001	<0.001	<0.05	<0.001	110	0.01	<0.0001	<0.001	12	0.001	<0.005	0.016	<20	<50	<100	<100
LLFG05	18 Aug 2016	LLFG05	Normal	<0.001	<0.02	<0.001	0.51	<0.0002	130	<0.001					<0.001	<0.001	<0.05	<0.001	96	<0.005	<0.0001	<0.001	12	0.002	<0.005	0.004	<20	<50	<100	<100
LLFG05	28 Nov 2018	LLFG05	Normal	<0.001	<0.02	<0.001	0.31	<0.0002	130		<0.005		<0.001	<0.005	<0.001	<0.001	<0.05	<0.001	93	0.032	<0.0001	0.005	12	<0.001	<0.005	0.009	<20	<50	<100	<100
LLFG05	06 Nov 2019	LLFG05	Normal	<0.001	<0.02	<0.001	0.36	0.0002	130		<0.005		<0.001	<0.005	<0.001	0.002	<0.05	<0.001	94	0.073	<0.0001	0.003	11	0.002	<0.005	0.02	<20	130	<100	<100
LLFG05	12 Oct 2020	LLFG05	Normal	<0.001	<0.02	<0.001	0.34	<0.0002	120	<0.005		0.049	<0.001	0.049	<0.001	<0.001	<0.05	<0.001	86	0.01	<0.0001	<0.001	11	0.001	<0.005	<0.005	<20	<50	<100	<100
LLFG05	24 Feb 2022	LLFG05	Normal	<0.001	0.03	<0.001	0.18	<0.0002	66		<0.005		<0.001	<0.005	0.004	<0.001	<0.05	<0.001	87	0.2	<0.0001	0.006	11	0.001	<0.005	<0.005	<20	<50	<100	<100
LLFG05	22 Nov 2022	LLFG5	Normal	<0.001	<0.02	<0.001	0.31	<0.0002	94	<0.005		0.033	<0.001	0.033	<0.001	<0.001	<0.05	<0.001	79	0.011	<0.0001	<0.001	10	0.001	<0.005	<0.005	<20	<50	<100	<100
LLFG05	20 Nov 2024	LLFG5	Normal	<0.001	<0.02	<0.001	<0.5	<0.0002	100	<0.005		0.005	<0.001	0.005	<0.001	<0.001	<0.05	<0.001	84	0.082	<0.0001	0.001	12	<0.001	<0.005	0.043	<20	<50	<100	<100
LLFG08	04 Oct 2012	LLFG08	Normal	0.001	0.247	<0.001		0.0002	80				<0.001		0.007	0.002	<0.05	0.048	103	1.53	<0.0001	0.008	19	<0.01	<0.01	0.012	20	<50	<100	<50
LLFG08	02 May 2013	LLFG08	Normal	<0.001	0.154	<0.001		<0.0001	89				<0.001		0.002	0.001	<0.05	<0.001	107	0.66	<0.0001	0.006	16	<0.01	<0.01	<0.005	<20	<50	<100	<50
LLFG08	12 Dec 2013	LLFG08	Normal	<0.001	0.1	<0.001		<0.0002	84				<0.001		0.001	<0.001	<0.05	<0.001	100	0.45	<0.0001	0.001	8.7	<0.001	<0.005	0.002	<20	<50	<100	<100
LLFG08	13 May 2014	LLFG08	Normal	0.001	0.06	<0.001		<0.0002	73				<0.001		0.001	<0.001	<0.05	<0.001	87	0.2	<0.0001	0.003	19	0.006	<0.005	0.003	<20	<50	<100	<100
LLFG08	30 Sep 2014	LLFG08	Normal	<0.001	0.092	<0.001	0.67	<0.0001	81				<0.001		0.003	<0.001	<0.05	<0.001	95	0.658	<0.0001	0.004	13	<0.01	<0.01	0.007	<20	<50	<100	<50
LLFG08	17 Mar 2015	LLFG08	Normal	<0.001	0.05	<0.001	0.73	<0.0002	78	<0.001					<0.001	<0.001	<0.05	<0.001	100	0.097	<0.0001	<0.001	14	0.001	<0.005	0.007	<20	<50	<100	<100
LLFG08	12 Aug 2015	LLFG08	Normal	<0.001	0.03	<0.001	0.58	<0.0002	74	<0.001					<0.001	<0.001	<0.05	<0.001	90	0.027	<0.0001	<0.001	12	<0.001	<0.005	0.004	<20	<50	<100	<100
LLFG08	07 Apr 2016	LLFG08	Normal	<0.001	0.07	<0.001	0.93	<0.0002	100	<0.001					0.001	<0.001	<0.05	<0.001	120	0.29	<0.0001	<0.001	12	<0.001	<0.005	0.008	<20	<50	<100	<100
LLFG08	17 Aug 2016	LLFG08	Normal	0.003	0.07	<0.001	0.64	0.0002	84	<0.001					0.003	0.004	<0.05	0.002	50	0.3	<0.0001	0.002	9.8	<0.001	<0.005	0.065	<20	<50	<100	<100
LLFG08	11 Apr 2017	LLFG08	Normal	<0.001	0.04	<0.001	0.87	<0.0002	68	<0.001					0.002	<0.001	<0.05	<0.001	85	0.028	<0.0001	<0.001	13	<0.001	<0.005	0.007	<20	<50	<100	<100
LLFG08	14 Nov 2017	LLFG08	Normal	0.001	0.08	<0.001	0.82	<0.0002	93		<0.001		<0.001	<0.001	0.006	<0.001	<0.05	<0.001	100	0.32	<0.0001	0.002	16	<0.001	<0.005	0.01	<20	<50	<100	<100
LLFG08	29 Nov 2018	LLFG08	Normal	0.002	0.08	<0.001	0.73	<0.0002	86		<0.001		<0.001	<0.001	0.008	<0.001	0.61	<0.001	100	0.98	<0.0001	0.004	15	<0.001	<0.005	0.008	<20	<50	300	<100
LLFG08	07 Nov 2019	LLFG08	Normal	0.001	0.05	<0.001	0.71	<0.0002	75		<0.005		<0.001	<0.005	0.004	<0.001	0.4	<0.001	89	0.42	<0.0001	0.004	20	<0.001	<0.005	0.022	<20	<50	<100	<100
LLFG08	12 Oct 2020	LLFG08	Normal	<0.001	0.05	<0.001	0.72	<0.0002	84	<0.005		0.002	<0.001	0.002	0.003	<0.001	<0.05	<0.001	95	0.78	<0.0001	0.001	22	<0.001	<0.005	0.016	<20	<50	<100	<100
LLFG08	15 Nov 2021	LLFG08	Normal	<0.001	0.06	<0.001	0.75	<0.0002	87		<0.005		<0.001	<0.005	0.002	0.001	<0.05	<0.001	100	0.34	<0.0001	0.01	13	<0.001	<0.005	0.035	<20	<50	<100	<100
LLFG08	22 Nov 2022	LLFG8	Normal	0.003	0.06	<0.001	0.68	<0.0002	62	<0.005		0.002	<0.001	<0.005	0.003	<0.001	1.5	<0.001	83	1	<0.0001	0.002	13	0.001	<0.005	<0.005	<20	<50	<100	<100
LLFG08	21 Nov 2024	LLFG8	Normal	0.002	0.12	<0.001	0.73	<0.0002	74	<0.005		<0.001	<0.001	<0.005	0.007	<0.001	0.99	<0.001	100	1.7	<0.0001	0.002	14	<0.001	<0.005	0.006	<20	<50	<100	<100
LLFG10	04 Oct 2012	LLFG10	Normal	<0.001	0.02	<0.001		0.0001	106				<0.001		<0.001	<0.001	<0.05	<0.001	118	0.006	<0.0001	<0.001	14	<0.01	<0.01	<0.005	<20	<50	<100	<50
LLFG10	29 Apr 2013	LLFG10	Normal	<0.001	0.022	<0.001		<0.0001	121				<0.001		<0.001	0.002	<0.05	<0.001	121	0.012	<0.0001	0.005	13	<0.01	<0.01	<0.005	<20	<50	<100	<50
LLFG10	29 Apr 2013	LLFG10	Normal	<0.001	0.022	<0.001		<0.0001	121				<0.001		<0.001	0.002	<0.05	<0.001	121	0.012	<0.0001	0.005	13	<0.01	<0.01	<0.005	<20	<50	<100	<50

	Metals																													
	Arsenic (filtered)	Barium (filtered)	Beryllium (filtered)	Boron (filtered)	Cadmium (filtered)	Calcium	Chromium (hexavalent)	Chromium (hexavalent) (filtered)	Chromium (III+VI)	Chromium (III+VI) (filtered)	Chromium (Trivalent)	Cobalt (filtered)	Copper (filtered)	Iron (filtered)	Lead (filtered)	Magnesium	Manganese (filtered)	Mercury (filtered)	Nickel (filtered)	Potassium	Selenium (filtered)	Vanadium (filtered)	Zinc (filtered)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L
EQL	0.001	0.001	0.001	0.05	0.0001	0.5	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.05	0.001	0.5	0.001	0.0001	0.001	0.5	0.001	0.005	0.001	20	50	100	50
ADWG 2022 Aesthetic													1	0.3			0.1						3				
ADWG 2022 Health	0.01	2	0.06	4	0.002		0.05	0.05					2		0.01		0.5	0.001	0.02		0.01						
ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)				0.94	0.0002		0.001	0.001					0.0014		0.0034		1.9	0.0006	0.011		0.011		0.008				
ANZECC 2000 Irrigation Short Term	2		0.5		0.05				1	1		0.1	5	10	5		10	0.002	2		0.05	0.5	5				
Location Code	**Date**	**Field ID**	**Sample Type**																											
LLFG10	**11 Dec 2013**	**LLFG10**	**Normal**	<0.001	<0.02	<0.001		<0.0002	100				<0.001		<0.001	<0.001	<0.05	<0.001	110	<0.005	<0.0001	<0.001	8.2	<0.001	<0.005	0.002	<20	<50	<100	<100
LLFG10	**13 May 2014**	**LLFG10**	**Normal**	0.001	<0.02	<0.001		<0.0002	100				<0.001		<0.001	<0.05	<0.001	100	0.015	<0.0001	<0.001	17	0.007	<0.005	0.002	<20	<50	<100	<100
LLFG10	**30 Sep 2014**	**LLFG10**	**Normal**	<0.001	0.02	<0.001	0.47	<0.0001	107				<0.001		<0.001	<0.001	<0.05	<0.001	109	0.008	<0.0001	<0.001	10	<0.01	<0.01	<0.005	<20	<50	<100	<50
LLFG10	**17 Mar 2015**	**LLFG10**	**Normal**	<0.001	0.02	<0.001	0.54	<0.0002	120	<0.001					<0.001	<0.001	<0.05	<0.001	130	<0.005	<0.0001	<0.001	13	<0.001	<0.005	0.004	<20	<50	<100	<100
LLFG10	**13 Aug 2015**	**LLFG10**	**Normal**	<0.001	<0.02	<0.001		<0.0002	98				<0.001		<0.001	<0.001	<0.05	<0.001	100	0.006	<0.0001	<0.001	9.8	<0.001	<0.005	0.002	<20	<50	<100	<100
LLFG10	**05 Apr 2016**	**LLFG10**	**Normal**	<0.001	0.02	<0.001	0.55	<0.0002	100	<0.001					<0.001	<0.001	<0.05	<0.001	100	<0.005	<0.0001	<0.001	11	<0.001	<0.005	0.007	<20	<50	<100	<100
LLFG10	**16 Aug 2016**	**LLFG10**	**Normal**	<0.001	0.02	<0.001	0.89	<0.0002	110	<0.001					<0.001	<0.001	0.21	<0.001	110	0.022	<0.0001	0.002	11	<0.001	<0.005	0.13	<20	<50	<100	<100
LLFG10	**11 Apr 2017**	**LLFG10**	**Normal**	<0.001	0.03	<0.001	0.58	<0.0002	100	<0.001					<0.001	<0.001	<0.05	<0.001	110	0.025	<0.0001	<0.001	13	<0.001	<0.005	0.005	<20	<50	<100	<100
LLFG10	**15 Nov 2017**	**LLFG10**	**Normal**	<0.001	0.02	<0.001	0.64	<0.0002	130		<0.001		<0.001	<0.001	<0.001	0.002	<0.05	<0.001	130	0.02	<0.0001	0.004	11	<0.001	<0.005	<0.05	<20	<50	<100	<100
LLFG10	**29 Nov 2018**	**LLFG10**	**Normal**	0.001	0.05	<0.001	0.55	<0.0002	90		<0.005		<0.001	<0.001	<0.001	<0.001	<0.05	<0.001	110	0.076	<0.0001	0.005	14	<0.001	<0.005	0.012	<20	<50	400	<100
LLFG10	**06 Nov 2019**	**LLFG10**	**Normal**	<0.001	0.03	<0.001	0.6	<0.0002	120		<0.005		<0.001	<0.005	<0.001	<0.001	0.1	<0.001	110	0.074	<0.0001	<0.001	13	<0.001	<0.005	<0.005	<20	220	<100	<100
LLFG10	**12 Oct 2020**	**LLFG10**	**Normal**	<0.001	0.02	<0.001	0.56	<0.0002	110	<0.005		0.028	<0.001	0.028	<0.001	<0.001	0.16	<0.001	120	0.11	<0.0001	<0.001	12	<0.001	<0.005	<0.005	<20	<50	<100	<100
LLFG10	**15 Nov 2021**	**LLFG10**	**Normal**	0.001	0.03	<0.001	0.63	<0.0002	100		<0.005		<0.001	<0.005	<0.001	<0.001	0.08	<0.001	110	0.19	<0.0001	0.001	12	0.004	<0.005	0.008	<20	<50	<100	<100
LLFG10	**22 Nov 2022**	**LLFG10**	**Normal**	<0.001	0.03	<0.001	0.52	<0.0002	94	<0.005		0.01	<0.001	0.01	<0.001	<0.001	<0.05	<0.001	110	0.096	<0.0001	<0.001	11	0.002	<0.005	0.017	<20	<50	<100	<100
LLFG10	**07 Nov 2023**	**LLFG10**	**Normal**	<0.001	0.04	<0.001	0.68	<0.0002	110		<0.005		<0.001	<0.005	<0.001	<0.001	<0.05	<0.001	130	0.059	<0.0001	<0.001	12	0.002	<0.005	0.008	<20	<50	<100	<100
LLFG10	**20 Nov 2024**	**LLFG10**	**Normal**	<0.001	0.03	<0.001	0.74	<0.0002	110	<0.005		<0.001	<0.001	<0.005	<0.001	<0.001	<0.05	<0.001	140	0.03	<0.0001	<0.001	12	0.001	<0.005	0.013	<20	<50	<100	<100

Environmental Standards
NHMRC, September 2022, ADWG 2022 Aesthetic
NHMRC, May 2022, ADWG 2022 Health
ANZG, July 2023, ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)
DoE, 2000, ANZECC 2000 Irrigation Short Term

				TRH								BTEX																							
				C10-C36 Fraction (Sum)	C6-C10 Fraction (F1)	C6-C10 (F1 minus BTEX)	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (Sum)	Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a) pyrene	Benzo(b+j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				50	20	20	50	50	100	100	100	0.01	1	1	1	2	1	2	0.01	0.01	0.01	0.01	0.01	0.00001	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
ADWG 2022 Aesthetic														25	3			20																	
ADWG 2022 Health													1	800	300			600					0.01												
ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)												0.016	950	180	80		350				0.4		0.2						1.4				16	2
ANZECC 2000 Irrigation Short Term																																			
Location Code	**Date**	**Field ID**	**Sample Type**																																
LL3	02 May 2013	LL3	Normal	<50	<20	<20	<100		<100	<100	<100		<1	<2	<2	<2	<2	<2	<1	<1	<1	<1	<0.5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL3	12 Dec 2013	LL3	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL3	13 May 2014	LL3	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL3	30 Sep 2014	LL3	Normal	<50	<20	<20	<100	<100	<100	<100	<100		<1	<2	<2	<2	<2	<2	<1	<1	<1	<1	<0.5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL3	17 Mar 2015	LL3	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL3	12 Aug 2015	LL3	Normal	200	<20	<20	<50	<50	200	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL3	06 Apr 2016	LL3	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL3	16 Aug 2016	LL3	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL3	12 Apr 2017	LL3	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL3	14 Nov 2017	LL3	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL3	29 Nov 2018	LL3	Normal	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL3	07 Nov 2019	LL3	Normal	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL3	12 Oct 2020	LL3	Normal	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL3	15 Nov 2021	LL3	Normal	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL3	22 Nov 2022	LL3	Normal	300	<20	<20	90	90	300	<100	390		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL3	07 Nov 2023	LL3	Normal	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL3	20 Nov 2024	LL3	Normal	<100	<20	<20	<50	<50	<100	<100	<100	<0.01	<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL4	21 May 2013	LL4	Normal	<50	<20	<20	<100		<100	<100	<100		<1	<2	<2	<2	<2	<2	<1	<1	<1	<1	<0.5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL4	11 Dec 2013	LL4	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL4	13 May 2014	LL4	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL4	30 Sep 2014	LL4	Normal	<50	<20	<20	<100	<100	<100	<100	<100		<1	<2	<2	<2	<2	<2	<1	<1	<1	<1	<0.5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL4	17 Mar 2015	LL4	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL4	12 Aug 2015	LL4	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL4	06 Apr 2016	LL4	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL4	17 Aug 2016	LL4	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<0.5	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL4	11 Apr 2017	LL4	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL4	14 Nov 2017	LL4	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL4	29 Nov 2018	LL4	Normal	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL4	06 Nov 2019	LL4	Normal	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL4	12 Oct 2020	LL4	Normal	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL4	24 Feb 2022	LL4	Normal	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL4	22 Nov 2022	LL4	Normal	100	<20	<20	<50	<50	200	<100	200		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL4	07 Nov 2023	LL4	Normal	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LL4	21 Nov 2024	LL4	Normal	<100	<20	<20	<50	<50	<100	<100	<100	<0.01	<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG03	04 Oct 2012	LLFG03	Normal	<50	<20	<20	<100		<100	<100	<100		<1	<2	<2	<2	<2	<2	<1	<1	<1	<1	<0.5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG03	29 Apr 2013	LLFG03	Normal	<50	<20	<20	<100		<100	<100	<100		<1	<2	<2	<2	<2	<2	<1	<1	<1	<1	<0.5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG03	11 Dec 2013	LLFG03	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG03	13 May 2014	LLFG03	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG03	30 Sep 2014	LLFG03	Normal	<50	<20	<20	<100	<100	<100	<100	<100		<1	<2	<2	<2	<2	<2	<1	<1	<1	<1	<0.5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG03	17 Mar 2015	LLFG03	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG03	13 Aug 2015	LLFG03	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG03	07 Apr 2016	LLFG03	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG03	18 Aug 2016	LLFG03	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG03	12 Apr 2017	LLFG03	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG03	14 Nov 2017	LLFG03	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG03	29 Nov 2018	LLFG03	Normal	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG03	05 Nov 2019	LLFG03	Normal	<100	<20	<20	70	70	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG03	12 Oct 2020	LLFG03	Normal	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG03	15 Nov 2021	LLFG03	Normal	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG03	22 Nov 2022	LLFG3	Normal	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG03	20 Nov 2024	LLFG3	Normal	<100	<20	<20	<50	<50	<100	<100	<100	<0.01	<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG04	04 Oct 2012	LLFG04	Normal	<50	<20	<20	<100		<100	<100	<100		<1	<2	<2	<2	<2	<2	<1	<1	<1	<1	<0.5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

				TRH								BTEX																							
				C10-C36 Fraction (Sum)	C6-C10 Fraction (F1)	C6-C10 (F1 minus BTEX)	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (Sum)	Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a) pyrene	Benzo(b+j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				50	20	20	50	50	100	100	100	0.01	1	1	1	2	1	2	0.01	0.01	0.01	0.01	0.01	0.00001	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
ADWG 2022 Aesthetic														25	3			20																	
ADWG 2022 Health													1	800	300			600					0.01												
ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)												0.016	950	180	80		350				0.4		0.2						1.4				16	2
ANZECC 2000 Irrigation Short Term																																			
Location Code	**Date**	**Field ID**	**Sample Type**																																
LLFG04	**29 Apr 2013**	**LLFG04**	**Normal**	800	<20	<20	<100		540	720	1,260		<1	<2	<2	<2	<2	<2	<1	<1	<1	<1	<0.5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG04	**29 Apr 2013**	**LLFG04**	**Normal**	660	<20	<20	<100		510	720	1,230		<1	<2	<2	<2	<2	<2	<1	<1	<1	<1	<0.5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG04	**29 Apr 2013**	**LLFG04**	**Normal**	660	<20	<20	<100		510	720	1,230		<1	<2	<2	<2	<2	<2	<1	<1	<1	<1	<0.5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG04	**12 Dec 2013**	**LLFG04**	**Normal**	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG04	**13 May 2014**	**LLFG04**	**Normal**	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG04	**30 Sep 2014**	**LLFG04**	**Normal**	<50	<20	<20	<100	<100	<100	<100	<100		<1	<2	<2	<2	<2	<2	<1	<1	<1	<1	<0.5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG04	**17 Mar 2015**	**LLFG04**	**Normal**	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG04	**12 Aug 2015**	**LLFG04**	**Normal**	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG04	**05 Apr 2016**	**LLFG04**	**Normal**	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG04	**17 Aug 2016**	**LLFG04**	**Normal**	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<0.02	<0.02	<0.02	<0.02	<0.02	<0.00002	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
LLFG04	**16 Nov 2017**	**LLFG04**	**Normal**	100	<20	<20	60	60	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG04	**28 Nov 2018**	**LLFG04**	**Normal**	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG04	**06 Nov 2019**	**LLFG04**	**Normal**	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG04	**08 Oct 2020**	**LLFG04**	**Normal**	110	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG04	**15 Nov 2021**	**LLFG04**	**Normal**	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG04	**22 Nov 2022**	**LLFG4**	**Normal**	100	<20	<20	<50	<50	100	<100	100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG04	**20 Nov 2024**	**LLFG4**	**Normal**	<100	<20	<20	<50	<50	<100	<100	<100	<0.01	<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG05	**04 Oct 2012**	**LLFG05**	**Normal**	560	<20	<20	<100		390	450	840		<1	<2	<2	<2	<2	<2	<1	<1	<1	<1	<0.5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG05	**02 May 2013**	**LLFG05**	**Normal**	170	<20	<20	<100		130	170	300		<1	<2	<2	<2	<2	<2	<1	<1	<1	<1	<0.5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG05	**12 Dec 2013**	**LLFG05**	**Normal**	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG05	**13 May 2014**	**LLFG05**	**Normal**	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG05	**30 Sep 2014**	**LLFG05**	**Normal**	<50	<20	<20	<100	<100	<100	<100	<100		<1	<2	<2	<2	<2	<2	<1	<1	<1	<1	<0.5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG05	**17 Mar 2015**	**LLFG05**	**Normal**	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG05	**12 Aug 2015**	**LLFG05**	**Normal**	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG05	**07 Apr 2016**	**LLFG05**	**Normal**	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG05	**18 Aug 2016**	**LLFG05**	**Normal**	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG05	**28 Nov 2018**	**LLFG05**	**Normal**	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG05	**06 Nov 2019**	**LLFG05**	**Normal**	130	<20	<20	130	130	<100	<100	130		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG05	**12 Oct 2020**	**LLFG05**	**Normal**	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG05	**24 Feb 2022**	**LLFG05**	**Normal**	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG05	**22 Nov 2022**	**LLFG5**	**Normal**	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG05	**20 Nov 2024**	**LLFG5**	**Normal**	<100	<20	<20	<50	<50	<100	<100	<100	<0.01	<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG08	**04 Oct 2012**	**LLFG08**	**Normal**	<50	20	<20	<100		<100	<100	<100		<1	6	<2	5	2	7	<1	<1	<1	<1	<0.5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG08	**02 May 2013**	**LLFG08**	**Normal**	<50	<20	<20	<100		<100	<100	<100		<1	<2	<2	<2	<2	<2	<1	<1	<1	<1	<0.5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG08	**12 Dec 2013**	**LLFG08**	**Normal**	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG08	**13 May 2014**	**LLFG08**	**Normal**	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG08	**30 Sep 2014**	**LLFG08**	**Normal**	<50	<20	<20	<100	<100	<100	<100	<100		<1	<2	<2	<2	<2	<2	<1	<1	<1	<1	<0.5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG08	**17 Mar 2015**	**LLFG08**	**Normal**	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG08	**12 Aug 2015**	**LLFG08**	**Normal**	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG08	**07 Apr 2016**	**LLFG08**	**Normal**	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG08	**17 Aug 2016**	**LLFG08**	**Normal**	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<0.5	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG08	**11 Apr 2017**	**LLFG08**	**Normal**	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG08	**14 Nov 2017**	**LLFG08**	**Normal**	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG08	**29 Nov 2018**	**LLFG08**	**Normal**	300	<20	<20	120	120	300	<100	420		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG08	**07 Nov 2019**	**LLFG08**	**Normal**	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG08	**12 Oct 2020**	**LLFG08**	**Normal**	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG08	**15 Nov 2021**	**LLFG08**	**Normal**	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG08	**22 Nov 2022**	**LLFG8**	**Normal**	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG08	**21 Nov 2024**	**LLFG8**	**Normal**	<100	<20	<20	<50	<50	<100	<100	<100	<0.01	<1	<1	<1	<2	<1	<3	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG10	**04 Oct 2012**	**LLFG10**	**Normal**	<50	<20	<20	<100		<100	<100	<100		<1	<2	<2	<2	<2	<2	<1	<1	<1	<1	<0.5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG10	**29 Apr 2013**	**LLFG10**	**Normal**	<50	<20	<20	<100		<100	<100	<100		<1	<2	<2	<2	<2	<2	<1	<1	<1	<1	<0.5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG10	**29 Apr 2013**	**LLFG10**	**Normal**	<50	<20	<20	<100		<100	<100	<100		<1	<2	<2	<2	<2	<2	<1	<1	<1	<1	<0.5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

				TRH								BTEX						
				C10-C36 Fraction (Sum)	C6-C10 Fraction (F1)	C6-C10 (F1 minus BTEX)	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (Sum)	Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				50	20	20	50	50	100	100	100	0.01	1	1	1	2	1	2
ADWG 2022 Aesthetic														25	3			20
ADWG 2022 Health													1	800	300			600
ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)												0.016	950	180	80		350	
ANZECC 2000 Irrigation Short Term																		
Location Code	**Date**	**Field ID**	**Sample Type**															
LLFG10	11 Dec 2013	LLFG10	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3
LLFG10	13 May 2014	LLFG10	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3
LLFG10	30 Sep 2014	LLFG10	Normal	<50	<20	<20	<100	<100	<100	<100	<100		<1	<2	<2	<2	<2	<2
LLFG10	17 Mar 2015	LLFG10	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3
LLFG10	13 Aug 2015	LLFG10	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3
LLFG10	05 Apr 2016	LLFG10	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3
LLFG10	16 Aug 2016	LLFG10	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3
LLFG10	11 Apr 2017	LLFG10	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3
LLFG10	15 Nov 2017	LLFG10	Normal	<100	<20	<20	<50	<50	<100	<100			<1	<1	<1	<2	<1	<3
LLFG10	29 Nov 2018	LLFG10	Normal	400	<20	<20	70	70	400	<100	470		<1	<1	<1	<2	<1	<3
LLFG10	06 Nov 2019	LLFG10	Normal	220	<20	<20	230	230	<100	<100	230		<1	<1	<1	<2	<1	<3
LLFG10	12 Oct 2020	LLFG10	Normal	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3
LLFG10	15 Nov 2021	LLFG10	Normal	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3
LLFG10	22 Nov 2022	LLFG10	Normal	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3
LLFG10	07 Nov 2023	LLFG10	Normal	<100	<20	<20	<50	<50	<100	<100	<100		<1	<1	<1	<2	<1	<3
LLFG10	20 Nov 2024	LLFG10	Normal	<100	<20	<20	<50	<50	<100	<100	<100	<0.01	<1	<1	<1	<2	<1	<3

				Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a) pyrene	Benzo(b+j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene
				µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				0.01	0.01	0.01	0.01	0.01	0.00001	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
ADWG 2022 Aesthetic																		
ADWG 2022 Health								0.01										
ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)						0.4		0.2						1.4			16	2
ANZECC 2000 Irrigation Short Term																		
Location Code	**Date**	**Field ID**	**Sample Type**															
LLFG10	11 Dec 2013	LLFG10	Normal	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG10	13 May 2014	LLFG10	Normal	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG10	30 Sep 2014	LLFG10	Normal	<1	<1	<1	<1	<0.5		<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG10	17 Mar 2015	LLFG10	Normal	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG10	13 Aug 2015	LLFG10	Normal	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG10	05 Apr 2016	LLFG10	Normal	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG10	16 Aug 2016	LLFG10	Normal	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG10	11 Apr 2017	LLFG10	Normal	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG10	15 Nov 2017	LLFG10	Normal	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG10	29 Nov 2018	LLFG10	Normal	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG10	06 Nov 2019	LLFG10	Normal	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG10	12 Oct 2020	LLFG10	Normal	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG10	15 Nov 2021	LLFG10	Normal	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG10	22 Nov 2022	LLFG10	Normal	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG10	07 Nov 2023	LLFG10	Normal	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1
LLFG10	20 Nov 2024	LLFG10	Normal	<1	<1	<1	<1	<1	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1

Environmental Standards

NHMRC, September 2022, ADWG 2022 Aesthetic
NHMRC, May 2022, ADWG 2022 Health
ANZG, July 2023, ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)
DoE, 2000, ANZECC 2000 Irrigation Short Term

				Phenols																										
				Pyrene	PAHs (Sum of total)	3&4-Methylphenol (m&p-cresol)	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dichlorophenol	2,4-Dimethylphenol	2,4-Dinitrophenol	2,6-Dichlorophenol	2-Chlorophenol	2-Methylphenol	2-Nitrophenol	4,6-Dinitro-2-methylphenol	4,6-Dinitro-o-cyclohexyl phenol	4-chloro-3-methylphenol	4-Nitrophenol	Cresol Total	Pentachlorophenol	Tetrachlorophenols	Phenol	Phenols (Total Halogenated)	Phenols (Total Non Halogenated)	Total Phosphate	Nitrite + Nitrate as N	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL				0.01	0.01	0.02	0.02	0.02	0.01	0.01	0.00001	0.01	0.01	0.01	0.02	0.1	0.2	0.02	0.1	0.01	0.02	0.2	0.01	0.0002	0.0002	0.01	0.05	1	1	1	1
ADWG 2022 Aesthetic								2	0.3				0.1																		
ADWG 2022 Health								20	200				300								10										
ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)								20	160		0.045		490								10		320							
ANZECC 2000 Irrigation Short Term																														
Location Code	**Date**	**Field ID**	**Sample Type**																												
LL3	02 May 2013	LL3	Normal	<1	<0.5																	<50					525	<1	<1	525
LL3	12 Dec 2013	LL3	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	<0.05		540	<10		540
LL3	13 May 2014	LL3	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.06		770	<10		770
LL3	30 Sep 2014	LL3	Normal	<1	<0.5	<2	<1	<1	<1	<1		<1	<1	<1	<1			<1			<2		<1					543	<1	<1	543
LL3	17 Mar 2015	LL3	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.06		658.8	<10		540
LL3	12 Aug 2015	LL3	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.15		520	<10		520
LL3	06 Apr 2016	LL3	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.07		550	<10		550
LL3	16 Aug 2016	LL3	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.09		590	<10		590
LL3	12 Apr 2017	LL3	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.08		480	<10		480
LL3	14 Nov 2017	LL3	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.07		510	<10		
LL3	29 Nov 2018	LL3	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.04		480	<10	<20	480
LL3	07 Nov 2019	LL3	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.06		400	<10	<20	410
LL3	12 Oct 2020	LL3	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1			430	<10	<20	430
LL3	15 Nov 2021	LL3	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1			520	<10	<20	520
LL3	22 Nov 2022	LL3	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	0.05		1,600	<10	<20	1,600
LL3	07 Nov 2023	LL3	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	0.05		490	<10	<20	490
LL3	20 Nov 2024	LL3	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	0.05	5.7	540	<10	<20	540
LL4	21 May 2013	LL4	Normal	<1	<0.5																	<50					544	<1	<1	544
LL4	11 Dec 2013	LL4	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.06		590	<10		590
LL4	13 May 2014	LL4	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.08		900	<10		900
LL4	30 Sep 2014	LL4	Normal	<1	<0.5	<2	<1	<1	<1	<1		<1	<1	<1	<1			<1			<2		<1					539	<1	<1	539
LL4	17 Mar 2015	LL4	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	<0.05		707.6	<10		580
LL4	12 Aug 2015	LL4	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	<0.05		580	<10		580
LL4	06 Apr 2016	LL4	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.14		570	<10		570
LL4	17 Aug 2016	LL4	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.33		810	<10		810
LL4	11 Apr 2017	LL4	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.15		550	<10		550
LL4	14 Nov 2017	LL4	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.15		580	<10		
LL4	29 Nov 2018	LL4	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.08		520	<10	<20	520
LL4	06 Nov 2019	LL4	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.05		600	<10	<20	600
LL4	12 Oct 2020	LL4	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1			610	<10	<20	610
LL4	24 Feb 2022	LL4	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1			610	<10	<20	610
LL4	22 Nov 2022	LL4	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	0.03		330	<10	<20	330
LL4	07 Nov 2023	LL4	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	0.03		570	<10	<20	570
LL4	21 Nov 2024	LL4	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	0.01	1.7	440	<10	<20	440
LLFG03	04 Oct 2012	LLFG03	Normal	<1	<0.5	<2	<1	<1	<1	<1		<1	<1	<1	<1			<1			<2		<1					516	<1	<1	516
LLFG03	29 Apr 2013	LLFG03	Normal	<1	<0.5																	<50					494	<1	<1	494
LLFG03	11 Dec 2013	LLFG03	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.12		530	<10		530
LLFG03	13 May 2014	LLFG03	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.05		800	<10		800
LLFG03	30 Sep 2014	LLFG03	Normal	<1	<0.5	<2	<1	<1	<1	<1		<1	<1	<1	<1			<1			<2		<1					483	<1	<1	483
LLFG03	17 Mar 2015	LLFG03	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.06		622.2	<10		510
LLFG03	13 Aug 2015	LLFG03	Normal	<1	<1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.0005	<0.05	<0.05	<0.05	<0.1	<0.5	<1	<0.1	<0.5		<0.02	<0.2	<0.05	<0.0001	<0.001	<0.05		470	<10		470
LLFG03	07 Apr 2016	LLFG03	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.05		550	<10		550
LLFG03	18 Aug 2016	LLFG03	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.16		590	<10		590
LLFG03	12 Apr 2017	LLFG03	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.08		490	<10		490
LLFG03	14 Nov 2017	LLFG03	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.19		500	<10		
LLFG03	29 Nov 2018	LLFG03	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.32		490	<10	<20	490
LLFG03	05 Nov 2019	LLFG03	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.11		500	30	<20	530
LLFG03	12 Oct 2020	LLFG03	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1			470	<10	<20	470
LLFG03	15 Nov 2021	LLFG03	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1			540	<10	<20	540
LLFG03	22 Nov 2022	LLFG3	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	0.05		680	<10	<20	680
LLFG03	20 Nov 2024	LLFG3	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	0.05	2.2	540	<10	<20	540
LLFG04	04 Oct 2012	LLFG04	Normal	<1	<0.5	<2	<1	<1	<1	<1		<1	<1	<1	<1			<1			<2		<1					583	<1	<1	583

			Phenols																									
	Pyrene	PAHs (Sum of total)	3&4-Methylphenol (m&p-cresol)	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dichlorophenol	2,4-Dimethylphenol	2,4-Dinitrophenol	2,6-Dichlorophenol	2-Chlorophenol	2-Methylphenol	2-Nitrophenol	4,6-Dinitro-2-methylphenol	4,6-Dinitro-o-cyclohexyl phenol	4-chloro-3-methylphenol	4-Nitrophenol	Cresol Total	Pentachlorophenol	Tetrachlorophenols	Phenol	Phenols (Total Halogenated)	Phenols (Total Non Halogenated)	Total Phosphate	Nitrite + Nitrate as N	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL	0.01	0.01	0.02	0.02	0.02	0.01	0.01	0.00001	0.01	0.01	0.01	0.02	0.1	0.2	0.02	0.1	0.01	0.02	0.2	0.01	0.0002	0.0002	0.01	0.05	1	1	1	1
ADWG 2022 Aesthetic					2	0.3				0.1																		
ADWG 2022 Health					20	200				300								10										
ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)					20	160		0.045		490								10		320								
ANZECC 2000 Irrigation Short Term																												
Location Code	**Date**	**Field ID**	**Sample Type**																										
LLFG04	29 Apr 2013	LLFG04	Normal	<1	<0.5																<50					564	<1	<1	564
LLFG04	29 Apr 2013	LLFG04	Normal	<1	<0.5																<50					564	<1	<1	564
LLFG04	29 Apr 2013	LLFG04	Normal	<1	<0.5																<50					564	<1	<1	564
LLFG04	12 Dec 2013	LLFG04	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.08		560	<10		560
LLFG04	13 May 2014	LLFG04	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.08		800	<10		800
LLFG04	30 Sep 2014	LLFG04	Normal	<1	<0.5		<0.1	<0.1	<0.1	<0.1		<0.1	<0.05	<0.1	<0.1			<0.05	<0.1		<0.05		<0.1				528	<1	<1	528
LLFG04	17 Mar 2015	LLFG04	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.11		671	<10		550
LLFG04	12 Aug 2015	LLFG04	Normal	<1	<1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.0005	<0.05	<0.05	<0.05	<0.1	<0.5	<1	<0.1	<0.5		<0.02	<0.2	<0.05	<0.0001	<0.001	0.18		570	<10		570
LLFG04	05 Apr 2016	LLFG04	Normal	<1	<1	<0.05	<0.05	<0.05	<0.02	<0.02	<0.0002	<0.02	<0.02	<0.02	<0.05	<0.2	<5	<0.05	<0.2		<0.5	<0.2	<0.02	<0.0005	<0.005	0.16		570	<10		570
LLFG04	17 Aug 2016	LLFG04	Normal	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.02	<0.0002	<0.02	<0.02	<0.02	<0.05	<0.2	<5	<0.05	<0.2		<0.5	<0.2	<0.02	<0.01	<0.1	0.24		630	<10		630
LLFG04	16 Nov 2017	LLFG04	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.41		440	<10		
LLFG04	28 Nov 2018	LLFG04	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.72		430	<10	<20	430
LLFG04	06 Nov 2019	LLFG04	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.27		540	<10	<20	540
LLFG04	08 Oct 2020	LLFG04	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1			490	<10	<20	490
LLFG04	15 Nov 2021	LLFG04	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1			500	<10	<20	500
LLFG04	22 Nov 2022	LLFG4	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	0.2		680	<10	<20	680
LLFG04	20 Nov 2024	LLFG4	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	0.01	0.51	490	<10	<20	490
LLFG05	04 Oct 2012	LLFG05	Normal	<1	<0.5	<2	<1	<1	<1	<1		<1	<1	<1	<1			<1			<2		<1					483	<1	<1	483
LLFG05	02 May 2013	LLFG05	Normal	<1	<0.5																<50					457	<1	<1	457
LLFG05	12 Dec 2013	LLFG05	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.76		470	<10		470
LLFG05	13 May 2014	LLFG05	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	<0.05		670	<10		670
LLFG05	30 Sep 2014	LLFG05	Normal	<1	<0.5	<2	<1	<1	<1	<1		<1	<1	<1	<1			<1			<2		<1					448	<1	<1	448
LLFG05	17 Mar 2015	LLFG05	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.09		585.6	<10		480
LLFG05	12 Aug 2015	LLFG05	Normal	<1	<1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.0005	<0.05	<0.05	<0.05	<0.1	<0.5	<1	<0.1	<0.5		<0.02	<0.2	<0.05	<0.0001	<0.001	<0.05		490	<10		490
LLFG05	07 Apr 2016	LLFG05	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.35		500	<10		500
LLFG05	18 Aug 2016	LLFG05	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.27		510	<10		510
LLFG05	28 Nov 2018	LLFG05	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.76		480	<10	<20	480
LLFG05	06 Nov 2019	LLFG05	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	3.5		540	<10	<20	540
LLFG05	12 Oct 2020	LLFG05	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1			490	<10	<20	490
LLFG05	24 Feb 2022	LLFG05	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1			520	<10	<20	520
LLFG05	22 Nov 2022	LLFG5	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	0.12		530	<10	<20	530
LLFG05	20 Nov 2024	LLFG5	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	0.02	3.5	500	<10	<20	500
LLFG08	04 Oct 2012	LLFG08	Normal	<1	<0.5	<2	<1	<1	<1	<1		<1	<1	<1	<1			<1			<2		<1					645	<1	<1	645
LLFG08	02 May 2013	LLFG08	Normal	<1	<0.5																<50					663	<1	<1	663
LLFG08	12 Dec 2013	LLFG08	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	1.4		690	<10		690
LLFG08	13 May 2014	LLFG08	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.05		970	<10		970
LLFG08	30 Sep 2014	LLFG08	Normal	<1	<0.5	<2	<1	<1	<1	<1		<1	<1	<1	<1			<1			<2		<1					681	<1	<1	681
LLFG08	17 Mar 2015	LLFG08	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	<0.05		878.4	<10		720
LLFG08	12 Aug 2015	LLFG08	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.1		740	<10		740
LLFG08	07 Apr 2016	LLFG08	Normal	<1	<1	<0.02	<0.02	<0.02	<0.01	<0.01	<0.0001	<0.01	<0.01	<0.01	<0.02	<0.1	<0.2	<0.02	<0.1		<0.02	<0.2	<0.05	<0.00002	<0.0002	0.13		770	<10		770
LLFG08	17 Aug 2016	LLFG08	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	<0.05		600	<10		600
LLFG08	11 Apr 2017	LLFG08	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.19		690	<10		690
LLFG08	14 Nov 2017	LLFG08	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.27		710	<10		
LLFG08	29 Nov 2018	LLFG08	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.25		750	<10	<20	750
LLFG08	07 Nov 2019	LLFG08	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.06		680	37	<20	710
LLFG08	12 Oct 2020	LLFG08	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1			740	<10	<20	740
LLFG08	15 Nov 2021	LLFG08	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1			770	<10	<20	770
LLFG08	22 Nov 2022	LLFG8	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	0.06		820	<10	<20	820
LLFG08	21 Nov 2024	LLFG8	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	<0.01	<0.05	630	<10	<20	630
LLFG10	04 Oct 2012	LLFG10	Normal	<1	<0.5	<2	<1	<1	<1	<1		<1	<1	<1	<1			<1			<2		<1					626	<1	<1	626
LLFG10	29 Apr 2013	LLFG10	Normal	<1	<0.5																<50					610	<1	<1	610
LLFG10	29 Apr 2013	LLFG10	Normal	<1	<0.5																<50					610	<1	<1	610

			Phenols																									
	Pyrene	PAHs (Sum of total)	3&4-Methylphenol (m&p-cresol)	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dichlorophenol	2,4-Dimethylphenol	2,4-Dinitrophenol	2,6-Dichlorophenol	2-Chlorophenol	2-Methylphenol	2-Nitrophenol	4,6-Dinitro-2-methylphenol	4,6-Dinitro-o-cyclohexyl phenol	4-chloro-3-methylphenol	4-Nitrophenol	Cresol Total	Pentachlorophenol	Tetrachlorophenols	Phenol	Phenols (Total Halogenated)	Phenols (Total Non Halogenated)	Total Phosphate	Nitrite + Nitrate as N	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL	0.01	0.01	0.02	0.02	0.02	0.01	0.01	0.00001	0.01	0.01	0.01	0.02	0.1	0.2	0.02	0.1	0.01	0.02	0.2	0.01	0.0002	0.0002	0.01	0.05	1	1	1	1
ADWG 2022 Aesthetic					2	0.3				0.1																		
ADWG 2022 Health					20	200				300								10										
ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)					20	160		0.045		490								10		320								
ANZECC 2000 Irrigation Short Term																												
Location Code	**Date**	**Field ID**	**Sample Type**																										
LLFG10	11 Dec 2013	LLFG10	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.05		660	<10		660
LLFG10	13 May 2014	LLFG10	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	<0.05		880	<10		880
LLFG10	30 Sep 2014	LLFG10	Normal	<1	<0.5	<2	<1	<1	<1	<1		<1	<1	<1	<1			<1			<2		<1					624	<1	<1	624
LLFG10	17 Mar 2015	LLFG10	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.07		780.8	<10		640
LLFG10	13 Aug 2015	LLFG10	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	<0.05		560	<10		570
LLFG10	05 Apr 2016	LLFG10	Normal	<1	<1	<0.5	<0.5	<0.5	<0.2	<0.2	<0.002	<0.2	<0.2	<0.2	<0.5	<2	<50	<0.5	<2		<5	<0.5	<0.5	<0.005	<0.05	<0.05		620	<10		620
LLFG10	16 Aug 2016	LLFG10	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.28		730	<10		730
LLFG10	11 Apr 2017	LLFG10	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.09		590	<10		590
LLFG10	15 Nov 2017	LLFG10	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.08		650	<10		
LLFG10	29 Nov 2018	LLFG10	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	0.27		640	<10	<20	640
LLFG10	06 Nov 2019	LLFG10	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1	2.5		710	<10	<20	710
LLFG10	12 Oct 2020	LLFG10	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30		<10	<30	<3	<0.01	<0.1			720	<10	<20	720
LLFG10	15 Nov 2021	LLFG10	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1			690	<10	<20	690
LLFG10	22 Nov 2022	LLFG10	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	0.12		900	<10	<20	900
LLFG10	07 Nov 2023	LLFG10	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	0.03		650	<10	<20	650
LLFG10	20 Nov 2024	LLFG10	Normal	<1	<1	<6	<10	<10	<3	<3	<0.03	<3	<3	<3	<10	<30	<100	<10	<30	<0.01	<10	<30	<3	<0.01	<0.1	0.04	0.16	580	<10	<20	580

Environmental Standards
NHMRC, September 2022, ADWG 2022 Aesthetic
NHMRC, May 2022, ADWG 2022 Health
ANZG, July 2023, ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)
DoE, 2000, ANZECC 2000 Irrigation Short Term

																								Herbicides	Organic
							Ammonia as N	Biochemical Oxygen Demand	Chloride	Chemical Oxygen Demand	Cyanide Total	Dissolved Oxygen (Lab) (filtered)	Electrical Conductivity (Lab)	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrate (as NO3-)	Nitrite (as N)	Organic Nitrogen as N	Nitrogen (Total Oxidised)	Nitrogen (Total)	pH (Lab)	Total Phosphorus (Organic Phosphate)	Sodium	Sodium Absorption Ratio	Sulphate	Sulphate as S	Total Dissolved Solids (Lab)	Hardness as CaCO3	Dinoseb	Total Organic Carbon
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	-	mg/L	mg/L	meq/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L
EQL							0.01	2	1	5	0.004		1	0.1	0.01	0.0443	0.01	0.2	0.01	0.02	0.01	0.01	0.5		1	0.334	1		0.2	1
ADWG 2022 Aesthetic									250												6.5-8.5		180		250		600	200		
ADWG 2022 Health											0.08					50														
ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)							0.9																							
ANZECC 2000 Irrigation Short Term																														
Location Code	**Date**	**Field ID**	**Sample Type**																											
LL3	**02 May 2013**	**LL3**	**Normal**				0.09	<2	159	<10	<0.004	5.94	1,550	0.5	5.47	24.21	0.02		5.49	6	7.3	0.11	192	4.06	97	32	940	424		4
LL3	**12 Dec 2013**	**LL3**	**Normal**				<0.01		140	<20	<0.005	4.95		<0.2	5.8	25.68	0.02		5.82	5.82	7.4		200	4.53	84	28	870	369	<100	<5
LL3	**13 May 2014**	**LL3**	**Normal**				<0.01		160	22	<0.005	4		<0.2	7	30.99	<0.02		7.02	7.04	7.1		160	3.81	87	29	990	334	<100	<5
LL3	**30 Sep 2014**	**LL3**	**Normal**				<0.01	<2	140	11	<0.004	2.89	1,530	0.6	7	30.99	0.02		7.02	7.6	7.58	0.05	177	3.96	83	28	994	379		4
LL3	**17 Mar 2015**	**LL3**	**Normal**				<0.01		130	<20	<0.005	3.84		0.9	7.9	34.97	<0.02		7.9	8.8	7.7		180	3.79	87	29	830	427	<100	23
LL3	**12 Aug 2015**	**LL3**	**Normal**				<0.01		130	<20	<0.005	2.04		1.1	6.7	29.66	0.03				7.2		170	3.94	78	26	830	352	<100	11
LL3	**06 Apr 2016**	**LL3**	**Normal**				<0.01	<5	130	31	<0.005	7.2		0.6	6.4	28.33	<0.02		6.4	7	7.8		160	3.84	78	26	810	329	<100	38
LL3	**16 Aug 2016**	**LL3**	**Normal**				<0.01		120	<25	<0.005	2.3		0.5	7.1	31.43	<0.02				7.2		180	4.00	78	26	860	383	<100	7.3
LL3	**12 Apr 2017**	**LL3**	**Normal**				0.05		160	<25	<0.005	3.21		<0.2	8.1	35.86	<0.02				7.6		160	3.64	86	29	3,300	366	<100	<25
LL3	**14 Nov 2017**	**LL3**	**Normal**				0.02	<5	120	<25	<0.005	1.4		1.4	8.4	37.19	0.02				7.5		180	4.02	71	24	840	379	<100	6.7
LL3	**29 Nov 2018**	**LL3**	**Normal**				<0.01	<5	140	<25	<0.005	2.51	1,400	<0.2	8.5	37.63	<0.02		8.5	8.5	8.1		190	4.80	91	30	710	296	<100	13
LL3	**07 Nov 2019**	**LL3**	**Normal**				<0.01	<5	180	<25	<0.005	1.7	1,200	0.9	6	26.56	<0.02		6	6.9	8.3		190	4.47	58	19	680	343	<100	<5
LL3	**12 Oct 2020**	**LL3**	**Normal**				0.02	<20	110	59	<0.005		1,100	1.1	4.9	21.69	0.05		5	6.1	8.1	0.07	170	4.15	54	18	780	317	<100	12
LL3	**15 Nov 2021**	**LL3**	**Normal**				<0.01	<5	42	<25	<0.005	1.33	1,300	1.3	6.6	29.22	<0.02		6.6	7.9	8.3	0.02	160	3.62	56	19	780	370	<100	
LL3	**22 Nov 2022**	**LL3**	**Normal**				<0.01	<5	97	<25	0.005		1,400	0.6	5.9	26.12	<0.02		6	6.6	7.6		150	3.74	40	13	680	304	<100	40
LL3	**07 Nov 2023**	**LL3**	**Normal**				0.03	<5	95	<25	<0.005		1,300	0.6	6.5	28.77	<0.02	0.57	6.5	7.1	7.5		160	4	56	19	330	328	<100	<5
LL3	**20 Nov 2024**	**LL3**	**Normal**				0.01	<5	89	<25	<0.005		1,200	0.8	5.7		<0.02	0.79		6.5	8		170		57		800	335	<100	<5
LL4	**21 May 2013**	**LL4**	**Normal**				0.34	<2	653	62	<0.004		2,960	1.4	0.06	0.27	<0.01		0.06	1.5	6.73	0.34	420	8.08	113	38	1,680	511		472
LL4	**11 Dec 2013**	**LL4**	**Normal**				0.07		570	<20	<0.005	1.74		<0.2	<0.02	<0.0885	<0.02		0.04	0.04	6.9		400	7.83	99	33	1,600	494	<100	<25
LL4	**13 May 2014**	**LL4**	**Normal**				<0.01		530	<20	<0.005	6.84		<0.2	<0.02	<0.0885	<0.02		0.04	0.06	6.9		320	6.83	102	34	1,600	416	<100	<5
LL4	**30 Sep 2014**	**LL4**	**Normal**				0.07	<2	649	<10	<0.004	0.1	2,980	0.3	0.01	0.04	<0.01		0.01	0.3	7.5	0.05	406	7.81	103	34	1,940	511		1
LL4	**17 Mar 2015**	**LL4**	**Normal**				0.04		590	<20	<0.005	3.51		<0.2	<0.02	<0.0885	<0.02		0.04	0.24	7.7		400	7.30	105	35	1,500	568	<100	12
LL4	**12 Aug 2015**	**LL4**	**Normal**				0.04		590	<20	<0.005	0.52		<0.2	<0.02	<0.0885	<0.02				7.3		400	7.89	99	33	1,600	486	<100	10
LL4	**06 Apr 2016**	**LL4**	**Normal**				0.03	<5	530	52	<0.005	5.06		0.3	0.07	0.31	<0.02		0.07	0.4	7.8		320	6.96	102	34	1,500	400	<100	50
LL4	**17 Aug 2016**	**LL4**	**Normal**				<0.01		660	40	<0.005	4.23		<0.2	0.04	0.18	<0.02				7.3		500	9.37	198	66	2,100	539	<100	<5
LL4	**11 Apr 2017**	**LL4**	**Normal**				<0.01		550	110	<0.005	0.72		<0.2	0.1	0.44	<0.02				7.3		360	7.13	110	37	5,700	483	<100	<25
LL4	**14 Nov 2017**	**LL4**	**Normal**				0.06	<5	520	27	<0.005	1.41		0.5	0.11	0.49	<0.02				7		430	8.40	110	37	1,600	496	<100	<5
LL4	**29 Nov 2018**	**LL4**	**Normal**				<0.01	<5	710	<25	<0.005	3.34	2,500	<0.2	0.9	3.98	<0.02		0.92	0.92	7.5		360	7.41	120	40	1,100	446	<100	17
LL4	**06 Nov 2019**	**LL4**	**Normal**				<0.01	<5	630	<25	<0.005		2,900	<0.2	<0.02	<0.0885	<0.02		<0.05	<0.2	7.8		390	7.57	100	33	1,600	502	<100	<5
LL4	**12 Oct 2020**	**LL4**	**Normal**				<0.01	53	440	42	<0.005	1.41	2,400	0.8	<0.02	<0.0885	<0.02		<0.05	0.8	7.8	0.09	330	6.26	83	28	1,400	525	<100	18
LL4	**24 Feb 2022**	**LL4**	**Normal**				<0.01	<5	550	<25	<0.005		3,200	0.8	<0.02	<0.0885	<0.02		<0.05	0.8	7.6	<0.05	390	7.98	94	31	1,500	452	<100	<5
LL4	**22 Nov 2022**	**LL4**	**Normal**				<0.01	7.3	76	52	0.006		890	0.4	0.93	4.12	<0.02		0.93	1.33	7.9		49	1.36	30	10	320	245	<100	37
LL4	**07 Nov 2023**	**LL4**	**Normal**				0.05	<5	640	<25	<0.005		1,500	<0.2	0.04	0.18	<0.02	<0.2	<0.05	<0.2	7.3		440	8	110	37	890	516	<100	<5
LL4	**21 Nov 2024**	**LL4**	**Normal**				0.02	<5	290	59	<0.005		1,700	1.1	1.7		<0.02	1.08		2.8	7.7		230		67		950	372	<100	33
LLFG03	**04 Oct 2012**	**LLFG03**	**Normal**				0.07	<2	1,060	29	<0.004	0.38	4,320	<0.1	1.75	7.75	0.03		1.78	1.8	7.2	0.15	528	7.59	130	43	2,500	914		1
LLFG03	**29 Apr 2013**	**LLFG03**	**Normal**				0.06	<2	1,140	<10	0.004	0.65	4,250	<0.1	2.66	11.78	<0.01		2.66	2.7	6.95	0.08	558	7.79	146	49	2,620	970		<1
LLFG03	**11 Dec 2013**	**LLFG03**	**Normal**				<0.01		1,000	<20	<0.005	2.01		<0.2	2.1	9.30	<0.02		2.1	2.1	6.9		510	7.83	153	51	2,500	802	<100	<25
LLFG03	**13 May 2014**	**LLFG03**	**Normal**				<0.01		1,100	<20	<0.005	2.68		<0.2	2.5	11.07	<0.02		2.52	2.54	6.9		660	9.98	162	54	2,600	827	<100	<25
LLFG03	**30 Sep 2014**	**LLFG03**	**Normal**				<0.01	<2	1,100	<10	<0.004	2.43	4,360	0.1	2.11	9.34	<0.01		2.11	2.2	7.33	0.1	541	7.96	170	57	2,830	875		<1
LLFG03	**17 Mar 2015**	**LLFG03**	**Normal**				<0.01		1,100	<20	<0.005	1.87		<0.2	2.2	9.74	<0.02		2.2	2.4	7.5		530	7.29	162	54	2,500	1000	<100	17
LLFG03	**13 Aug 2015**	**LLFG03**	**Normal**				0.1		1,000	<20	<0.005	0.83		<0.2	2.3	10.18	<0.02				8.2		490	7.73	144	48	2,300	761	<1	11
LLFG03	**07 Apr 2016**	**LLFG03**	**Normal**				<0.01	<5	1,100	<20	<0.005	9.4		0.3	2.3	10.18	<0.02		2.3	2.6	7.6		570	8.01	150	50	2,500	959	<100	43
LLFG03	**18 Aug 2016**	**LLFG03**	**Normal**				<0.01		930	<25	<0.005	3.05		<0.2	4.2	18.59	<0.02				7.4		490	7.41	153	51	2,300	827	<100	6.4
LLFG03	**12 Apr 2017**	**LLFG03**	**Normal**				0.02		1,000	27	<0.005	1.45		<0.2	2	8.85	<0.02				7.5		470	7.22	160	53	8,700	802	<100	<25
LLFG03	**14 Nov 2017**	**LLFG03**	**Normal**				0.02	<5	840	<25	<0.005	1.55		0.8	2.3	10.18	<0.02				7.2		560	7.93	150	50	2,400	943	<100	5.5
LLFG03	**29 Nov 2018**	**LLFG03**	**Normal**				<0.01	<5	1,300	<25	<0.005	3.17	4,800	<0.2	2.6	11.51	<0.02		2.6	2.6	7.8		610	8.50	190	63	3,200	975	<100	10
LLFG03	**05 Nov 2019**	**LLFG03**	**Normal**				<0.01	<5	1,200	170	<0.005	2.24	4,500	0.4	2.6	11.51	<0.02		2.6	3	8.5		590	8.71	170	57	2,600	868	<100	<5
LLFG03	**12 Oct 2020**	**LLFG03**	**Normal**				0.02	<20	1,000	150	<0.005	3.61	4,300	0.8	2.5	11.07	<0.02		2.5	3.3	7.8	0.83	630	8.49	160	53	2,700	1041	<100	15
LLFG03	**15 Nov 2021**	**LLFG03**	**Normal**				<0.01	<5	1,100	40	<0.005	1.44	4,300	0.6	0.57	2.52	1.2		1.8	2.4	7.8	0.21	580	8.56	160	53	2,700	868	<100	
LLFG03	**22 Nov 2022**	**LLFG3**	**Normal**				0.04	37	850	37	0.005		4,600	0.8	0.16	0.71	<0.02		0.17	0.97	7.7		510	7.96	150	50	2,300	777	<100	49
LLFG03	**20 Nov 2024**	**LLFG3**	**Normal**				0.05	<5	1,200	<25	<0.005		4,400	0.6	2.2		0.02	0.55		2.8	7.9		650		180		2,800	949	<100	<5
LLFG04	**04 Oct 2012**	**LLFG04**	**Normal**				0.11	<2	2,930	82	<0.004	0.2	9,370	0.1	4.37	19.35	0.03		4.4	4.5	6.78	0.48	1,300	12.89	494	165	5,980	1926		3

Location Code	Date	Field ID	Sample Type	Ammonia as N	Biochemical Oxygen Demand	Chloride	Chemical Oxygen Demand	Cyanide Total	Dissolved Oxygen (Lab) (filtered)	Electrical Conductivity (Lab)	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrate (as NO3-)	Nitrite (as N)	Organic Nitrogen as N	Nitrogen (Total Oxidised)	Nitrogen (Total)	pH (Lab)	Total Phosphorus (Organic Phosphate)	Sodium	Sodium Absorption Ratio	Sulphate	Sulphate as S	Total Dissolved Solids (Lab)	Hardness as CaCO3	Herbicides: Dinoseb	Organic: Total Organic Carbon
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	-	mg/L	mg/L	meq/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L
EQL				0.01	2	1	5	0.004		1	0.1	0.01	0.0443	0.01	0.2	0.01	0.02	0.01	0.01	0.5		1	0.334	1		0.2	1
ADWG 2022 Aesthetic						250												6.5-8.5		180		250		600	200		
ADWG 2022 Health								0.08					50														
ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)				0.9																							
ANZECC 2000 Irrigation Short Term																											
LLFG04	29 Apr 2013	LLFG04	Normal	0.12	4	3,820	81	<0.004		10,700	4.5	3.6	15.94	<0.01		3.6	8.1	6.75	7.02	1,680	14.77	593	198	6,330	2448		3
LLFG04	29 Apr 2013	LLFG04	Normal	0.12	4	3,820	81	<0.004		10,700	4.5	3.6	15.94	<0.01		3.6	8.1	6.75	7.02	1,680	14.77	593	198	6,330	2448		3
LLFG04	29 Apr 2013	LLFG04	Normal	0.12	4	3,820	81	<0.004		10,700	4.5	3.6	15.94	<0.01		3.6	8.1	6.75	7.02	1,680	14.77	593	198	6,330	2448		3
LLFG04	12 Dec 2013	LLFG04	Normal	<0.01		2,600	31	<0.005	1.11		<0.2	4.7	20.81	0.05		4.75	4.75	6.9		1,200	12.55	480	160	5,700	1729	<100	<5
LLFG04	13 May 2014	LLFG04	Normal	<0.01		2,800	190	<0.005	4.4		<0.2	6	26.56	<0.02		6.02	6.04	6.6		1,500	16.41	509	170	6,100	1580	<100	<25
LLFG04	30 Sep 2014	LLFG04	Normal	<0.01	<2	3,310	16	<0.004	2.89	9,950	0.4	5.33	23.59	0.06		5.39	5.8	7.24	0.36	1,440	13.68	558	186	6,470	2095		2
LLFG04	17 Mar 2015	LLFG04	Normal	<0.01		3,600	<20	<0.005	1.08		<0.2	3.5	15.49	0.08		3.6	3.8	7.1		1,700	13.80	599	200	6,300	2870	<100	20
LLFG04	12 Aug 2015	LLFG04	Normal	<0.01		2,700	30	<0.005	1.19		0.2	6.3	27.89	<0.02				6.7		1,300	14.04	479	160	5,100	1621	<1	5.6
LLFG04	05 Apr 2016	LLFG04	Normal	<0.01	<5	3,000	130	<0.005	5		<0.2	5.5	24.35	0.04		5.5	5.5	7		1,300	12.85	509	170	5,200	1936	<5	45
LLFG04	17 Aug 2016	LLFG04	Normal	<0.01		2,400	<25	<0.005	3.43		<0.2	6.6	29.22	<0.02				7		1,000	11.12	479	160	5,100	1530	<5	<5
LLFG04	16 Nov 2017	LLFG04	Normal	<0.01	<5	1,500	75	<0.005	3.12		0.5	4.3	19.04	0.04				7		940	12.28	320	107	3,400	1109	<100	<5
LLFG04	28 Nov 2018	LLFG04	Normal	<0.01	6.7	2,700	79	<0.005	3.07	10,000	1.7	1.8	7.97	0.08		1.8	3.5	7.9		1,300	12.56	450	150	7,900	2027	<100	23
LLFG04	06 Nov 2019	LLFG04	Normal	<0.01	<5	2,700	390	<0.005	1.56	8,800	0.5	3	13.28	<0.02		3	3.5	7.9		1,300	13.31	460	154	5,500	1804	<100	17
LLFG04	08 Oct 2020	LLFG04	Normal	<0.01	<5	2,700	62	<0.005	1.05	9,200	0.2	4.4	19.48	0.15		4.6	4.8	7.4	0.1	1,200	12.80	480	160	7,000	1663	<100	57
LLFG04	15 Nov 2021	LLFG04	Normal	<0.01	<5	2,600	35	<0.005	1.64	7,800	<0.2	5.9	26.12	0.02		5.9	5.9	7.8	0.19	1,300	13.26	470	157	5,800	1820	<100	
LLFG04	22 Nov 2022	LLFG4	Normal	0.01	9.4	2,400	76	0.005		9,000	2.3	2.3	10.18	0.04		2.4	4.7	7.9		1,200	13.61	300	100	4,800	1472	<100	52
LLFG04	20 Nov 2024	LLFG4	Normal	0.14	<5	3,100	42	<0.005		9,900	0.6	0.27		0.24	0.46		1.1	7.7		1,500		500		6,500	1890	<100	16
LLFG05	04 Oct 2012	LLFG05	Normal	0.1	16	768	85	<0.004	2.02	3,300	4.2	3.13	13.86	0.02		3.15	7.4	6.96	7.95	460	8.43	108	36	2,610	564		2
LLFG05	02 May 2013	LLFG05	Normal	0.1	<2	829	12	<0.004	1.83	3,330	<0.1	4.17	18.46	<0.01		4.17	4.2	6.94	2.01	458	8.05	115	38	2,000	612		1
LLFG05	12 Dec 2013	LLFG05	Normal	<0.01		930	<20	<0.005	2.94		0.6	4.3	19.04	<0.02		4.3	4.9	7		500	7.76	258	86	2,500	786	<100	<25
LLFG05	13 May 2014	LLFG05	Normal	<0.01		930	130	<0.005	1.42		<0.2	4.8	21.25	<0.02		4.82	4.84	6.7		580	9.17	237	79	2,400	757	<100	<50
LLFG05	30 Sep 2014	LLFG05	Normal	0.04	<2	975	<10	<0.004	0.77	3,950	0.4	4.53	20.05	<0.01		4.53	4.9	7.24	0.05	496	7.64	224	75	2,570	797		1
LLFG05	17 Mar 2015	LLFG05	Normal	<0.01		890	<20	<0.005	2.49		0.7	4.4	19.48	0.05		4.5	5.2	7.3		450	6.71	216	72	2,000	852	<100	16
LLFG05	12 Aug 2015	LLFG05	Normal	<0.01		920	<20	<0.005	1.38		<0.2	4.5	19.92	<0.02				6.8		510	8.42	207	69	2,200	695	<1	6.8
LLFG05	07 Apr 2016	LLFG05	Normal	0.02	<5	900	<20	<0.005	5.01		0.3	4.1	18.15	<0.02		4.1	4.4	7.5		550	8.32	189	63	2,200	827	<100	40
LLFG05	18 Aug 2016	LLFG05	Normal	<0.01		850	<25	<0.005	2.38		<0.2	2.2	9.74	<0.02				7.2		490	7.95	216	72	2,000	719	<100	<5
LLFG05	28 Nov 2018	LLFG05	Normal	<0.01	<5	930	260	<0.005	2.98	3,900	2.5	4.2	18.59	<0.02		4.2	6.7	7.7		520	8.51	180	60	2,300	707	<100	18
LLFG05	06 Nov 2019	LLFG05	Normal	0.04	6	970	320	<0.005	1.55	3,700	2.6	3.7	16.38	0.22		3.9	6.5	7.9		540	8.81	180	60	2,000	711	<100	<5
LLFG05	12 Oct 2020	LLFG05	Normal	<0.01	<20	830	740	<0.005	1.06	3,500	0.4	3.1	13.72	0.28		3.4	3.8	7.7	0.75	530	9.02	160	53	2,100	653	<100	15
LLFG05	24 Feb 2022	LLFG05	Normal	<0.01	9.3	850	270	<0.005		4,300	1.9	3.7	16.38	0.03		3.7	5.6	7.6	2.1	510	9.70	170	57	2,300	523	<100	<5
LLFG05	22 Nov 2022	LLFG5	Normal	0.08	7.4	880	<25	0.005		3,900	1	3.5	15.49	0.09		3.6	4.6	8.1		490	9.01	150	50	1,900	560	<100	46
LLFG05	20 Nov 2024	LLFG5	Normal	0.02	<5	760	<25	<0.005		3,300	0.8	3.2		0.33	0.78		4.3	7.7		530		160		2,300	594	<100	<5
LLFG08	04 Oct 2012	LLFG08	Normal	0.04	<2	834	28	<0.004	3.61	3,820	0.2	0.12	0.53	<0.01		0.12	0.3	7.19	0.58	564	9.83	190	63	2,280	623		2
LLFG08	02 May 2013	LLFG08	Normal	0.04	<2	860	13	<0.004	2.95	3,780	0.3	0.03	0.13	<0.01		0.03	0.3	7.05	3.2	608	10.28	184	61	2,280	662		2
LLFG08	12 Dec 2013	LLFG08	Normal	<0.01		730	<20	<0.005	3.65		0.8	<0.02	<0.0885	<0.02		0.04	0.84	7.2		530	9.25	213	71	2,200	621	<100	<25
LLFG08	13 May 2014	LLFG08	Normal	<0.01		730	61	<0.005	4.52		<0.2	0.03	0.13	<0.02		0.05	0.07	7		660	12.35	204	68	2,400	540	<100	<50
LLFG08	30 Sep 2014	LLFG08	Normal	<0.01	<2	809	<10	<0.004	0.74	3,830	0.7	0.06	0.27	<0.01		0.06	0.8	7.36	1.11	574	10.25	189	63	2,490	593		1
LLFG08	17 Mar 2015	LLFG08	Normal	<0.01		750	<20	<0.005	1.57		<0.2	<0.02	<0.0885	<0.02		0.04	0.24	7.4		540	9.54	195	65	2,000	606	<100	16
LLFG08	12 Aug 2015	LLFG08	Normal	<0.01		700	<20	<0.005	2.47		<0.2	<0.02	<0.0885	<0.02				7.1		540	9.97	195	65	2,100	555	<100	21
LLFG08	07 Apr 2016	LLFG08	Normal	0.01	<5	740	<25	<0.005	6.02		0.3	0.04	0.18	<0.02		0.04	0.3	7.6		610	9.73	192	64	2,100	743	<0.2	56
LLFG08	17 Aug 2016	LLFG08	Normal	0.02		320	100	<0.005	3.21		0.6	0.48	2.12	<0.02				7		240	5.12	78	26	1,100	415	<100	14
LLFG08	11 Apr 2017	LLFG08	Normal	<0.01		690	32	<0.005	1.63		<0.2	<0.02	<0.0885	<0.02				7.4		490	9.35	180	60	7,800	519	<100	<25
LLFG08	14 Nov 2017	LLFG08	Normal	<0.01	<5	740	75	<0.005	3.04		0.4	<0.02	<0.0885	<0.02				7.3		690	11.83	210	70	2,100	644	<100	6.4
LLFG08	29 Nov 2018	LLFG08	Normal	<0.01	33	960	36	<0.005	2.28	3,900	<0.2	<0.02	<0.0885	<0.02		<0.05	<0.2	7.7		620	10.78	190	63	2,000	626	<100	27
LLFG08	07 Nov 2019	LLFG08	Normal	<0.01	<5	750	<25	<0.005	1.76	3,400	<0.2	<0.02	<0.0885	<0.02		<0.05	<0.2	8.5		580	10.72	180	60	2,000	553	<100	<5
LLFG08	12 Oct 2020	LLFG08	Normal	<0.01	<5	710	<25	<0.005	1.12	3,500	<0.2	<0.02	<0.0885	<0.02		<0.05	<0.2	8	0.02	640	11.36	170	57	2,000	601	<100	23
LLFG08	15 Nov 2021	LLFG08	Normal	<0.01	<5	800	<25	<0.005	2.3	3,800	2.7	<0.02	<0.0885	<0.02		<0.05	2.7	8.1	0.27	550	9.54	220	73	2,200	629	<100	
LLFG08	22 Nov 2022	LLFG8	Normal	0.11	6.9	610	<25	0.005		4,000	0.4	0.05	0.22	0.02		0.08	0.48	7.9		540	10.54	150	50	1,700	496	<100	67
LLFG08	21 Nov 2024	LLFG8	Normal	0.2	7.4	760	230	<0.005		1,900	0.4	<0.02		<0.02	0.2		0.4	7.9		610		200		2,300	595	<100	12
LLFG10	04 Oct 2012	LLFG10	Normal	0.04	<2	965	19	<0.004	0.58	4,030	<0.1	0.11	0.49	<0.01		0.11	0.1	7.26	0.03	557	8.85	134	45	2,380	750		<1
LLFG10	29 Apr 2013	LLFG10	Normal	0.07	<2	1,010	<10	<0.004		3,880	<0.1	0.16	0.71	<0.01		0.16	0.2	7.03	0.09	567	8.72	148	49	2,580	800		1
LLFG10	29 Apr 2013	LLFG10	Normal	0.07	<2	1,010	<10	<0.004	0.13	3,880	<0.1	0.16	0.71	<0.01		0.16	0.2	7.03	0.09	567	8.72	148	49	2,580	800		1

																							Herbicides	Organic
	Ammonia as N	Biochemical Oxygen Demand	Chloride	Chemical Oxygen Demand	Cyanide Total	Dissolved Oxygen (Lab) (filtered)	Electrical Conductivity (Lab)	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrate (as NO3-)	Nitrite (as N)	Organic Nitrogen as N	Nitrogen (Total Oxidised)	Nitrogen (Total)	pH (Lab)	Total Phosphorus (Organic Phosphate)	Sodium	Sodium Absorption Ratio	Sulphate	Sulphate as S	Total Dissolved Solids (Lab)	Hardness as CaCO3	Dinoseb	Total Organic Carbon
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	-	mg/L	mg/L	meq/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L
EQL	0.01	2	1	5	0.004		1	0.1	0.01	0.0443	0.01	0.2	0.01	0.02	0.01	0.01	0.5		1	0.334	1		0.2	1
ADWG 2022 Aesthetic			250												6.5-8.5		180		250		600	200		
ADWG 2022 Health					0.08					50														
ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)	0.9																							
ANZECC 2000 Irrigation Short Term																								
Location Code	**Date**	**Field ID**	**Sample Type**																					
LLFG10	**11 Dec 2013**	**LLFG10**	**Normal**	<0.01		920	<20	<0.005	0.94		<0.2	0.13	0.58	<0.02		0.13	0.13	7		550	9.03	150	50	2,300	702	<100	9.4
LLFG10	**13 May 2014**	**LLFG10**	**Normal**	<0.01		890	<20	<0.005	0.56		<0.2	0.2	0.89	<0.02		0.04	0.06	7		640	10.83	159	53	2,300	661	<100	6.1
LLFG10	**30 Sep 2014**	**LLFG10**	**Normal**	<0.01	<2	945	<10	<0.004	0.41	4,040	<0.1	0.18	0.80	<0.01		0.18	0.2	7.42	0.04	554	9.01	150	50	2,630	716		<1
LLFG10	**17 Mar 2015**	**LLFG10**	**Normal**	<0.01		930	<20	<0.005	3		<0.2	0.19	0.84	<0.02		0.21	0.41	7.5		530	7.98	156	52	2,100	834	<100	11
LLFG10	**13 Aug 2015**	**LLFG10**	**Normal**	0.25		860	<20	<0.005	0.57		0.3	0.18	0.80	<0.02				8.3		490	8.32	141	47	2,100	656	<100	6.8
LLFG10	**05 Apr 2016**	**LLFG10**	**Normal**	<0.01	<5	820	<20	<0.005	0.13		<0.2	0.16	0.71	<0.02		0.16	0.2	7.4		500	8.46	141	47	2,000	661	<50	43
LLFG10	**16 Aug 2016**	**LLFG10**	**Normal**	<0.01		850	100	<0.005	1.41		0.4	0.16	0.71	<0.02				7.2		510	8.23	141	47	2,100	727	<100	<5
LLFG10	**11 Apr 2017**	**LLFG10**	**Normal**	<0.01		910	30	<0.005	2.03		0.3	0.24	1.06	<0.02				7.4		510	8.37	160	53	7,800	702	<100	<5
LLFG10	**15 Nov 2017**	**LLFG10**	**Normal**	<0.01	<5	960	<25	<0.005	6.8		0.5	0.2	0.89	<0.02				7.2		680	10.09	160	53	2,500	859	<100	11
LLFG10	**29 Nov 2018**	**LLFG10**	**Normal**	<0.01	<5	1,000	<25	<0.005	2.93	4,300	<0.2	0.26	1.15	<0.02		0.27	0.27	7.8		640	10.70	180	60	2,300	677	<100	21
LLFG10	**06 Nov 2019**	**LLFG10**	**Normal**	<0.01	<5	1,000	470	<0.005	1.14	4,100	<0.2	0.03	0.13	<0.02		<0.05	<0.2	8		590	9.36	160	53	2,100	752	<100	11
LLFG10	**12 Oct 2020**	**LLFG10**	**Normal**	<0.01	<5	930	180	<0.005	1	3,900	<0.2	<0.02	<0.0885	<0.02		<0.05	<0.2	7.9	0.03	620	9.73	150	50	2,300	768	<100	17
LLFG10	**15 Nov 2021**	**LLFG10**	**Normal**	0.03	<5	960	<25	<0.005	2.29	3,900	1.1	<0.02	<0.0885	0.02		<0.05	1.1	7.9	0.11	600	9.85	160	53	2,300	702	<100	
LLFG10	**22 Nov 2022**	**LLFG10**	**Normal**	<0.01	<5	850	<25	0.005		4,400	2.3	0.05	0.22	0.02		0.07	2.37	7.6		570	9.46	150	50	2,100	687	<100	42
LLFG10	**07 Nov 2023**	**LLFG10**	**Normal**	0.06	<5	1,100	<25	<0.005		4,400	<0.2	0.19	0.84	<0.02	<0.2	0.2	0.2	7.4		660	10	190	63	1,200	809	<100	<5
LLFG10	**20 Nov 2024**	**LLFG10**	**Normal**	0.02	<5	1,000	<25	<0.005		2,100	0.2	0.12		0.03	<0.2		0.4	7.9		690		180		2,500	849	<100	<5

Environmental Standards
NHMRC, September 2022, ADWG 2022 Aesthetic
NHMRC, May 2022, ADWG 2022 Health
ANZG, July 2023, ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)
DoE, 2000, ANZECC 2000 Irrigation Short Term

Appendix D – QA/QC

Quality Assurance and Quality Control

General QA/QC procedures undertaken during the November 2024 Groundwater Investigation are detailed in the table below. Conformance to specific QA/QC criteria is detailed in Table 1 below.

Field and laboratory data handling were managed as follows:

- All laboratory analysis results are imported into ESDAT; and
- Summary results tables were exported to Excel from ESDAT.

Table 1 QA/QC Procedures

QA/QC Item	Detail
QA	
Field Methodology	Procedures in the field were undertaken in accordance with Schedule B(2) of the NEPM, and SA EPA groundwater sampling guidelines, SA EPA water and wastewater sampling guidelines.
Decontamination of Equipment	All reusable equipment was decontaminated with phosphate free detergent and water prior to being used for sampling purposes.
National Association of Testing Authorities (NATA) Accreditation	Laboratory analysis was conducted by NATA accredited laboratories.
Sample Tracking	Chain of Custody documentation and procedures were used.
Sample Storage	Samples were stored in chilled cool boxes with ice bricks during sampling and transportation to the laboratories.
Holding Times	Samples were mostly analysed within specific holding times, with some exceptions as detailed in the Holding Time Exceedances Summary table (Table 2).
Laboratory Limits of Reporting (LORs)	LORs were below the adopted assessment criteria. However, due to low assessment criteria for some organics, some of the LORs exceed assessment criteria.
QC	
Duplicate Samples	A minimum of 10% duplicates were retrieved and analysed and submitted to a secondary laboratory for analysis. Where possible, calculation of the RPD of the reported results was made, along with an assessment of the correlation of the reported laboratory results.
QC	
Laboratory QC	Laboratory quality control procedures were undertaken by the laboratory and included the analysis of laboratory duplicates, blanks, matrix spikes and recoveries.
Water Quality Meter	Water quality meter was calibrated by the equipment hire company prior to use. Calibration certificates were retained.

Field Methodology

Groundwater sampling was undertaken by Tonkin personnel in accordance with the assessment framework and sampling protocols contained in the following documents:

- NEPC (1999) The National Environment Protection (Assessment of Site Contamination) Amendment Measure (ASC NEPM), National Environment Protection Council, amended 2013.
- SA EPA Guidelines (2007) Regulatory Monitoring and Testing: Groundwater Sampling, updated April 2016; and
- SA EPA (2007) Regulatory monitoring and testing, water, and wastewater sampling.

The guidelines as stated in the above documents were adhered to on all occasions.

HydraSleeves were used to sample all wells during the November 2024 groundwater monitoring event (GME).

Holding Times

The majority of samples were analysed within the recommended laboratory holding times, with some exceptions as detailed in the Holding Time Exceedances Summary Table (Table 2) below.

Table 2 Holding Time Exceedances Summary

Sample ID	Analytes	Laboratory & Report No.	Sampling Dates	Analysis Date	Recommended Holding Time	Days Exceeded
LLFG08	pH	MGT 1163239	21/11/2024	25/11/2024	6 hours	4 days
LLFG08	BOD, nitrite (as N)	MGT 1163239	21/11/2024	25/11/2024	2 days	2 days
DUP01, LL3, LL4, LLFG03, LLFG04, LLFG05, LLFG10	pH	MGT 1162835	20/11/2024	22/11/2024	6 hours	2 days
DUP02	pH	ALS EM2420487	20/11/2024	26/11/2024	30 mins	6 days

The recommended holding time for pH is 30 minutes at MGT and 6 hours at ALS. This holding time is difficult to achieve as the samples were analysed at an interstate laboratory. Refer to the field values of pH (Appendix B, Table 1) for greater accuracy. The exceedances of holding times for these samples are not considered significant. The holding times were also exceeded for Nitrite as N and BOD by two days. This was due to a logistical issue on behalf of Eurofins and is not considered to have a significant effect on the results.

Duplicate Samples

During the groundwater sampling event one inter-laboratory and one intra-laboratory duplicate samples were retrieved, corresponding to the requirement of 1 in 10 primary samples to be field duplicate. To assess the quality of the results, RPDs were calculated on the duplicate pair results. Calculated groundwater RPDs are presented in Appendix C, Table 2. For samples which recorded results below the laboratory limit, the RPDs were not calculated. Groundwater RPDs are generally considered acceptable if they are less than 20% (SA EPA, 2007).

Based on Australian Standard AS 4482.1-2005, a field duplicate RPD within the range of 30 to 50% is considered acceptable. Generally higher RPD values occur for organic compounds than for metals and where low concentrations of an analyte are recorded.

- RPDs – no limit if results are <10 times the LOR
- RPDs – between 0–50% if results are between 10–20 times LOR
- RPDs – are between 0–20% if results are >20 times LOR.

High RPDs can be attributed to factors including:

- The reported results are close to laboratory limits of detection (i.e. low concentrations of analytes).
- Volatile nature of some of the analytes which are hard to replicate to the required accuracy at low concentrations
- Sample matrix interference from organic materials within the sample.

The table below summarises the RPD's which were calculated and provides comments on any RPDs considered to be significant. Given that the majority of the results detailed in the table are within the acceptable range, the results are considered accurate and repeatable.

Table 3 RPD's Analysis

Sampling Event	Date	Primary Samples	Inter-laboratory Duplicate	RPDs		Comments	Data Accepted (Y or N)
				Number Calculated	Number >20%		
November 2024	20/11/2024	LLFG03	DUP01	23	5	Five RPD calculations were above the acceptance guideline of 20%. The results reported for selenium, zinc, ammonia, TKN and organic nitrogen are less than 10 times the LOR, therefore, there is no limit and the RPD's are considered acceptable.	Y
November 2024	20/11/2025	LLFG10	DUP02	21	5	Five RPD calculations were above the acceptance guideline of 20%. The reported RPD values for total phosphorus, TKM and nitrite (as N) are less than 10 times the LOR and therefore, affected by small differences in concentration. The elevated RPD's can be accepted and are not considered to affect the validity of the results.	Y

Sampling Event	Date	Primary Samples	Inter-laboratory Duplicate	RPDs		Comments	Data Accepted (Y or N)
				Number Calculated	Number >20%		
						The reported RPD for boron is less than 20 times the LOR with an RPD result less than 50%, therefore the elevated RPD can be accepted. The elevated RPD for EC is greater than 10 times the LOR. This exceedance is not considered to affect the integrity of the results as the field EC result is more accurate and has been used as the representative sample for the purposes of this investigation.	

Trip Blanks

Two trip blank samples (TB01 & TB02) were taken to ensure that there was no volatile hydrocarbon contamination of the samples during transit. All analytes reported for the trip blank were below the laboratory LOR, therefore, there is no impact expected upon the results from transit.

Rinsate Sample

Groundwater samples were retrieved using hydrasleeves® at all wells. One rinsate sample (RINS01) was retrieved from the battery-operated water quality meter (WQM) as reusable equipment was not used to sample the groundwater wells. The rinsate sample was only analysed for heavy metals and all concentrations were reported below the laboratory LOR.

Laboratory QC

Laboratory analysis was conducted by Eurofins MGT and ALS, both of which are NATA accredited for the requested analysis.

Laboratory QA/QC procedures were undertaken by Eurofins MGT and ALS and included the analysis of laboratory duplicates, blanks, matrix spikes and recoveries. Laboratory results are considered reliable and representative if:

- Results of all control blanks are below laboratory Limit of Reporting (LOR).
- Recoveries are within an approximate range of 70% - 130% (Phenols 30 - 130%).
- RPDs – no limit if results are <10 times the LOR.
- RPDs – between 0 - 50% if results are between 10 – 20 times LOR.
- RPDs – are between 0% - 20% if results are >20 times LOR.

All laboratory reports produced as part of the groundwater investigation are presented in Appendix F. Levels of reporting and analytical methods used by the laboratories are referenced in the laboratory QA/QC reports presented along with the laboratory certificates in Appendix F. A

summary of the laboratory reports for the November 2024 monitoring event are listed in Table 4 below.

Table 4 Summary of Laboratory QA/QC

Laboratory & Report No.	Date of sampling	Data Accepted (Y or N)	Comments
MGT 1163239	21/11/2024	Y	None
MGT 1162835	20/11/2024	Y	None
EM2420487	20/11/2024	Y	None

Laboratory Quality Control reports (including Interpretative quality control reports – ALS) are included in Appendix F.

Review of the available laboratory quality assurance and quality control data accompanying the primary laboratory (MGT) reports indicates:

- One duplicate sample failed in report No. 1163239 for zinc by which the RPD value was 150% which is over the recommended value of 30%.
- Two duplicate samples failed in report No. 1162835 for ammonia and TKN by which the RPD values were 100% and 130%, respectively, which is over the recommended value of 30%.
- One matrix spike recovery outlier occurred in report No. 1162835 for phenol by which the recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
- No method blank result outliers occurred.
- No surrogate recovery outliers occurred.

Review of the available laboratory quality assurance and quality control data accompanying the secondary laboratory (ALS) reports indicates:

- Four quality control sample frequency outliers occurred for PAH/phenols and TRH in report No. EM2420487. The actual rate was below the expected rate.
- No matrix spile outliers occurred.
- No method blank outliers occurred.
- No laboratory duplicate outliers occurred.
- No surrogate recovery outliers occurred.

It is therefore considered, based on the weight of evidence, that the laboratory data for the purposes of this investigation is precise (repeatable and reproducible) and accurate.

Water Quality Meter Calibration

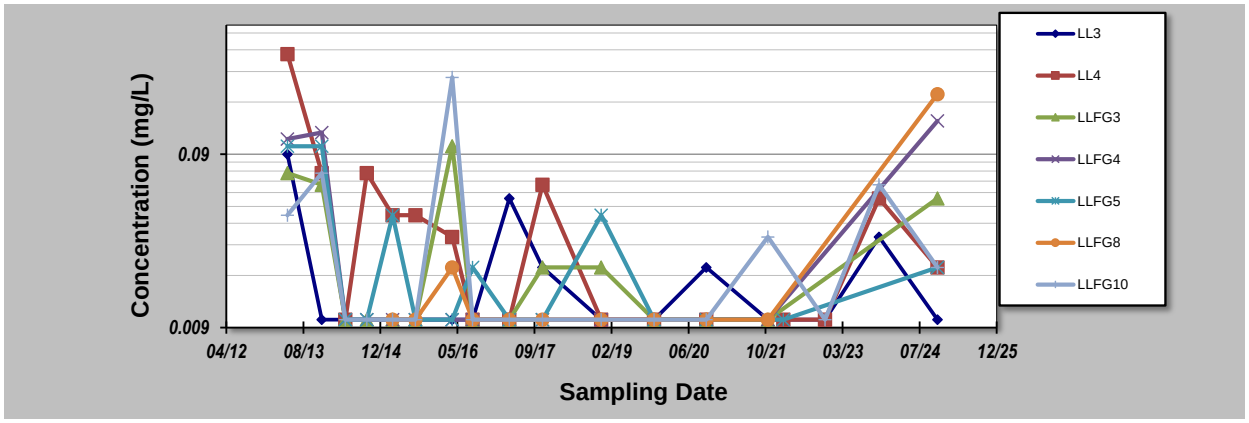
During the groundwater sampling event, a water quality meter (WQM) was used to measure groundwater field parameters. The WQM was hired from Air-Met, who calibrated the WQM prior to use. Completed calibration certificate is provided in Appendix B.

Appendix E – Mann Kendall Analysis

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	17-Dec-24	Job ID:	240365
Facility Name:	Lynton Landfill	Constituent:	Ammonia
Conducted By:	Kelsey Lees	Concentration Units:	mg/L

Sampling Point ID:	LL3	LL4	LLFG3	LLFG4	LLFG5	LLFG8	LLFG10
Sampling Event	Sampling Date	AMMONIA CONCENTRATION (mg/L)						
1	2-May-13	0.09	0.34	0.07	0.11	0.1		0.04
2	12-Dec-13	0.01	0.07	0.06	0.12	0.1		0.07
3	13-May-14	0.01	0.01	0.01	0.01	0.01		0.01
4	30-Sep-14	0.01	0.07	0.01	0.01	0.01		0.01
5	17-Mar-15	0.01	0.04	0.01	0.01	0.04	0.01	0.01
6	12-Aug-15	0.01	0.04	0.01	0.01	0.01	0.01	0.01
7	6-Apr-16	0.01	0.03	0.1	0.01	0.01	0.02	0.25
8	16-Aug-16	0.01	0.01	0.01	0.01	0.02	0.01	0.01
9	12-Apr-17	0.05	0.01	0.01	0.01	0.01	0.01	0.01
10	14-Nov-17	0.02	0.06	0.02	0.01	0.01	0.01	0.01
11	29-Nov-18	0.01	0.01	0.02	0.01	0.04	0.01	0.01
12	7-Nov-19	0.01	0.01	0.01	0.01	0.01	0.01	0.01
13	12-Oct-20	0.02	0.01	0.01	0.01	0.01	0.01	0.01
14	16-Nov-21	0.01		0.01	0.01		0.01	0.03
15	24-Feb-22		0.01			0.01		
16	22-Nov-22	0.01	0.01	0.04	0.01	0.08	0.11	0.01
17	7-Nov-23	0.03	0.05					0.06
18	20-Nov-24	0.01	0.02	0.05	0.14	0.02	0.2	0.02
19								
20								
Coefficient of Variation:		1.08	1.67	1.05	1.45	1.14	2.02	1.72
Mann-Kendall Statistic (S):		3	-48	3	4	-9	14	1
Confidence Factor:		53.2%	97.4%	53.9%	55.8%	65.1%	84.0%	50.0%
Concentration Trend:		No Trend	Decreasing	No Trend	No Trend	No Trend	No Trend	No Trend



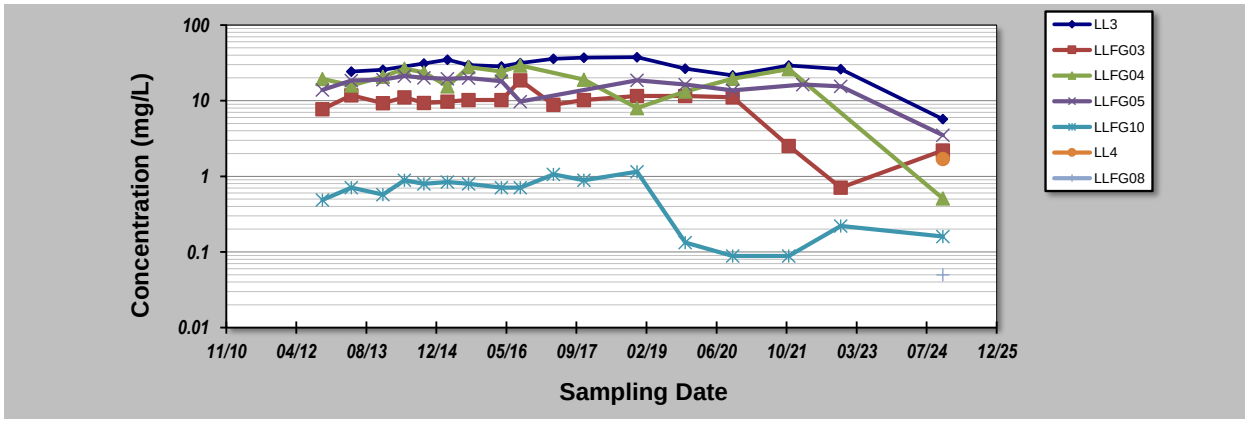
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	17-Dec-24	Job ID:	240365
Facility Name:	Lynton Landfill	Constituent:	Nitrate (as NO3-)
Conducted By:	Kelsey Lees	Concentration Units:	mg/L

Sampling Point ID:	LL3	LLFG03	LLFG04	LLFG05	LLFG10	LL4	LLFG08
Sampling Event	Sampling Date	NITRATE (AS NO3-) CONCENTRATION (mg/L)						
1	4-Oct-12		7.747	19.35	13.86	0.4869		
2	29-Apr-13	24.21	11.78	15.94	18.46	0.7083		
3	11-Dec-13	25.68	9.296	20.81	19.04	0.5755		
4	13-May-14	30.99	11.07	26.56	21.25	0.8854		
5	30-Sep-14	30.99	9.341	23.59	20.05	0.7968		
6	17-Mar-15	34.97	9.739	15.49	19.48	0.8411		
7	13-Aug-15	29.66	10.18	27.89	19.92	0.7968		
8	5-Apr-16	28.33	10.18	24.35	18.15	0.7083		
9	17-Aug-16	31.43	18.59	29.22	9.739	0.7083		
10	11-Apr-17	35.86	8.854			1.062		
11	14-Nov-17	37.19	10.18	19.04		0.8854		
12	28-Nov-18	37.63	11.51	7.968	18.59	1.151		
13	7-Nov-19	26.56	11.51	13.28	16.38	0.1328		
14	12-Oct-20	21.69	11.07	19.48	13.72	0.08854		
15	16-Nov-21	29.22	2.523	26.12		0.08854		
16	24-Feb-22				16.38			
17	22-Nov-22	26.12	0.708		15.49	0.221		
18	20-Nov-24	5.7	2.2	0.51	3.5	0.16	1.7	0.05
19								
20								
Coefficient of Variation:		0.28	0.46	0.41	0.29	0.58		
Mann-Kendall Statistic (S):		-18	-15	-13	-44	-24		
Confidence Factor:		79.6%	71.5%	72.1%	98.4%	82.6%		
Concentration Trend:		Stable	Stable	Stable	Decreasing	Stable		



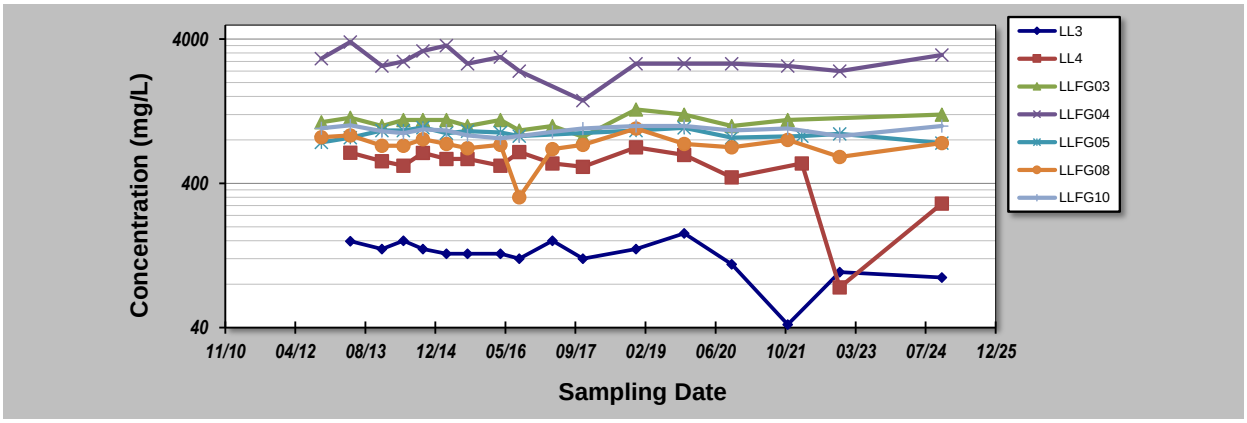
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	17-Dec-24	Job ID:	240365
Facility Name:	Lynton Landfill	Constituent:	Chloride
Conducted By:	Kelsey Lees	Concentration Units:	mg/L

Sampling Point ID:	LL3	LL4	LLFG03	LLFG04	LLFG05	LLFG08	LLFG10
Sampling Event	Sampling Date	CHLORIDE CONCENTRATION (mg/L)						
1	4-Oct-12			1060	2930	768	834	965
2	29-Apr-13	159	653	1140	3820	829	860	1010
3	11-Dec-13	140	570	1000	2600	930	730	920
4	13-May-14	160	530	1100	2800	930	730	890
5	30-Sep-14	140	649	1100	3310	975	809	945
6	17-Mar-15	130	590	1100	3600	890	750	930
7	13-Aug-15	130	590	1000	2700	920	700	860
8	5-Apr-16	130	530	1100	3000	900	740	820
9	17-Aug-16	120	660	930	2400	850	320	850
10	11-Apr-17	160	550	1000			690	910
11	14-Nov-17	120	520	840	1500		740	960
12	28-Nov-18	140	710	1300	2700	930	960	1000
13	7-Nov-19	180	630	1200	2700	970	750	1000
14	12-Oct-20	110	440	1000	2700	830	710	930
15	16-Nov-21	42		1100	2600		800	960
16	24-Feb-22		550			850		
17	22-Nov-22	97	76		2400	880	610	850
18	20-Nov-24	89	290	1200	3100	760	760	1000
19								
20								
Coefficient of Variation:		0.26	0.29	0.10	0.19	0.07	0.18	0.06
Mann-Kendall Statistic (S):		-58	-43	7	-36	-13	-19	4
Confidence Factor:		99.6%	97.1%	60.5%	94.2%	72.1%	76.8%	54.8%
Concentration Trend:		Decreasing	Decreasing	No Trend	Prob. Decreasing	Stable	Stable	No Trend



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
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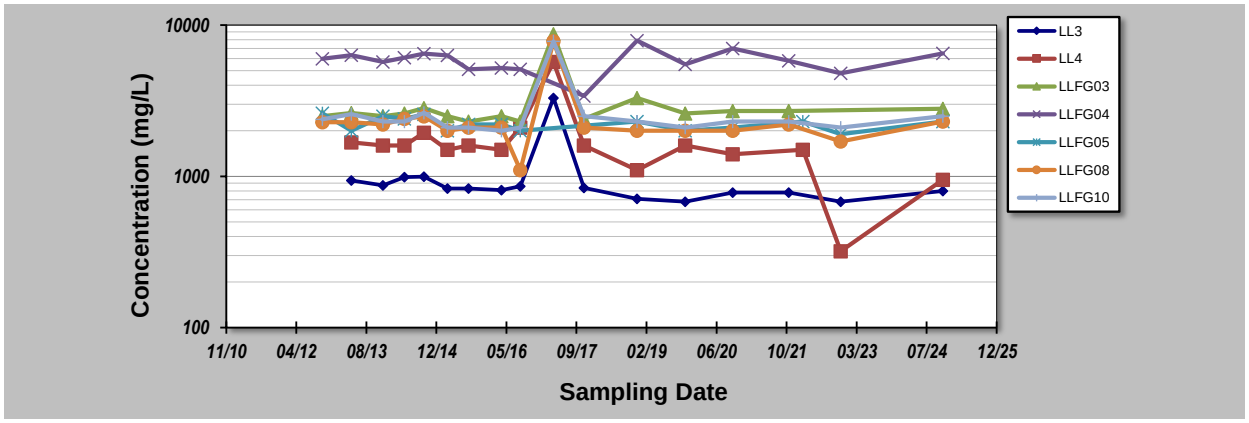
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	17-Dec-24	Job ID:	240365
Facility Name:	Lynton Landfill	Constituent:	TDS
Conducted By:	Kelsey Lees	Concentration Units:	mg/L

Sampling Point ID:	LL3	LL4	LLFG03	LLFG04	LLFG05	LLFG08	LLFG10
Sampling Event	Sampling Date	TDS CONCENTRATION (mg/L)						
1	4-Oct-12			2500	5980	2610	2280	2380
2	29-Apr-13	940	1680	2620	6330	2000	2280	2580
3	11-Dec-13	870	1600	2500	5700	2500	2200	2300
4	13-May-14	990	1600	2600	6100	2400	2400	2300
5	30-Sep-14	994	1940	2830	6470	2570	2490	2630
6	17-Mar-15	830	1500	2500	6300	2000	2000	2100
7	13-Aug-15	830	1600	2300	5100	2200	2100	2100
8	5-Apr-16	810	1500	2500	5200	2200	2100	2000
9	17-Aug-16	860	2100	2300	5100	2000	1100	2100
10	11-Apr-17	3300	5700	8700			7800	7800
11	14-Nov-17	840	1600	2400	3400		2100	2500
12	28-Nov-18	710	1100	3299	7900	2300	2000	2300
13	7-Nov-19	680	1600	2600	5500	2000	2000	2100
14	12-Oct-20	780	1400	2700	7000	2100	2000	2300
15	16-Nov-21	780		2700	5800		2200	2300
16	24-Feb-22		1500			2300		
17	22-Nov-22	680	320		4800	1900	1700	2100
18	20-Nov-24	800	950	2800	6500	2300	2300	2500
19								
20								
Coefficient of Variation:		0.64	0.66	0.52	0.18	0.10	0.59	0.52
Mann-Kendall Statistic (S):		-61	-51	25	-7	-29	-35	-15
Confidence Factor:		99.8%	98.9%	85.7%	60.5%	91.6%	91.8%	71.5%
Concentration Trend:		Decreasing	Decreasing	No Trend	Stable	Prob. Decreasing	Prob. Decreasing	Stable



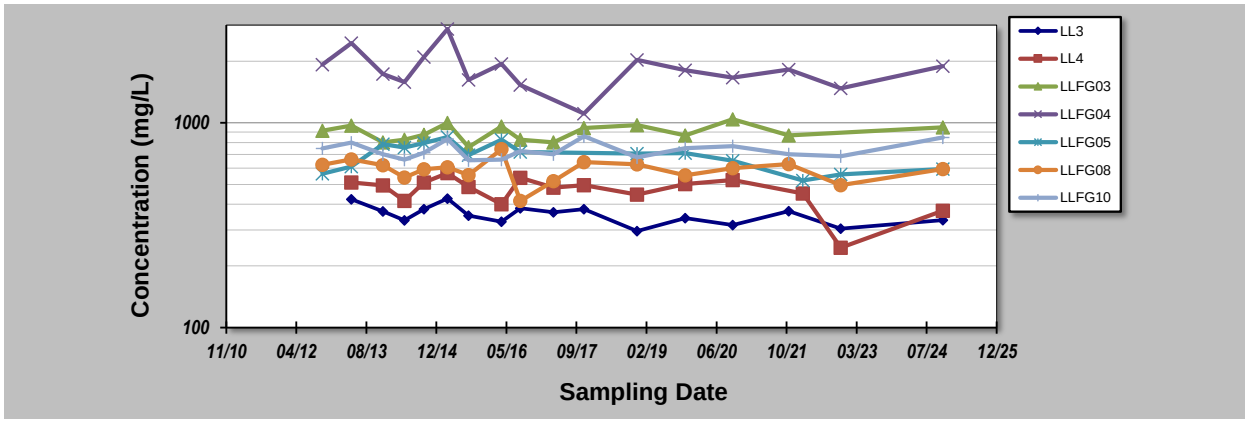
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	17-Dec-24	Job ID:	240365
Facility Name:	Lynton Landfill	Constituent:	Hardness as CaCO3
Conducted By:	Kelsey Lees	Concentration Units:	mg/L

Sampling Point ID:	LL3	LL4	LLFG03	LLFG04	LLFG05	LLFG08	LLFG10
Sampling Event	Sampling Date	HARDNESS AS CACO3 CONCENTRATION (mg/L)						
1	4-Oct-12			914.5	1926	563.7	623.5	750.1
2	29-Apr-13	423.6	511	970	2448	612	662.4	799.8
3	11-Dec-13	368.9	494.1	802	1729	785.8	621.1	702.2
4	13-May-14	334.3	415.7	826.9	1580	757	540.2	661
5	30-Sep-14	378.9	511.5	874.8	2095	796.6	593	715.5
6	17-Mar-15	426.8	567.6	1000	2870	851.9	606.1	834.4
7	13-Aug-15	352.5	485.9	760.8	1621	694.7	555	656
8	5-Apr-16	329.3	400.4	959.1	1936	826.9	743.3	661
9	17-Aug-16	383	539.3	826.9	1530	719.4	415.3	727.1
10	11-Apr-17	365.7	482.7	802			519.5	702.2
11	14-Nov-17	379.1	495.9	942.9	1109		643.6	859.3
12	28-Nov-18	296	446.3	975.3	2027	707.1	626.1	677.2
13	7-Nov-19	342.5	501.6	868.1	1804	711.2	553.5	752.1
14	12-Oct-20	316.8	525.2	1041	1663	653.3	600.5	768.3
15	16-Nov-21	370.3		868.1	1820		628.6	702.2
16	24-Feb-22		451.9			522.7		
17	22-Nov-22	304.5	245.5		1472	559.6	496.3	687.2
18	20-Nov-24	335	372	949	1890	594	595	849
19								
20								
Coefficient of Variation:		0.11	0.17	0.09	0.22	0.15	0.12	0.09
Mann-Kendall Statistic (S):		-42	-32	17	-26	-29	-22	12
Confidence Factor:		96.8%	91.7%	76.1%	86.7%	91.6%	80.4%	67.2%
Concentration Trend:		Decreasing	Prob. Decreasing	No Trend	Stable	Prob. Decreasing	Stable	No Trend



Notes:

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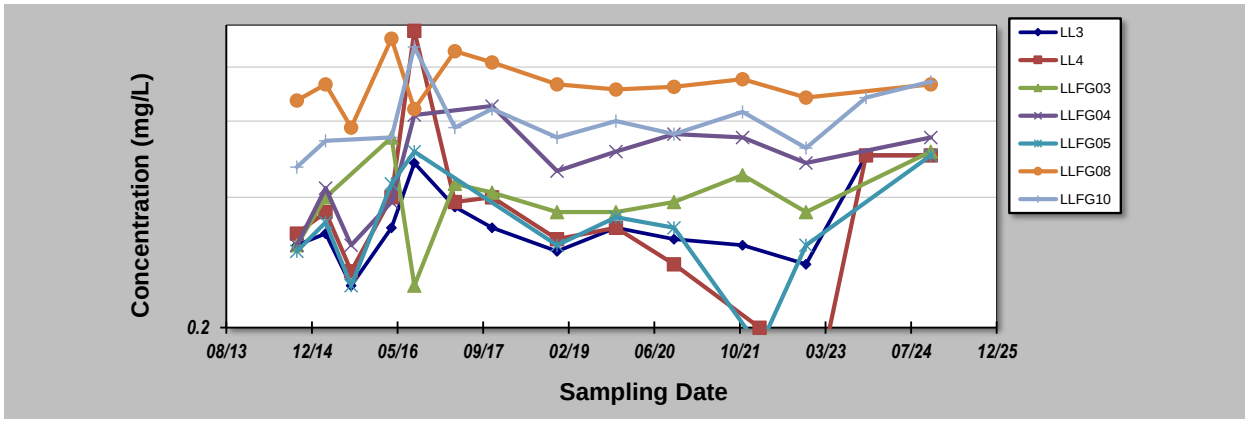
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	17-Dec-24	Job ID:	240365
Facility Name:	Lynton Landfill	Constituent:	Boron
Conducted By:	Kelsey Lees	Concentration Units:	mg/L

Sampling Point ID:	LL3	LL4	LLFG03	LLFG04	LLFG05	LLFG08	LLFG10
Sampling Event	Sampling Date	BORON CONCENTRATION (mg/L)						
1	30-Sep-14	0.31	0.33	0.31	0.31	0.3	0.67	0.47
2	17-Mar-15	0.33	0.37	0.4	0.42	0.35	0.73	0.54
3	13-Aug-15	0.25	0.27	0	0.31	0.25	0.58	0
4	5-Apr-16	0.34	0.4	0.55	0.39	0.43	0.93	0.55
5	17-Aug-16	0.48	0.97	0.25	0.62	0.51	0.64	0.89
6	11-Apr-17	0.38	0.39	0.43			0.87	0.58
7	14-Nov-17	0.34	0.4	0.41	0.65		0.82	0.64
8	28-Nov-18	0.3	0.32	0.37	0.46	0.31	0.73	0.55
9	7-Nov-19	0.34	0.34	0.37	0.51	0.36	0.71	0.6
10	12-Oct-20	0.32	0.28	0.39	0.56	0.34	0.72	0.56
11	16-Nov-21	0.31		0.45	0.55		0.75	0.63
12	24-Feb-22		0.2			0.18		
13	22-Nov-22	0.28	0.11	0.37	0.48	0.31	0.68	0.52
14	7-Nov-23	0.5	0.5					0.68
15	20-Nov-24	0.5	0.5	0.51	0.55	0.5	0.73	0.74
16								
17								
18								
19								
20								
Coefficient of Variation:		0.23	0.52	0.37	0.23	0.29	0.13	0.34
Mann-Kendall Statistic (S):		14	-5	19	26	4	3	38
Confidence Factor:		75.8%	58.5%	86.1%	95.7%	59.0%	54.8%	97.9%
Concentration Trend:		No Trend	Stable	No Trend	Increasing	No Trend	No Trend	Increasing



Notes:

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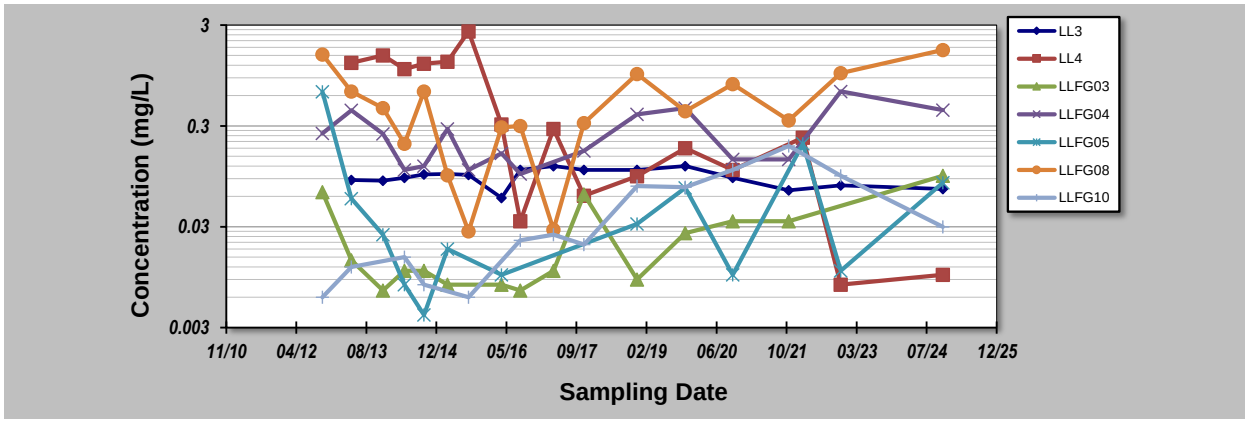
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	17-Dec-24	Job ID:	240365
Facility Name:	Lynton Landfill	Constituent:	Manganese
Conducted By:	Kelsey Lees	Concentration Units:	mg/L

Sampling Point ID:	LL3	LL4	LLFG03	LLFG04	LLFG05	LLFG08	LLFG10
Sampling Event	Sampling Date	MANGANESE CONCENTRATION (mg/L)						
1	4-Oct-12			0.066	0.253	0.656	1.53	0.006
2	29-Apr-13	0.087	1.27	0.014	0.428	0.057	0.66	0.012
3	11-Dec-13	0.086	1.5	0.007	0.25	0.025	0.45	0
4	13-May-14	0.092	1.1	0.011	0.11	0.008	0.2	0.015
5	30-Sep-14	0.099	1.24	0.011	0.12	0.004	0.658	0.008
6	17-Mar-15	0.1	1.3	0.008	0.28	0.018	0.097	0
7	13-Aug-15	0.098	2.6	0	0.11	0	0.027	0.006
8	5-Apr-16	0.058	0.31	0.008	0.16	0.01	0.29	0
9	17-Aug-16	0.11	0.034	0.007	0.1		0.3	0.022
10	11-Apr-17	0.12	0.28	0.011	0		0.028	0.025
11	14-Nov-17	0.11	0.061	0.063	0.17		0.32	0.02
12	28-Nov-18	0.11	0.095	0.009	0.39	0.032	0.98	0.076
13	7-Nov-19	0.12	0.18	0.026	0.45	0.073	0.42	0.074
14	12-Oct-20	0.092	0.11	0.034	0.14	0.01	0.78	0.11
15	16-Nov-21	0.069		0.034	0.14		0.34	0.19
16	24-Feb-22		0.23			0.2		
17	22-Nov-22	0.077	0.008		0.66	0.011	1	0.096
18	20-Nov-24	0.071	0.01	0.096	0.43	0.082	1.7	0.03
19								
20								
Coefficient of Variation:		0.20	1.18	1.08	0.70	2.04	0.85	1.29
Mann-Kendall Statistic (S):		3	-68	30	18	6	26	80
Confidence Factor:		53.6%	99.9%	90.3%	75.5%	60.6%	84.6%	>99.9%
Concentration Trend:		No Trend	Decreasing	Prob. Increasing	No Trend	No Trend	No Trend	Increasing



Notes:

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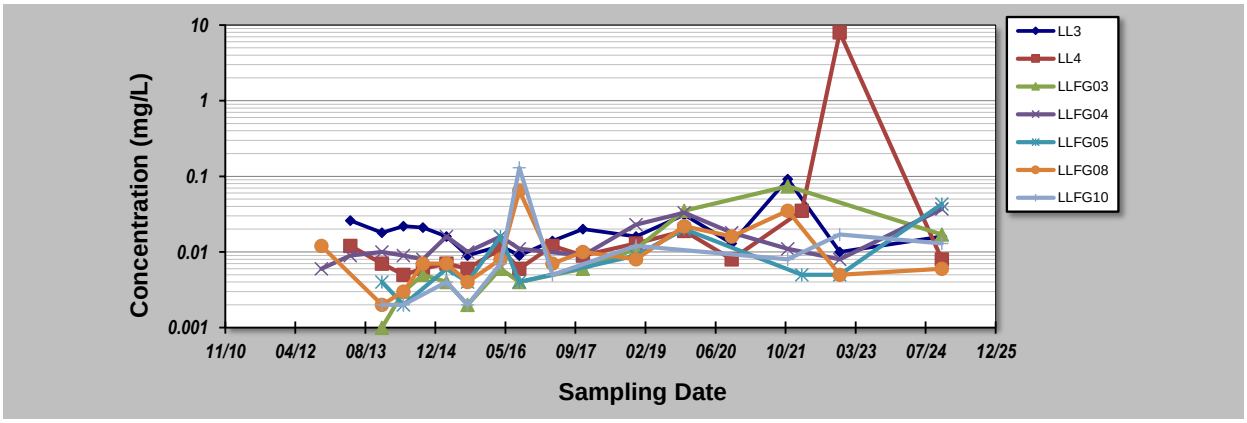
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	17-Dec-24	Job ID:	240365
Facility Name:	Lynton Landfill	Constituent:	Zinc
Conducted By:	Kelsey Lees	Concentration Units:	mg/L

Sampling Point ID:	LL3	LL4	LLFG03	LLFG04	LLFG05	LLFG08	LLFG10
Sampling Event	Sampling Date	ZINC CONCENTRATION (mg/L)						
1	4-Oct-12				0.006		0.012	
2	29-Apr-13	0.026	0.012		0.009		0	
3	11-Dec-13	0.018	0.007	0.001	0.01	0.004	0.002	0.002
4	13-May-14	0.022	0.005	0.003	0.009	0.002	0.003	0.002
5	30-Sep-14	0.021	0.006	0.005	0.008		0.007	
6	17-Mar-15	0.016	0.007	0.004	0.016	0.006	0.007	0.004
7	13-Aug-15	0.009	0.006	0.002	0.01	0.004	0.004	0.002
8	5-Apr-16	0.012	0.011	0.006	0.016	0.016	0.008	0.007
9	17-Aug-16	0.009	0.006	0.004	0.011	0.004	0.065	0.13
10	11-Apr-17	0.014	0.012				0.007	0.005
11	14-Nov-17	0.02	0.009	0.006	0.009		0.01	
12	28-Nov-18	0.016	0.013	0.011	0.023	0.009	0.008	0.012
13	7-Nov-19	0.031	0.019	0.035	0.033	0.02	0.022	
14	12-Oct-20	0.013	0.008		0.018		0.016	
15	16-Nov-21	0.092		0.074	0.011		0.035	0.008
16	24-Feb-22		0.035			0.005		
17	22-Nov-22	0.01	8		0.008	0.005	0.005	0.017
18	20-Nov-24	0.016	0.008	0.017	0.037	0.043	0.006	0.013
19								
20								
Coefficient of Variation:		0.92	3.91	1.51	0.62	1.13	1.24	2.03
Mann-Kendall Statistic (S):		-14	52	48	51	25	46	34
Confidence Factor:		71.8%	99.0%	>99.9%	98.9%	97.0%	96.8%	99.6%
Concentration Trend:		Stable	Increasing	Increasing	Increasing	Increasing	Increasing	Increasing



Notes:

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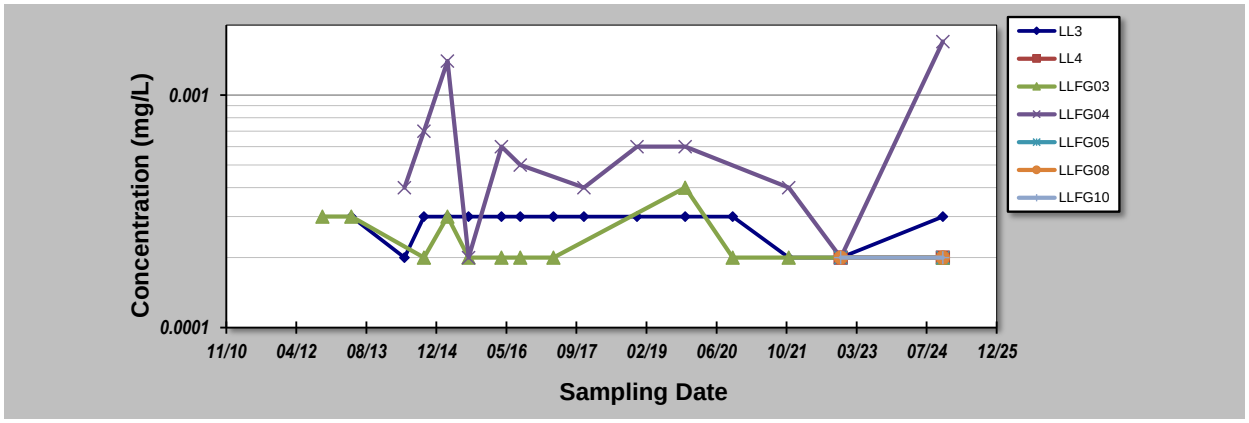
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	17-Dec-24	Job ID:	240365
Facility Name:	Lynton Landfill	Constituent:	Cadmium
Conducted By:	Kelsey Lees	Concentration Units:	mg/L

Sampling Point ID:	LL3	LL4	LLFG03	LLFG04	LLFG05	LLFG08	LLFG10
Sampling Event	Sampling Date	CADMIUM CONCENTRATION (mg/L)						
1	4-Oct-12			0.0003				
2	29-Apr-13	0.0003		0.0003				
3	11-Dec-13							
4	13-May-14	0.0002			0.0004			
5	30-Sep-14	0.0003		0.0002	0.0007			
6	17-Mar-15	0.0003		0.0003	0.0014			
7	13-Aug-15	0.0003		0.0002	0.0002			
8	5-Apr-16	0.0003		0.0002	0.0006			
9	17-Aug-16	0.0003		0.0002	0.0005			
10	11-Apr-17	0.0003		0.0002				
11	14-Nov-17	0.0003			0.0004			
12	28-Nov-18	0.0003			0.0006			
13	7-Nov-19	0.0003		0.0004	0.0006			
14	12-Oct-20	0.0003		0.0002				
15	16-Nov-21	0.0002		0.0002	0.0004			
16	24-Feb-22							
17	22-Nov-22	0.0002	0.0002		0.0002	0.0002	0.0002	0.0002
18	20-Nov-24	0.0003	0.0002	0.0002	0.0017	0.0002	0.0002	0.0002
19								
20								
Coefficient of Variation:		0.15	0.00	0.28	0.71	0.00	0.00	0.00
Mann-Kendall Statistic (S):		-10	0	-17	-3	0	0	0
Confidence Factor:		66.9%		86.0%	55.4%			
Concentration Trend:		Stable		Stable	Stable			



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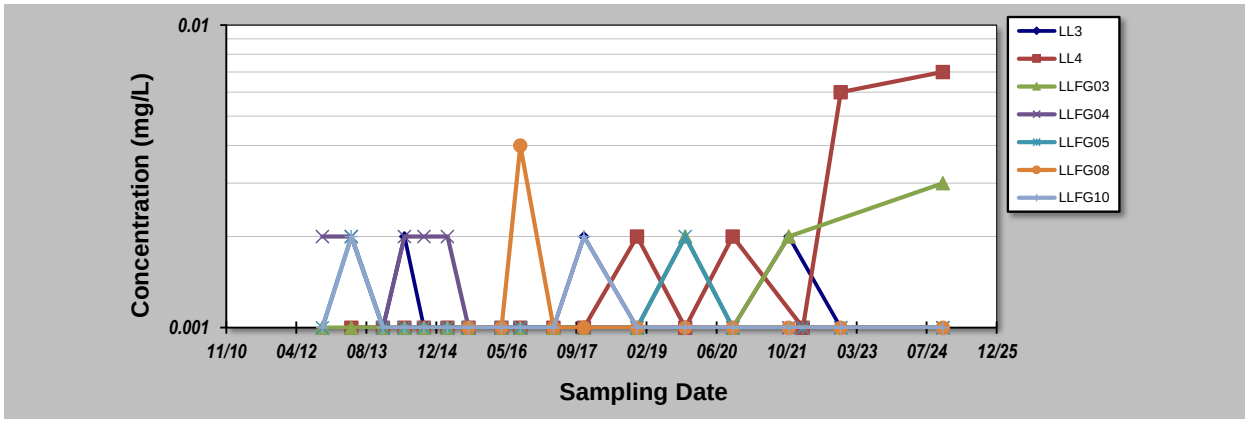
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	17-Dec-24	Job ID:	240365
Facility Name:	Lynton Landfill	Constituent:	Copper
Conducted By:	Kelsey Lees	Concentration Units:	mg/L

Sampling Point ID:	LL3	LL4	LLFG03	LLFG04	LLFG05	LLFG08	LLFG10
Sampling Event	Sampling Date	COPPER CONCENTRATION (mg/L)						
1	4-Oct-12			0.001	0.002	0.001		0.001
2	29-Apr-13	0.001	0.001	0.001	0.002	0.002		0.002
3	11-Dec-13	0.001	0.001	0.001	0.001	0.001		0.001
4	13-May-14	0.002	0.001	0.001	0.002	0.001		0.001
5	30-Sep-14	0.001	0.001	0.001	0.002	0.001		0.001
6	17-Mar-15	0.001	0.001	0.001	0.002	0.001		0.001
7	13-Aug-15	0.001	0.001	0.001	0.001	0.001	0.001	0.001
8	5-Apr-16	0.001	0.001	0.001	0.001	0.001	0.001	0.001
9	17-Aug-16	0.001	0.001	0.001	0.001	0.001	0.004	0.001
10	11-Apr-17	0.001	0.001	0.001			0.001	0.001
11	14-Nov-17	0.002	0.001	0.001	0.001		0.001	0.002
12	28-Nov-18	0.001	0.002	0.001	0.001	0.001	0.001	0.001
13	7-Nov-19	0.001	0.001	0.002	0.001	0.002	0.001	0.001
14	12-Oct-20	0.001	0.002	0.001	0.001	0.001	0.001	0.001
15	16-Nov-21	0.002		0.002	0.001		0.001	0.001
16	24-Feb-22		0.001			0.001		
17	22-Nov-22	0.001	0.006		0.001	0.001	0.001	0.001
18	20-Nov-24	0.001	0.007	0.003	0.001	0.001	0.001	0.001
19								
20								
Coefficient of Variation:		0.34	1.03	0.46	0.36	0.31	0.71	0.30
Mann-Kendall Statistic (S):		3	47	39	-49	-6	-6	-10
Confidence Factor:		53.6%	98.2%	95.7%	98.6%	59.6%	64.8%	64.2%
Concentration Trend:		No Trend	Increasing	Increasing	Decreasing	Stable	Stable	Stable



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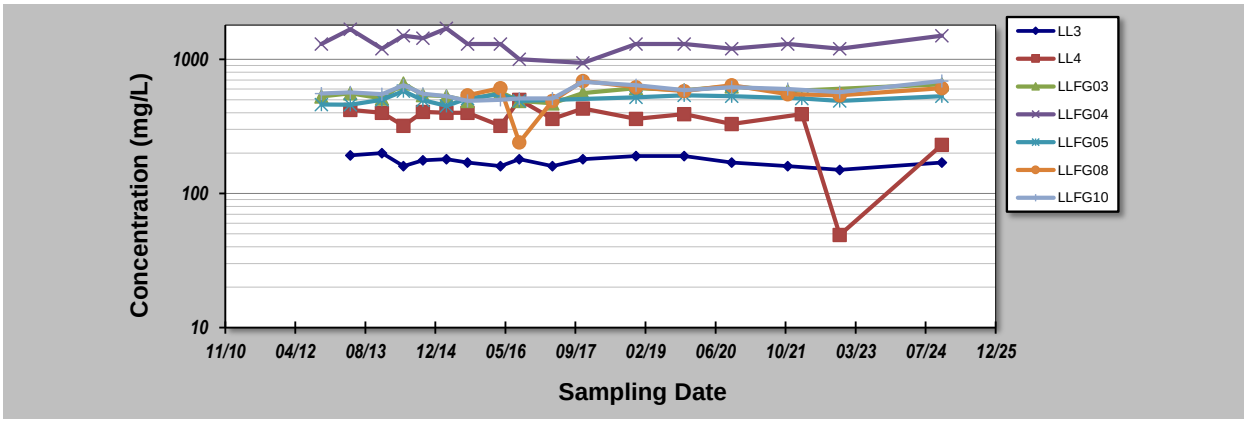
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	17-Dec-24	Job ID:	240365
Facility Name:	Lynton Landfill	Constituent:	Sodium
Conducted By:	Kelsey Lees	Concentration Units:	mg/L

Sampling Point ID:	LL3	LL4	LLFG03	LLFG04	LLFG05	LLFG08	LLFG10
Sampling Event	Sampling Date	SODIUM CONCENTRATION (mg/L)						
1	4-Oct-12			528	1300	460		557
2	29-Apr-13	192	420	558	1680	458		567
3	11-Dec-13	200	400	510	1200	500		550
4	13-May-14	160	320	660	1500	580		640
5	30-Sep-14	177	406	541	1440	496		554
6	17-Mar-15	180	400	530	1700	450		530
7	13-Aug-15	170	400	490	1300	510	540	490
8	5-Apr-16	160	320	570	1300	550	610	500
9	17-Aug-16	180	500	490	1000	490	240	510
10	11-Apr-17	160	360	470			490	510
11	14-Nov-17	180	430	560	940		690	680
12	28-Nov-18	190	360	610	1300	520	620	640
13	7-Nov-19	190	390	590	1300	540	580	590
14	12-Oct-20	170	330	630	1200	530	640	620
15	16-Nov-21	160		580	1300		550	600
16	24-Feb-22		390			510		
17	22-Nov-22	150	49		1200	490	540	570
18	20-Nov-24	170	230	650	1500	530	610	690
19								
20								
Coefficient of Variation:		0.08	0.28	0.10	0.16	0.07	0.21	0.11
Mann-Kendall Statistic (S):		-31	-44	37	-25	24	7	32
Confidence Factor:		91.0%	97.4%	94.7%	85.7%	87.0%	67.6%	89.8%
Concentration Trend:		Prob. Decreasing	Decreasing	Prob. Increasing	Stable	No Trend	No Trend	No Trend



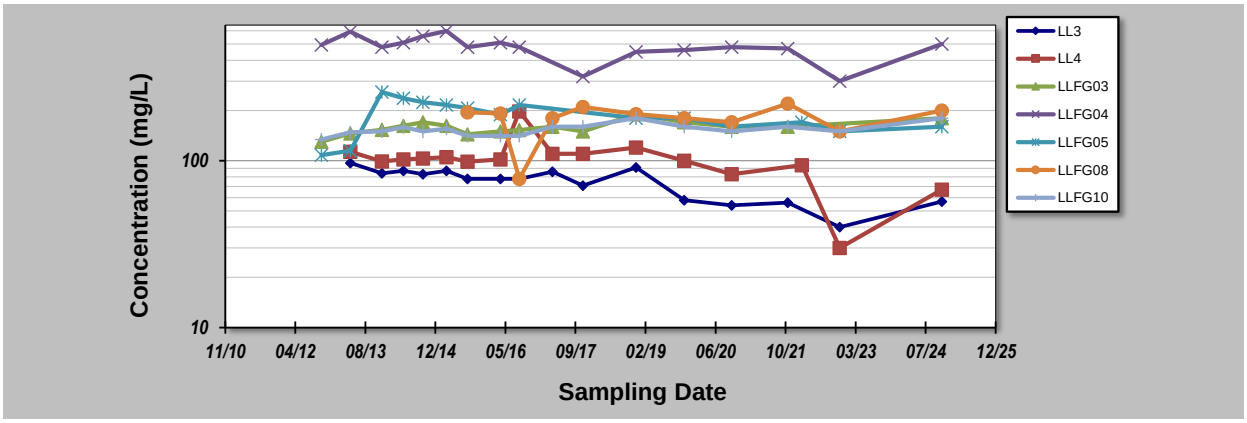
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	17-Dec-24	Job ID:	240365
Facility Name:	Lynton Landfill	Constituent:	Sulfate
Conducted By:	Kelsey Lees	Concentration Units:	mg/L

Sampling Point ID:	LL3	LL4	LLFG03	LLFG04	LLFG05	LLFG08	LLFG10
Sampling Event	Sampling Date	SULFATE CONCENTRATION (mg/L)						
1	4-Oct-12			130	494	108		134
2	29-Apr-13	97	113	146	593	115		148
3	11-Dec-13	84	99	153	480	258		150
4	13-May-14	86.89	101.9	161.8	509.4	236.7		158.8
5	30-Sep-14	83	103	170	558	224		150
6	17-Mar-15	86.89	104.9	161.8	599.2	215.7		155.8
7	13-Aug-15	77.9	98.87	143.8	479.4	206.7	194.8	140.8
8	5-Apr-16	77.9	101.9	149.8	509.4	188.8	191.8	140.8
9	17-Aug-16	77.9	197.7	152.8	479.4	215.7	77.9	140.8
10	11-Apr-17	86	110	160			180	160
11	14-Nov-17	71	110	150	320		210	160
12	28-Nov-18	91	120	190	450	180	190	180
13	7-Nov-19	58	100	170	460	180	180	160
14	12-Oct-20	54	83	160	480	160	170	150
15	16-Nov-21	56		160	470		220	160
16	24-Feb-22		94			170		
17	22-Nov-22	40	30		300	150	150	150
18	20-Nov-24	57	67	180	500	160	200	180
19								
20								
Coefficient of Variation:		0.22	0.33	0.09	0.17	0.23	0.22	0.08
Mann-Kendall Statistic (S):		-74	-38	45	-47	-40	-2	56
Confidence Factor:		>99.9%	95.2%	97.7%	98.2%	97.4%	53.0%	98.9%
Concentration Trend:		Decreasing	Decreasing	Increasing	Decreasing	Decreasing	Stable	Increasing



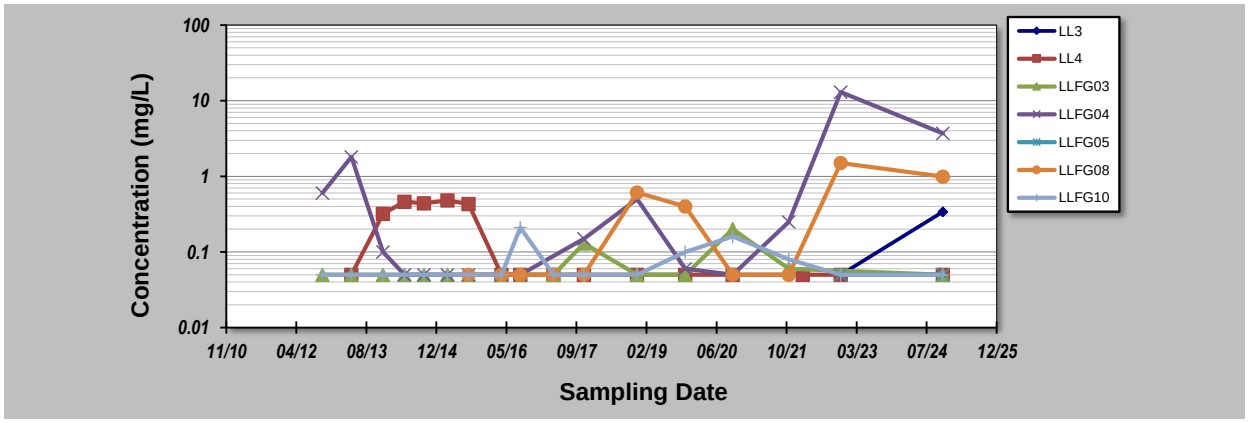
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	17-Dec-24	Job ID:	240365
Facility Name:	Lynton Landfill	Constituent:	Iron
Conducted By:	Kelsey Lees	Concentration Units:	mg/L

Sampling Point ID:	LL3	LL4	LLFG03	LLFG04	LLFG05	LLFG08	LLFG10
Sampling Event	Sampling Date	IRON CONCENTRATION (mg/L)						
1	4-Oct-12			0.05	0.6			0.05
2	29-Apr-13		0.05	0.05	1.81			0.05
3	11-Dec-13		0.32	0.05	0.1			0.05
4	13-May-14		0.46	0.05	0.05			0.05
5	30-Sep-14		0.44	0.05	0.05			0.05
6	17-Mar-15		0.48	0.05	0.05			0.05
7	13-Aug-15		0.43	0.05	0.05		0.05	0.05
8	5-Apr-16		0.05	0.05	0.05		0.05	0.05
9	17-Aug-16		0.05	0.05	0.05		0.05	0.21
10	11-Apr-17		0.05	0.05			0.05	0.05
11	14-Nov-17		0.05	0.13	0.15		0.05	0.05
12	28-Nov-18		0.05	0.05	0.5		0.61	0.05
13	7-Nov-19		0.05	0.05	0.06		0.4	0.1
14	12-Oct-20		0.05	0.2	0.05		0.05	0.16
15	16-Nov-21			0.06	0.25		0.05	0.08
16	24-Feb-22		0.05					
17	22-Nov-22	0.05	0.05		13	0.05	1.5	0.05
18	20-Nov-24	0.34	0.05	0.05	3.7	0.05	0.99	0.05
19								
20								
Coefficient of Variation:		1.05	1.09	0.63	2.55	0.00	1.41	0.65
Mann-Kendall Statistic (S):		1	-43	28	21	0	22	26
Confidence Factor:			97.1%	88.6%	81.3%		94.9%	84.6%
Concentration Trend:			Decreasing	No Trend	No Trend		Prob. Increasing	No Trend



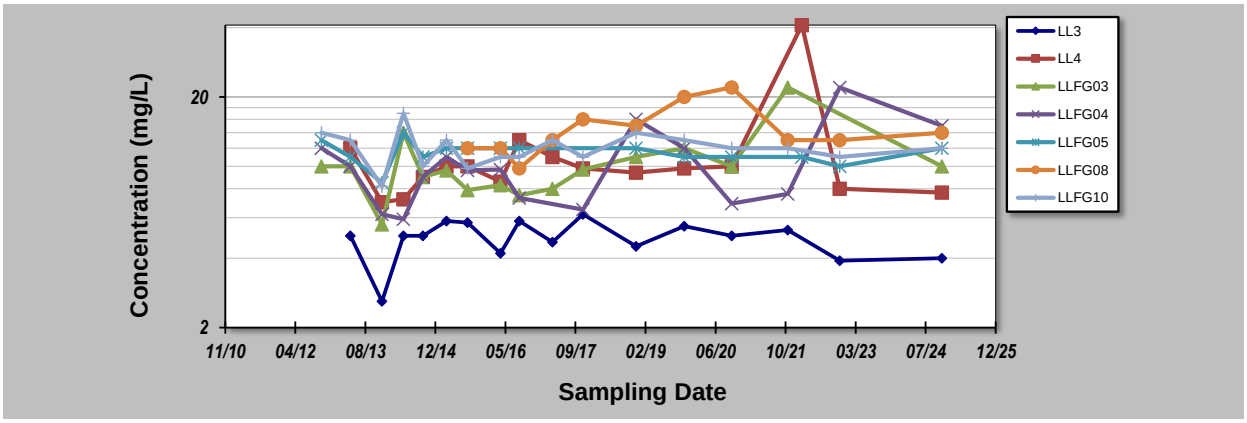
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	17-Dec-24	Job ID:	240365
Facility Name:	Lynton Landfill	Constituent:	Potassium
Conducted By:	Kelsey Lees	Concentration Units:	mg/L

Sampling Point ID:	LL3	LL4	LLFG03	LLFG04	LLFG05	LLFG08	LLFG10
Sampling Event	Sampling Date	POTASSIUM CONCENTRATION (mg/L)						
1	4-Oct-12			10	12	13		14
2	29-Apr-13	5	12	10	10	11		13
3	11-Dec-13	2.6	7	5.6	6.2	8.5		8.2
4	13-May-14	5	7.2	14	5.9	14		17
5	30-Sep-14	5	9	9	9	11		10
6	17-Mar-15	5.8	10	9.6	11	12		13
7	13-Aug-15	5.7	10	7.9	9.6	12	12	9.8
8	5-Apr-16	4.2	8.6	8.3	9.7	12	12	11
9	17-Aug-16	5.8	13	7.5	7.3	12	9.8	11
10	11-Apr-17	4.7	11	8			13	13
11	14-Nov-17	6.2	9.8	9.7	6.5		16	11
12	28-Nov-18	4.5	9.4	11	16	12	15	14
13	7-Nov-19	5.5	9.8	12	12	11	20	13
14	12-Oct-20	5	10	10	6.9	11	22	12
15	16-Nov-21	5.3		22	7.6		13	12
16	24-Feb-22		41			11		
17	22-Nov-22	3.9	8		22	10	13	11
18	20-Nov-24	4	7.7	10	15	12	14	12
19								
20								
Coefficient of Variation:		0.19	0.70	0.36	0.41	0.11	0.25	0.17
Mann-Kendall Statistic (S):		-9	6	28	23	-20	21	-4
Confidence Factor:		63.9%	58.8%	88.6%	83.6%	82.3%	94.0%	54.8%
Concentration Trend:		Stable	No Trend	No Trend	No Trend	Stable	Prob. Increasing	Stable



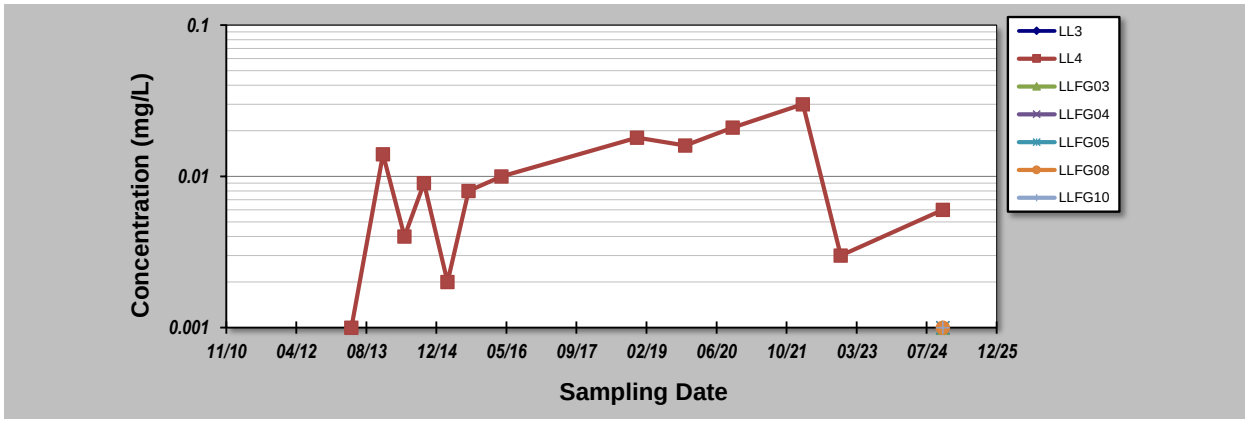
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	17-Dec-24	Job ID:	240365
Facility Name:	Lynton Landfill	Constituent:	Lead
Conducted By:	Kelsey Lees	Concentration Units:	mg/L

Sampling Point ID:	LL3	LL4	LLFG03	LLFG04	LLFG05	LLFG08	LLFG10
Sampling Event	Sampling Date	LEAD CONCENTRATION (mg/L)						
1	4-Oct-12							
2	29-Apr-13		0.001					
3	11-Dec-13		0.014					
4	13-May-14		0.004					
5	30-Sep-14		0.009					
6	17-Mar-15		0.002					
7	13-Aug-15		0.008					
8	5-Apr-16		0.01					
9	17-Aug-16							
10	11-Apr-17							
11	14-Nov-17							
12	28-Nov-18		0.018					
13	7-Nov-19		0.016					
14	12-Oct-20		0.021					
15	16-Nov-21							
16	24-Feb-22		0.03					
17	22-Nov-22		0.003					
18	20-Nov-24	0.001	0.006	0.001	0.001	0.001	0.001	0.001
19								
20								
Coefficient of Variation:			0.78					
Mann-Kendall Statistic (S):			26					
Confidence Factor:			93.6%					
Concentration Trend:			Prob. Increasing					



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

Appendix F – Laboratory Certificates

1162835
21/11 LA

SF11: CHAIN OF CUSTODY

REF: 240365

tonkin

Job No:	240365	**Laboratory Name:**	Eurofins MGT
Details:	Mitcham Environmental Monitoring	**Laboratory Address:**	6 Monterey Road, Dandenong South VIC 3175
Date Sampled:	20/11/24 **Sampled by:** KL	**Laboratory Contact:**	Karl Bulow **phone:** 0477 574 867
Consultant:	Tonking Consulting **Address:** Level 2, 170 Frome St, Adelaide 5000	**Quotation No:**	Pricebook 2024 **email:** karl.bulow@eurofinsanz.com
Contact:	**Kelsey Lees** **Phone:** (08) 8273 3100	**Delivery by:**	
Email:	kelsey.lees@tonkin.com.au **Email:** environmental@tonkin.com.au	**Consignment Note:**	

Lab Sample Identification	Sample Identification	Matrix Container / Preservation	pH, EC, TDS	TOC	Cyanide (Total)	*B19D (Nutrients)	*B11C (Cations)	*B11E (Anions)	B4A (TRH, BTEXN, PAHs, Phenols)	BOD, COD	**Dissolved Metals	Speciated Chromium	Total Metals	TRH C6-C10			Notes / Deviations from Standard Protocols
	RINSO1	Water											x				Please email results to our LabSync Email at ESdat_AU+TonkinConsulting@ESdatLabSync.net
	DUP01	Water	x	x	x	x	x	x	x	x	x	x					
	DUP02	Water	x	x	x	x	x	x	x	x	x	x	← * PLEASE FORWARD TO ALS				
	TB01	Water												*			
	LL3	Water	x	x	x	x	x	x	x	x	x	x					
	LL4	Water	x	x	x	x	x	x	x	x	x	x					
	LL FG3	Water	x	x	x	x	x	x	x	x	x	x					
	LL FG4	Water	x	x	x	x	x	x	x	x	x	x					
	LL FG5	Water	x	x	x	x	x	x	x	x	x	x					
	LL FG10	Water	x	x	x	x	x	x	x	x	x	x					
																	*Nutrients: Total N, TKN, NOx, NO2, NO3, NH3, Total P
																	*Cations: Na, K, Ca, Mg
																	*Anions: Cl, SO4, Alkalinity (CO3, HCO3, OH, Total alkalinity, CaCO3)
																	**Metals: As, Ba, Be, B, Cd, Co, Cu, Cr, Hg, Mn, Ni, Pb, Se, Zn, V, Fe
	Number of Samples:																

Sample Preservation:

Samples must be transported and stored in a chilled or cold condition at all times

COC must remain with samples

ANALYSING LABORATORY:
Please email sample receipt to the environmental@tonkin.com.au email IMMEDIATELY on receipt of samples and return original COC with final results

Relinquished by:	Kelsey Lees	Relinquished by:		Relinquished by:	
Date and time:	20/11/24 3pm	Date and time:		Date and time:	
Company:	Tonkin	Company:		Company:	
Signature		Signature		Signature	
Received in good condition by:	Pat Email	Received in good condition by:		Received in good condition by:	
Date and Time:	20/11 3pm	Date and Time:		Date and Time:	
Company:	Eurofins	Company:		Company:	
Signature		Signature		Signature	

15.3°C
+0.1°C
15.4°C on IB.

Tonkin Consulting
Level 2, 170 Frome Street
Adelaide
SA 5000

NATA Accredited
Accreditation Number 1261
Site Number 1254

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

Attention: **Kelsey Lees**

Report **1162835-W**
Project name Mitcham Environmental Monitoring
Project ID 240365
Received Date Nov 20, 2024

Client Sample ID			**DUP01**	**LL3**	**LL4**	**LLFG3**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins Sample No.			**M24-No0058843**	**M24-No0058844**	**M24-No0058845**	**M24-No0058846**
Date Sampled			**Nov 20, 2024**	**Not Provided**[I12]	**Not Provided**[I12]	**Not Provided**[I12]
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2)*[N01]	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	101	98	98	97
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chrysene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Fluorene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			DUP01	LL3	LL4	LLFG3
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M24-No0058843	M24-No0058844	M24-No0058845	M24-No0058846
Date Sampled			Nov 20, 2024	Not Provided[I12]	Not Provided[I12]	Not Provided[I12]
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Naphthalene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Phenanthrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Total PAH*	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
2-Fluorobiphenyl (surr.)	1	%	147	136	105	108
p-Terphenyl-d14 (surr.)	1	%	52	66	59	94
Phenols (Halogenated)						
2-Chlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
2.4-Dichlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
2.4.5-Trichlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
2.4.6-Trichlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
2.6-Dichlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Chloro-3-methylphenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Pentachlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachlorophenols - Total	0.03	mg/L	< 0.03	< 0.03	< 0.03	< 0.03
Total Halogenated Phenol*	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
2-Methyl-4.6-dinitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03	< 0.03
2-Nitrophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
2.4-Dimethylphenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
2.4-Dinitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03	< 0.03
2-Methylphenol (o-Cresol)	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
3&4-Methylphenol (m&p-Cresol)	0.006	mg/L	< 0.006	< 0.006	< 0.006	< 0.006
Total cresols*	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
4-Nitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03	< 0.03
Dinoseb	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Phenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
Phenol-d6 (surr.)	1	%	42	31	31	21
Total Non-Halogenated Phenol*	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Ammonia (as N)	0.01	mg/L	0.02	0.01	0.02	0.05
Biochemical Oxygen Demand (BOD-5 Day)	5	mg/L	< 5	< 5	< 5	< 5
Chemical Oxygen Demand (COD)	25	mg/L	< 25	< 25	59	< 25
Chloride	1	mg/L	1200	89	290	1200
Chromium (hexavalent)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Chromium (trivalent)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Conductivity (at 25 °C)	10	uS/cm	4400	1200	1700	4400
Cyanide (total)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Nitrate & Nitrite (as N)	0.05	mg/L	2.2	5.7	1.7	2.2
Nitrate (as N)	0.02	mg/L	2.2	5.7	1.7	2.2
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.02
Organic Nitrogen (as N)*	0.2	mg/L	0.28	0.79	1.08	0.55
pH (at 25 °C)	0.1	pH Units	7.7	8.0	7.7	7.9
Sulphate (as SO4)	5	mg/L	180	57	67	180
Total Dissolved Solids Dried at 180 °C ± 2 °C	10	mg/L	2800	800	950	2800
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	0.8	1.1	0.6
Total Nitrogen (as N)*	0.2	mg/L	2.5	6.5	2.8	2.8

Client Sample ID			DUP01	LL3	LL4	LLFG3
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M24-No0058843	M24-No0058844	M24-No0058845	M24-No0058846
Date Sampled			Nov 20, 2024	Not Provided[I12]	Not Provided[I12]	Not Provided[I12]
Test/Reference	LOR	Unit				
Total Organic Carbon	5	mg/L	< 5	< 5	33	< 5
Phosphate total (as P)	0.01	mg/L	0.05	0.05	0.01	0.05
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	530	540	440	540
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Total Alkalinity (as CaCO3)	20	mg/L	530	540	440	540
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Barium (filtered)	0.02	mg/L	0.07	< 0.02	0.04	0.07
Beryllium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Boron (filtered)	0.05	mg/L	< 0.5	< 0.5	< 0.5	0.51
Cadmium (filtered)	0.0002	mg/L	0.0002	0.0003	0.0003	0.0002
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Chromium (filtered)	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Cobalt (filtered)	0.001	mg/L	0.001	< 0.001	0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.007	0.003
Iron (filtered)	0.05	mg/L	< 0.05	0.34	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	0.001	0.006	< 0.001
Manganese (filtered)	0.005	mg/L	0.093	0.071	0.010	0.096
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	0.009
Selenium (filtered)	0.001	mg/L	0.002	0.003	< 0.001	0.001
Vanadium (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	0.006	0.016	0.008	0.017
Alkali Metals						
Calcium (filtered)	0.5	mg/L	150	65	70	150
Magnesium (filtered)	0.5	mg/L	140	42	48	140
Potassium (filtered)	0.5	mg/L	9.3	4.0	7.7	10
Sodium (filtered)	0.5	mg/L	630	170	230	650

Client Sample ID			LLFG4	LLFG5	LLFG10	RINS01
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M24-No0058847	M24-No0058848	M24-No0058849	M24-No0058850
Date Sampled			Not Provided[I12]	Not Provided[I12]	Not Provided[I12]	Not Provided[I12]
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
TRH C10-C36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
TRH >C10-C16 less Naphthalene (F2)*[N01]	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	-

Client Sample ID			LLFG4	LLFG5	LLFG10	RINS01
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M24-No0058847	M24-No0058848	M24-No0058849	M24-No0058850
Date Sampled			Not Provided[I12]	Not Provided[I12]	Not Provided[I12]	Not Provided[I12]
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Xylenes - Total*	0.003	mg/L	< 0.003	< 0.003	< 0.003	-
4-Bromofluorobenzene (surr.)	1	%	96	97	101	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.01	mg/L	< 0.01	< 0.01	< 0.01	-
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Chrysene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Fluorene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Naphthalene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Phenanthrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Total PAH*	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
2-Fluorobiphenyl (surr.)	1	%	77	77	126	-
p-Terphenyl-d14 (surr.)	1	%	84	136	112	-
Phenols (Halogenated)						
2-Chlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	-
2.4-Dichlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	-
2.4.5-Trichlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	-
2.4.6-Trichlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	-
2.6-Dichlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	-
4-Chloro-3-methylphenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	-
Pentachlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	-
Tetrachlorophenols - Total	0.03	mg/L	< 0.03	< 0.03	< 0.03	-
Total Halogenated Phenol*	0.01	mg/L	< 0.01	< 0.01	< 0.01	-
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
2-Methyl-4.6-dinitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03	-
2-Nitrophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	-
2.4-Dimethylphenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	-
2.4-Dinitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03	-

Client Sample ID			LLFG4	LLFG5	LLFG10	RINS01
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M24-No0058847	M24-No0058848	M24-No0058849	M24-No0058850
Date Sampled			Not Provided[I12]	Not Provided[I12]	Not Provided[I12]	Not Provided[I12]
Test/Reference	LOR	Unit				
Phenols (non-Halogenated)						
2-Methylphenol (o-Cresol)	0.003	mg/L	< 0.003	< 0.003	< 0.003	-
3&4-Methylphenol (m&p-Cresol)	0.006	mg/L	< 0.006	< 0.006	< 0.006	-
Total cresols*	0.01	mg/L	< 0.01	< 0.01	< 0.01	-
4-Nitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03	-
Dinoseb	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
Phenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	-
Phenol-d6 (surr.)	1	%	121	121	63	-
Total Non-Halogenated Phenol*	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
Ammonia (as N)	0.01	mg/L	0.14	0.02	0.02	-
Biochemical Oxygen Demand (BOD-5 Day)	5	mg/L	< 5	< 5	< 5	-
Chemical Oxygen Demand (COD)	25	mg/L	42	< 25	< 25	-
Chloride	1	mg/L	3100	760	1000	-
Chromium (hexavalent)	0.005	mg/L	< 0.005	< 0.005	< 0.005	-
Chromium (trivalent)	0.005	mg/L	< 0.005	0.005	< 0.005	-
Conductivity (at 25 °C)	10	uS/cm	9900	3300	2100	-
Cyanide (total)	0.005	mg/L	< 0.005	< 0.005	< 0.005	-
Nitrate & Nitrite (as N)	0.05	mg/L	0.51	3.5	0.16	-
Nitrate (as N)	0.02	mg/L	0.27	3.2	0.12	-
Nitrite (as N)	0.02	mg/L	0.24	0.33	0.03	-
Organic Nitrogen (as N)*	0.2	mg/L	0.46	0.78	< 0.2	-
pH (at 25 °C)	0.1	pH Units	7.7	7.7	7.9	-
Sulphate (as SO4)	5	mg/L	500	160	180	-
Total Dissolved Solids Dried at 180 °C ± 2 °C	10	mg/L	6500	2300	2500	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	0.8	0.2	-
Total Nitrogen (as N)*	0.2	mg/L	1.1	4.3	0.4	-
Total Organic Carbon	5	mg/L	16	< 5	< 5	-
Phosphate total (as P)	0.01	mg/L	0.01	0.02	0.04	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	490	500	580	-
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	-
Total Alkalinity (as CaCO3)	20	mg/L	490	500	580	-
Heavy Metals						
Arsenic	0.001	mg/L	-	-	-	< 0.001
Arsenic (filtered)	0.001	mg/L	0.003	< 0.001	< 0.001	-
Barium	0.02	mg/L	-	-	-	< 0.02
Barium (filtered)	0.02	mg/L	0.09	< 0.02	0.03	-
Beryllium	0.001	mg/L	-	-	-	< 0.001
Beryllium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Boron	0.05	mg/L	-	-	-	< 0.05
Boron (filtered)	0.05	mg/L	0.55	< 0.5	0.74	-
Cadmium	0.0002	mg/L	-	-	-	< 0.0002
Cadmium (filtered)	0.0002	mg/L	0.0017	< 0.0002	< 0.0002	-
Chromium	0.001	mg/L	< 0.001	0.005	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Cobalt	0.001	mg/L	-	-	-	< 0.001
Cobalt (filtered)	0.001	mg/L	0.009	< 0.001	< 0.001	-
Copper	0.001	mg/L	-	-	-	< 0.001

Client Sample ID			LLFG4	LLFG5	LLFG10	RINS01
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M24-No0058847	M24-No0058848	M24-No0058849	M24-No0058850
Date Sampled			Not Provided[I12]	Not Provided[I12]	Not Provided[I12]	Not Provided[I12]
Test/Reference	LOR	Unit				
Heavy Metals						
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Iron	0.05	mg/L	-	-	-	< 0.05
Iron (filtered)	0.05	mg/L	3.7	< 0.05	< 0.05	-
Lead	0.001	mg/L	-	-	-	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Manganese	0.005	mg/L	-	-	-	< 0.005
Manganese (filtered)	0.005	mg/L	0.43	0.082	0.030	-
Mercury	0.0001	mg/L	-	-	-	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Nickel	0.001	mg/L	-	-	-	< 0.001
Nickel (filtered)	0.001	mg/L	0.006	0.001	< 0.001	-
Selenium	0.001	mg/L	-	-	-	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	-
Vanadium	0.005	mg/L	-	-	-	< 0.005
Vanadium (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	-
Zinc	0.005	mg/L	-	-	-	< 0.005
Zinc (filtered)	0.005	mg/L	0.037	0.043	0.013	-
Alkali Metals						
Calcium (filtered)	0.5	mg/L	330	100	110	-
Magnesium (filtered)	0.5	mg/L	260	84	140	-
Potassium (filtered)	0.5	mg/L	15	12	12	-
Sodium (filtered)	0.5	mg/L	1500	530	690	-

Client Sample ID			TB01
Sample Matrix			Water
Eurofins Sample No.			M24-No0058851
Date Sampled			Not Provided[I12]
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons			
TRH C6-C10	0.02	mg/L	< 0.02

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Eurofins Suite B4A			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Nov 22, 2024	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Nov 22, 2024	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Nov 22, 2024	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Melbourne	Nov 22, 2024	14 Days
- Method: LTM-ORG-2010 BTEX and Volatile TRH			
Polycyclic Aromatic Hydrocarbons	Melbourne	Nov 22, 2024	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (Halogenated)	Melbourne	Nov 22, 2024	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Melbourne	Nov 22, 2024	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Total Recoverable Hydrocarbons	Melbourne	Nov 22, 2024	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Biochemical Oxygen Demand (BOD-5 Day)	Melbourne	Nov 22, 2024	2 Days
- Method: LTM-INO-4010 Biochemical Oxygen Demand (BOD5) in Water			
Chemical Oxygen Demand (COD)	Melbourne	Nov 22, 2024	28 Days
- Method: LTM-INO-4220 Determination of COD in Water			
Conductivity (at 25 °C)	Melbourne	Nov 22, 2024	28 Days
- Method: LTM-INO-4030 Conductivity			
Cyanide (total)	Melbourne	Nov 22, 2024	14 Days
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
pH (at 25 °C)	Melbourne	Nov 22, 2024	6 Hours
- Method: LTM-GEN-7090 pH in water by ISE			
Total Organic Carbon	Melbourne	Nov 22, 2024	28 Days
- Method: LTM-INO-4060 Total Organic Carbon in water and soil			
Phosphate total (as P)	Melbourne	Nov 22, 2024	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Heavy Metals	Melbourne	Nov 27, 2024	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Heavy Metals (filtered)	Melbourne	Nov 22, 2024	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Mobil Metals : Metals M15	Melbourne	Nov 22, 2024	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Eurofins Suite B11C filtered: Na/K/Ca/Mg	Melbourne	Nov 22, 2024	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, NH3, Total P			
Ammonia (as N)	Melbourne	Nov 22, 2024	28 Days
- Method: LTM-INO-4450 Determination of Nitrogen Species by Discrete Analyser			
Nitrate & Nitrite (as N)	Melbourne	Nov 22, 2024	28 Days
- Method: LTM-INO-4450 Determination of Nitrogen Species by Discrete Analyser			
Nitrate (as N)	Melbourne	Nov 22, 2024	28 Days
- Method: LTM-INO-4450 Determination of Nitrogen Species by Discrete Analyser			
Nitrite (as N)	Melbourne	Nov 22, 2024	2 Days
- Method: LTM-INO-4450 Nitrogens by Discrete Analyser			
Organic Nitrogen (as N)*	Melbourne	Nov 21, 2024	7 Days
- Method: APHA 4500 Organic Nitrogen (N)			
Total Kjeldahl Nitrogen (as N)	Melbourne	Nov 22, 2024	28 Days

Description	Testing Site	Extracted	Holding Time
- Method: APHA 4500-Norg B,D Total Kjeldahl Nitrogen by FIA			
Eurofins Suite B11E: Cl/SO4/Alkalinity			
Chloride	Melbourne	Nov 22, 2024	28 Days
- Method: LTM-INO-4090 Chloride by Discrete Analyser			
Sulphate (as SO4)	Melbourne	Nov 22, 2024	28 Days
- Method: LTM-INO-4110 Sulfate by Discrete Analyser			
Alkalinity (speciated)	Melbourne	Nov 22, 2024	14 Days
- Method: LTM-INO-4250 Alkalinity by Electrometric Titration			
Chromium (speciated)			
Chromium (hexavalent)	Melbourne	Nov 27, 2024	28 Days
- Method: LTM-INO-4100 Hexavalent Chromium by Spectrometric detection			
Total Dissolved Solids Dried at 180 °C ± 2 °C	Melbourne	Nov 22, 2024	28 Days
- Method: LTM-INO-4170 Total Dissolved Solids in Water			

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Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
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Project Name: Mitcham Environmental Monitoring
Project ID: 240365

Order No.:
Report #: 1162835
Phone:
Fax:

Received: Nov 20, 2024 3:00 PM
Due: Nov 27, 2024
Priority: 5 Day
Contact Name: Kelsey Lees

Eurofins Analytical Services Manager : Karl Bulow

Sample Detail	Arsenic	Arsenic (filtered)	Barium	Barium (filtered)	Beryllium	Beryllium (filtered)	Biochemical Oxygen Demand (BOD-5 Day)	Boron	Boron (filtered)	Cadmium	Cadmium (filtered)	Chemical Oxygen Demand (COD)	Chromium	Chromium (filtered)	Cobalt	Cobalt (filtered)	Conductivity (at 25 °C)	Copper	Copper (filtered)	Cyanide (total)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH (at 25 °C)	Phosphate total (as P)	Selenium	Selenium (filtered)	Total Organic Carbon	TRH C6-C10	Vanadium	Vanadium (filtered)	Zinc	Zinc (filtered)	Chromium (speciated)	Eurofins Suite B4A	Eurofins Suite B19D: Total N, TKN, NOx,	Eurofins Suite B11E: Cl/SO4/Alkalinity	Total Dissolved Solids Dried at 180 °C ± 2 °C	Eurofins Suite B11C filtered: Na/K/Ca/Mg
Melbourne Laboratory - NATA # 1261 Site # 1254	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
External Laboratory																																															
No / **Sample ID** / **Sample Date** / **Sampling Time** / **Matrix** / **LAB ID**																																															
1 DUP01 Not Provided		X		X		X	X		X		X	X		X		X	X		X	X		X		X		X		X		X	X	X		X	X			X		X	X	X	X	X	X	X
2 LL3 Not Provided		X		X		X	X		X		X	X		X		X	X		X	X		X		X		X		X		X	X	X		X	X			X		X	X	X	X	X	X	X
3 LL4 Not Provided		X		X		X	X		X		X	X		X		X	X		X	X		X		X		X		X		X	X	X		X	X			X		X	X	X	X	X	X	X
4 LLFG3 Not Provided		X		X		X	X		X		X	X		X		X	X		X	X		X		X		X		X		X	X	X		X	X			X		X	X	X	X	X	X	X
5 LLFG4 Not Provided		X		X		X	X		X		X	X		X		X	X		X	X		X		X		X		X		X	X	X		X	X			X		X	X	X	X	X	X	X
6 LLFG5 Not Provided		X		X		X	X		X		X	X		X		X	X		X	X		X		X		X		X		X	X	X		X	X			X		X	X	X	X	X	X	X
7 LLFG10 Not Provided		X		X		X	X		X		X	X		X		X	X		X	X		X		X		X		X		X	X	X		X	X			X		X	X	X	X	X	X	X
8 RINS01 Not Provided	X		X		X			X		X			X		X			X			X		X		X		X		X				X			X		X							
9 TB01 Not Provided																																			X												
Test Counts	1	7	1	7	1	7	7	1	7	1	7	7	1	7	1	7	7	1	7	7	1	7	1	7	1	7	1	7	1	7	7	7	1	7	7	1	1	7	1	7	7	7	7	7	7	7

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

mg/kg: milligrams per kilogram	**mg/L:** milligrams per litre	**ppm:** parts per million
µg/L: micrograms per litre	**ppb:** parts per billion	**%:** Percentage
org/100 mL: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units	**MPN/100 mL:** Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit	**Colour:** Pt-Co Units (CU)	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

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

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

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

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

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

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons							
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g.h.i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a.h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Phenols (Halogenated)							
2-Chlorophenol	mg/L	< 0.003			0.003	Pass	
2.4-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
2.4.5-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2.4.6-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2.6-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
4-Chloro-3-methylphenol	mg/L	< 0.01			0.01	Pass	
Pentachlorophenol	mg/L	< 0.01			0.01	Pass	
Tetrachlorophenols - Total	mg/L	< 0.03			0.03	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	mg/L	< 0.1			0.1	Pass	
2-Methyl-4.6-dinitrophenol	mg/L	< 0.03			0.03	Pass	
2-Nitrophenol	mg/L	< 0.01			0.01	Pass	
2.4-Dimethylphenol	mg/L	< 0.003			0.003	Pass	
2.4-Dinitrophenol	mg/L	< 0.03			0.03	Pass	
2-Methylphenol (o-Cresol)	mg/L	< 0.003			0.003	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/L	< 0.006			0.006	Pass	
4-Nitrophenol	mg/L	< 0.03			0.03	Pass	
Dinoseb	mg/L	< 0.1			0.1	Pass	
Phenol	mg/L	< 0.003			0.003	Pass	
Method Blank							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Biochemical Oxygen Demand (BOD-5 Day)	mg/L	< 5			5	Pass	
Chemical Oxygen Demand (COD)	mg/L	< 25			25	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chloride	mg/L	< 1			1	Pass	
Chromium (hexavalent)	mg/L	< 0.005			0.005	Pass	
Cyanide (total)	mg/L	< 0.005			0.005	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Sulphate (as SO4)	mg/L	< 5			5	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Phosphate total (as P)	mg/L	< 0.01			0.01	Pass	
Method Blank							
Heavy Metals							
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Barium (filtered)	mg/L	< 0.02			0.02	Pass	
Beryllium (filtered)	mg/L	< 0.001			0.001	Pass	
Boron (filtered)	mg/L	< 0.05			0.05	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Cobalt (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Vanadium (filtered)	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium (filtered)	mg/L	< 0.5			0.5	Pass	
Magnesium (filtered)	mg/L	< 0.5			0.5	Pass	
Potassium (filtered)	mg/L	< 0.5			0.5	Pass	
Sodium (filtered)	mg/L	< 0.5			0.5	Pass	
Method Blank							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Total Organic Carbon	mg/L	< 5			5	Pass	
Method Blank							
Total Recoverable Hydrocarbons							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total*	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
Method Blank							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Total Organic Carbon	mg/L	< 5			5	Pass	
Method Blank							
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total*	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
Method Blank							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Total Organic Carbon	mg/L	< 5			5	Pass	
Method Blank							
Conductivity (at 25 °C)	uS/cm	< 10			10	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Method Blank							
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Barium	mg/L	< 0.02			0.02	Pass	
Barium (filtered)	mg/L	< 0.02			0.02	Pass	
Beryllium	mg/L	< 0.001			0.001	Pass	
Beryllium (filtered)	mg/L	< 0.001			0.001	Pass	
Boron	mg/L	< 0.05			0.05	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Cobalt	mg/L	< 0.001			0.001	Pass	
Cobalt (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Vanadium	mg/L	< 0.005			0.005	Pass	
Vanadium (filtered)	mg/L	< 0.005			0.005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	
Barium	mg/L	< 0.02			0.02	Pass	
Beryllium	mg/L	< 0.001			0.001	Pass	
Boron	mg/L	< 0.05			0.05	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Cobalt	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	0.001			0.001	Pass	
Vanadium	mg/L	< 0.005			0.005	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C10-C14	%	124			70-130	Pass	
TRH >C10-C16	%	115			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	90			70-130	Pass	
Acenaphthylene	%	90			70-130	Pass	
Anthracene	%	80			70-130	Pass	
Benz(a)anthracene	%	80			70-130	Pass	
Benzo(a)pyrene	%	80			70-130	Pass	
Benzo(b&j)fluoranthene	%	120			70-130	Pass	
Benzo(g.h.i)perylene	%	80			70-130	Pass	
Benzo(k)fluoranthene	%	120			70-130	Pass	
Chrysene	%	120			70-130	Pass	
Dibenz(a.h)anthracene	%	80			70-130	Pass	
Fluoranthene	%	120			70-130	Pass	
Fluorene	%	80			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	80			70-130	Pass	
Naphthalene	%	90			70-130	Pass	
Phenanthrene	%	80			70-130	Pass	
Pyrene	%	120			70-130	Pass	
LCS - % Recovery							
Phenols (Halogenated)							
2-Chlorophenol	%	120			25-140	Pass	
2.4-Dichlorophenol	%	98			25-140	Pass	
2.4.5-Trichlorophenol	%	107			25-140	Pass	
2.4.6-Trichlorophenol	%	114			25-140	Pass	
2.6-Dichlorophenol	%	98			25-140	Pass	
4-Chloro-3-methylphenol	%	87			25-140	Pass	
Pentachlorophenol	%	120			25-140	Pass	
Tetrachlorophenols - Total	%	93			25-140	Pass	
LCS - % Recovery							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	%	80			25-140	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2-Methyl-4.6-dinitrophenol	%	124			25-140	Pass	
2-Nitrophenol	%	120			25-140	Pass	
2.4-Dimethylphenol	%	107			25-140	Pass	
2.4-Dinitrophenol	%	107			25-140	Pass	
2-Methylphenol (o-Cresol)	%	80			25-140	Pass	
3&4-Methylphenol (m&p-Cresol)	%	74			25-140	Pass	
4-Nitrophenol	%	98			25-140	Pass	
Dinoseb	%	98			25-140	Pass	
Phenol	%	120			25-140	Pass	
LCS - % Recovery							
Ammonia (as N)	%	83			70-130	Pass	
Biochemical Oxygen Demand (BOD-5 Day)	%	86			85-115	Pass	
Chemical Oxygen Demand (COD)	%	93			70-130	Pass	
Chromium (hexavalent)	%	101			70-130	Pass	
Cyanide (total)	%	98			70-130	Pass	
Nitrite (as N)	%	109			70-130	Pass	
Sulphate (as SO4)	%	98			70-130	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	%	98			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	99			70-130	Pass	
Phosphate total (as P)	%	99			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic (filtered)	%	102			80-120	Pass	
Boron (filtered)	%	115			80-120	Pass	
Cadmium (filtered)	%	111			80-120	Pass	
Chromium	%	103			80-120	Pass	
Cobalt (filtered)	%	101			80-120	Pass	
Copper (filtered)	%	103			80-120	Pass	
Iron (filtered)	%	112			80-120	Pass	
Lead (filtered)	%	118			80-120	Pass	
Manganese (filtered)	%	100			80-120	Pass	
Mercury (filtered)	%	112			80-120	Pass	
Nickel (filtered)	%	105			80-120	Pass	
Selenium (filtered)	%	106			80-120	Pass	
Zinc (filtered)	%	104			80-120	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium (filtered)	%	103			80-120	Pass	
Magnesium (filtered)	%	112			80-120	Pass	
Potassium (filtered)	%	104			80-120	Pass	
LCS - % Recovery							
Chloride	%	98			70-130	Pass	
Sulphate (as SO4)	%	104			70-130	Pass	
Total Organic Carbon	%	110			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Chromium (filtered)	%	102			80-120	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	109			70-130	Pass	
TRH C6-C10	%	110			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	106			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Toluene	%	121			70-130	Pass	
Ethylbenzene	%	120			70-130	Pass	
m&p-Xylenes	%	120			70-130	Pass	
Xylenes - Total*	%	121			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	86			70-130	Pass	
LCS - % Recovery							
Total Organic Carbon	%	126			70-130	Pass	
LCS - % Recovery							
Chloride	%	99			70-130	Pass	
Nitrate & Nitrite (as N)	%	106			70-130	Pass	
Total Organic Carbon	%	120			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO3)	%	77			70-130	Pass	
Total Alkalinity (as CaCO3)	%	81			70-130	Pass	
LCS - % Recovery							
Chloride	%	101			70-130	Pass	
Conductivity (at 25 °C)	%	99			70-130	Pass	
LCS - % Recovery							
Nitrate & Nitrite (as N)	%	107			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	102			80-120	Pass	
Barium	%	101			80-120	Pass	
Beryllium	%	100			80-120	Pass	
Cadmium	%	102			80-120	Pass	
Cobalt	%	101			80-120	Pass	
Copper	%	103			80-120	Pass	
Iron	%	105			80-120	Pass	
Lead	%	102			80-120	Pass	
Manganese	%	103			80-120	Pass	
Mercury	%	100			80-120	Pass	
Nickel	%	103			80-120	Pass	
Selenium	%	106			80-120	Pass	
Vanadium	%	102			80-120	Pass	
Zinc	%	103			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons				Result 1					
TRH C6-C9	M24-No0061387	NCP	%	82			70-130	Pass	
TRH C10-C14	M24-No0058843	CP	%	111			70-130	Pass	
TRH C6-C10	M24-No0061387	NCP	%	83			70-130	Pass	
TRH >C10-C16	M24-No0058843	CP	%	108			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M24-No0061387	NCP	%	86			70-130	Pass	
Toluene	M24-No0061387	NCP	%	81			70-130	Pass	
Ethylbenzene	M24-No0061387	NCP	%	80			70-130	Pass	
m&p-Xylenes	M24-No0061387	NCP	%	82			70-130	Pass	
o-Xylene	M24-No0061387	NCP	%	82			70-130	Pass	
Xylenes - Total*	M24-No0061387	NCP	%	82			70-130	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M24-No0061387	NCP	%	126			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M24-No0064069	NCP	%	104			70-130	Pass	
Acenaphthylene	M24-No0064069	NCP	%	110			70-130	Pass	
Anthracene	M24-No0064069	NCP	%	94			70-130	Pass	
Benz(a)anthracene	M24-No0064069	NCP	%	92			70-130	Pass	
Benzo(a)pyrene	M24-No0064069	NCP	%	100			70-130	Pass	
Benzo(b&j)fluoranthene	M24-No0064069	NCP	%	100			70-130	Pass	
Benzo(g.h.i)perylene	M24-No0064069	NCP	%	96			70-130	Pass	
Benzo(k)fluoranthene	M24-No0064069	NCP	%	108			70-130	Pass	
Chrysene	M24-No0064069	NCP	%	100			70-130	Pass	
Dibenz(a.h)anthracene	M24-No0064069	NCP	%	98			70-130	Pass	
Fluoranthene	M24-No0064069	NCP	%	106			70-130	Pass	
Fluorene	M24-No0064069	NCP	%	108			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M24-No0064069	NCP	%	100			70-130	Pass	
Naphthalene	M24-No0064069	NCP	%	90			70-130	Pass	
Phenanthrene	M24-No0064069	NCP	%	92			70-130	Pass	
Pyrene	M24-No0064069	NCP	%	126			70-130	Pass	
Spike - % Recovery									
Phenols (Halogenated)				Result 1					
2-Chlorophenol	M24-No0064069	NCP	%	82			30-130	Pass	
2.4-Dichlorophenol	M24-No0064069	NCP	%	94			30-130	Pass	
2.4.5-Trichlorophenol	M24-No0064069	NCP	%	99			30-130	Pass	
2.4.6-Trichlorophenol	M24-No0064069	NCP	%	99			30-130	Pass	
2.6-Dichlorophenol	M24-No0064069	NCP	%	90			30-130	Pass	
4-Chloro-3-methylphenol	M24-No0064069	NCP	%	90			30-130	Pass	
Pentachlorophenol	M24-No0064069	NCP	%	67			30-130	Pass	
Tetrachlorophenols - Total	M24-No0064069	NCP	%	105			30-130	Pass	
Spike - % Recovery									
Phenols (non-Halogenated)				Result 1					
2-Cyclohexyl-4.6-dinitrophenol	M24-No0064069	NCP	%	105			30-130	Pass	
2-Methyl-4.6-dinitrophenol	M24-No0064069	NCP	%	107			30-130	Pass	
2-Nitrophenol	M24-No0064069	NCP	%	104			30-130	Pass	
2.4-Dimethylphenol	M24-No0064069	NCP	%	118			30-130	Pass	
2.4-Dinitrophenol	M24-No0064069	NCP	%	107			30-130	Pass	
2-Methylphenol (o-Cresol)	M24-No0064069	NCP	%	64			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	M24-No0064069	NCP	%	62			30-130	Pass	
4-Nitrophenol	M24-No0064069	NCP	%	82			30-130	Pass	
Dinoseb	M24-No0064069	NCP	%	96			30-130	Pass	
Phenol	M24-No0064069	NCP	%	24			30-130	Fail	Q08
Spike - % Recovery									
				Result 1					
Chromium (hexavalent)	M24-No0067407	NCP	%	100			70-130	Pass	
Cyanide (total)	M24-No0056707	NCP	%	102			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	S24-No0058817	NCP	%	108			70-130	Pass	
Phosphate total (as P)	M24-No0052870	NCP	%	102			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	M24-No0052865	NCP	%	100			75-125	Pass	
Barium (filtered)	M24-No0052865	NCP	%	90			75-125	Pass	
Beryllium (filtered)	M24-No0052865	NCP	%	110			75-125	Pass	
Cadmium (filtered)	M24-No0052865	NCP	%	96			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Cobalt (filtered)	M24-No0052865	NCP	%	91			75-125	Pass	
Copper (filtered)	M24-No0052865	NCP	%	87			75-125	Pass	
Iron (filtered)	M24-No0061360	NCP	%	94			75-125	Pass	
Lead (filtered)	M24-No0052865	NCP	%	101			75-125	Pass	
Manganese (filtered)	M24-No0052865	NCP	%	77			75-125	Pass	
Mercury (filtered)	M24-No0052865	NCP	%	110			75-125	Pass	
Nickel (filtered)	M24-No0052865	NCP	%	89			75-125	Pass	
Selenium (filtered)	M24-No0052865	NCP	%	99			75-125	Pass	
Vanadium (filtered)	M24-No0052865	NCP	%	98			75-125	Pass	
Zinc (filtered)	M24-No0052865	NCP	%	92			75-125	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M24-No0046085	NCP	%	87			70-130	Pass	
Sulphate (as SO4)	M24-No0046085	NCP	%	96			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M24-No0058844	CP	%	102			75-125	Pass	
Barium	M24-No0058844	CP	%	103			75-125	Pass	
Beryllium	M24-No0058844	CP	%	105			75-125	Pass	
Cadmium	M24-No0058844	CP	%	93			75-125	Pass	
Chromium	M24-No0058844	CP	%	99			75-125	Pass	
Chromium (filtered)	M24-No0052865	NCP	%	94			75-125	Pass	
Cobalt	M24-No0058844	CP	%	93			75-125	Pass	
Copper	M24-No0058844	CP	%	93			75-125	Pass	
Iron	M24-No0058844	CP	%	98			75-125	Pass	
Lead	M24-No0058844	CP	%	83			75-125	Pass	
Mercury	M24-No0058844	CP	%	97			75-125	Pass	
Nickel	M24-No0058844	CP	%	94			75-125	Pass	
Selenium	M24-No0058844	CP	%	100			75-125	Pass	
Vanadium	M24-No0058844	CP	%	97			75-125	Pass	
Zinc	M24-No0058844	CP	%	96			75-125	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M24-No0058845	CP	%	111			70-130	Pass	
Nitrate & Nitrite (as N)	M24-No0058845	CP	%	104			70-130	Pass	
Nitrate (as N)	M24-No0058845	CP	%	99			70-130	Pass	
Nitrite (as N)	M24-No0058845	CP	%	112			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium (filtered)	M24-No0058845	CP	%	95			75-125	Pass	
Magnesium (filtered)	M24-No0058845	CP	%	101			75-125	Pass	
Potassium (filtered)	M24-No0058845	CP	%	97			75-125	Pass	
Sodium (filtered)	M24-No0058845	CP	%	95			75-125	Pass	
Spike - % Recovery									
				Result 1					
Chemical Oxygen Demand (COD)	M24-No0058847	CP	%	90			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M24-No0052520	NCP	%	102			75-125	Pass	
Barium	M24-No0052520	NCP	%	100			75-125	Pass	
Beryllium	M24-No0052520	NCP	%	104			75-125	Pass	
Boron	M24-No0056157	NCP	%	104			75-125	Pass	
Cadmium	M24-No0052520	NCP	%	92			75-125	Pass	
Cobalt	M24-No0052520	NCP	%	98			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper	M24-No0052520	NCP	%	95			75-125	Pass	
Iron	M24-No0052520	NCP	%	90			75-125	Pass	
Lead	M24-No0052520	NCP	%	84			75-125	Pass	
Manganese	M24-No0056157	NCP	%	105			75-125	Pass	
Mercury	M24-No0052520	NCP	%	96			75-125	Pass	
Nickel	M24-No0052520	NCP	%	96			75-125	Pass	
Selenium	M24-No0052520	NCP	%	98			75-125	Pass	
Vanadium	M24-No0052520	NCP	%	102			75-125	Pass	
Zinc	M24-No0055274	NCP	%	105			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	M24-No0061388	NCP	mg/L	0.52	0.52	<1	30%	Pass	
TRH C10-C14	M24-No0062132	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M24-No0062132	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M24-No0062132	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C6-C10	M24-No0061388	NCP	mg/L	0.52	0.53	<1	30%	Pass	
TRH >C10-C16	M24-No0062132	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	M24-No0062132	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	M24-No0062132	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M24-No0061388	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M24-No0061388	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M24-No0061388	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	M24-No0061388	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	M24-No0061388	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total*	M24-No0061388	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M24-No0061388	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M24-No0064078	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Acenaphthylene	M24-No0064078	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Anthracene	M24-No0064078	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benz(a)anthracene	M24-No0064078	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(a)pyrene	M24-No0064078	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(b&j)fluoranthene	M24-No0064078	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(g.h.i)perylene	M24-No0064078	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(k)fluoranthene	M24-No0064078	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chrysene	M24-No0064078	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dibenz(a.h)anthracene	M24-No0064078	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluoranthene	M24-No0064078	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluorene	M24-No0064078	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M24-No0064078	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Naphthalene	M24-No0064078	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Phenanthrene	M24-No0064078	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Pyrene	M24-No0064078	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	

Duplicate									
Phenols (Halogenated)				Result 1	Result 2	RPD			
2-Chlorophenol	M24-No0064078	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
2.4-Dichlorophenol	M24-No0064078	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
2.4.5-Trichlorophenol	M24-No0064078	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
2.4.6-Trichlorophenol	M24-No0064078	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
2.6-Dichlorophenol	M24-No0064078	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
4-Chloro-3-methylphenol	M24-No0064078	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Pentachlorophenol	M24-No0064078	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Tetrachlorophenols - Total	M24-No0064078	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass	
Duplicate									
Phenols (non-Halogenated)				Result 1	Result 2	RPD			
2-Cyclohexyl-4.6-dinitrophenol	M24-No0064078	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
2-Methyl-4.6-dinitrophenol	M24-No0064078	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass	
2-Nitrophenol	M24-No0064078	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
2.4-Dimethylphenol	M24-No0064078	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
2.4-Dinitrophenol	M24-No0064078	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass	
2-Methylphenol (o-Cresol)	M24-No0064078	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
3&4-Methylphenol (m&p-Cresol)	M24-No0064078	NCP	mg/L	< 0.006	< 0.006	<1	30%	Pass	
4-Nitrophenol	M24-No0064078	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass	
Dinoseb	M24-No0064078	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Phenol	M24-No0064078	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Biochemical Oxygen Demand (BOD-5 Day)	M24-No0061417	NCP	mg/L	13000	13000	1.0	30%	Pass	
Chloride	M24-No0061441	NCP	mg/L	830	830	<1	30%	Pass	
Chromium (hexavalent)	M24-No0065826	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Conductivity (at 25 °C)	M24-No0058843	CP	uS/cm	4400	4400	1.7	30%	Pass	
pH (at 25 °C)	M24-No0058843	CP	pH Units	7.7	7.7	pass	30%	Pass	
Sulphate (as SO4)	M24-No0061441	NCP	mg/L	250	250	1.0	30%	Pass	
Phosphate total (as P)	M24-No0062431	NCP	mg/L	0.05	0.06	4.0	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M24-No0058843	CP	mg/L	530	540	1.9	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M24-No0058843	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M24-No0058843	CP	mg/L	< 20	< 20	<1	30%	Pass	
Total Alkalinity (as CaCO3)	M24-No0058843	CP	mg/L	530	540	1.9	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	M24-No0052865	NCP	mg/L	0.014	0.015	2.0	30%	Pass	
Barium (filtered)	M24-No0052865	NCP	mg/L	0.07	0.07	<1	30%	Pass	
Beryllium (filtered)	M24-No0052865	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Boron (filtered)	M24-No0056525	NCP	mg/L	0.37	0.36	2.0	30%	Pass	
Cadmium (filtered)	M24-No0052865	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Cobalt (filtered)	M24-No0052865	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M24-No0052865	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	M24-No0052865	NCP	mg/L	3.9	3.9	1.0	30%	Pass	
Lead (filtered)	M24-No0052865	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	M24-No0052865	NCP	mg/L	0.22	0.23	1.0	30%	Pass	
Mercury (filtered)	M24-No0052865	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	M24-No0052865	NCP	mg/L	0.002	0.002	2.0	30%	Pass	
Selenium (filtered)	M24-No0052865	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Vanadium (filtered)	M24-No0052865	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc (filtered)	M24-No0052865	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	

Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M24-No0058844	CP	mg/L	0.01	0.04	100	30%	Fail	Q15
Nitrate & Nitrite (as N)	M24-No0058844	CP	mg/L	5.7	5.8	1.0	30%	Pass	
Nitrate (as N)	M24-No0058844	CP	mg/L	5.7	5.8	1.0	30%	Pass	
Nitrite (as N)	M24-No0058844	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M24-No0058844	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Barium	M24-No0058844	CP	mg/L	0.02	0.02	<1	30%	Pass	
Beryllium	M24-No0058844	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium	M24-No0058844	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium (filtered)	M24-No0052865	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cobalt	M24-No0058844	CP	mg/L	0.035	0.035	<1	30%	Pass	
Copper	M24-No0058844	CP	mg/L	0.006	0.007	5.0	30%	Pass	
Iron	M24-No0058844	CP	mg/L	0.10	0.10	<1	30%	Pass	
Lead	M24-No0058844	CP	mg/L	0.005	0.005	2.0	30%	Pass	
Manganese	M24-No0058844	CP	mg/L	2.9	2.9	<1	30%	Pass	
Mercury	M24-No0058844	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M24-No0058844	CP	mg/L	0.006	0.006	2.0	30%	Pass	
Selenium	M24-No0058844	CP	mg/L	0.003	0.003	1.0	30%	Pass	
Vanadium	M24-No0058844	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc	M24-No0058844	CP	mg/L	0.021	0.024	14	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25 °C)	M24-No0058845	CP	uS/cm	1700	1700	<1	30%	Pass	
pH (at 25 °C)	M24-No0058845	CP	pH Units	7.7	8.0	pass	30%	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	M24-No0058845	CP	mg/L	950	1000	4.9	30%	Pass	
Total Organic Carbon	S24-No0059183	NCP	mg/L	< 5	< 5	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M24-No0058845	CP	mg/L	440	410	8.0	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M24-No0058845	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M24-No0058845	CP	mg/L	< 20	< 20	<1	30%	Pass	
Total Alkalinity (as CaCO3)	M24-No0058845	CP	mg/L	440	410	8.0	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium (filtered)	M24-No0058845	CP	mg/L	70	70	<1	30%	Pass	
Magnesium (filtered)	M24-No0058845	CP	mg/L	48	49	2.0	30%	Pass	
Potassium (filtered)	M24-No0058845	CP	mg/L	7.7	7.8	2.0	30%	Pass	
Sodium (filtered)	M24-No0058845	CP	mg/L	230	230	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chemical Oxygen Demand (COD)	M24-No0058846	CP	mg/L	< 25	< 25	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M24-No0058847	CP	mg/L	0.6	< 0.2	130	30%	Fail	Q15
Duplicate									
				Result 1	Result 2	RPD			
Cyanide (total)	M24-No0058849	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M24-No0052520	NCP	mg/L	0.009	0.009	4.0	30%	Pass	
Barium	M24-No0052520	NCP	mg/L	0.04	0.04	2.0	30%	Pass	
Beryllium	M24-No0052520	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Boron	M24-No0056157	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Cadmium	M24-No0052520	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Cobalt	M24-No0052520	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M24-No0052520	NCP	mg/L	0.001	0.001	<1	30%	Pass	
Iron	M24-No0052520	NCP	mg/L	0.73	0.72	2.0	30%	Pass	
Lead	M24-No0052520	NCP	mg/L	0.002	0.002	<1	30%	Pass	
Manganese	M24-No0052520	NCP	mg/L	0.71	0.71	<1	30%	Pass	
Mercury	M24-No0052520	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M24-No0052520	NCP	mg/L	0.003	0.003	4.0	30%	Pass	
Selenium	M24-No0052520	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Vanadium	M24-No0052520	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc	M24-No0055274	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Harry Bacalis	Analytical Services Manager
Caitlin Breeze	Senior Analyst-Inorganic
Carroll Lee	Senior Analyst-Volatile
Edward Lee	Senior Analyst-Organic
Emily Rosenberg	Senior Analyst-Metal
Joseph Edouard	Senior Analyst-Organic
Joseph Edouard	Senior Analyst-Volatile
Luke Holt	Senior Analyst-Inorganic
Mary Makarios	Senior Analyst-Metal
Vivian Wang	Senior Analyst-Metal

Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

SF11: CHAIN OF CUSTODY

REF: 240365

1163239

tonkin

Job No:	240365		
Details:	Mitcham Environmental Monitoring		
Date Sampled:	21/11/24	**Sampled by:**	**KL**
Consultant:	Tonking Consulting	**Address:**	Level 2, 170 Frome St, Adelaide 5000
Contact:	**Kelsey Lees**	**Phone:**	(08) 8273 3100
Email:	kelsey.lees@tonkin.com.au	**Email:**	environmental@tonkin.com.au

Laboratory Name:	Eurofins MGT		
Laboratory Address:	6 Monterey Road, Dandenong South VIC 3175		
Laboratory Contact:	Karl Bulow	**phone:**	0477 574 867
Quotation No:	Pricebook 2024	**email:**	karl.bulow@eurofinsanz.com
Delivery by:			
Consignment Note:			

Lab Sample Identification	Sample Identification	Matrix / Container / Preservation	pH, EC, TDS	TOC	Cyanide (Total)	*B19D (Nutrients)	*B11C (Cations)	*B11E (Anions)	B4A (TRH, BTEXN, PAHs, Phenols)	BOD, COD	**Dissolved Metals	Speciated Chromium	TRH C6-C40	Total Metals		
	TB02	Water											X			
	RINS02	Water												X		
	LLFG8	Water	X	X	X	X	X	X	X	X	X	X				
	EHGW7	Water	X	X	X	X	X	X	X	X	X	X				
	Number of Samples:															

Notes / Deviations from Standard Protocols

Please email results to our LabSync Email at ESdat_AU+TonkinConsulting@ESdatLabSync.net

*Nutrients: Total N, TKN, NOx, NO2, NO3, NH3, Total P

*Cations: Na, K, Ca, Mg

*Anions: Cl, SO4, Alkalinity (CO3, HCO3, OH, Total alkalinity, CaCO3)

**Metals: As, Ba, Be, B, Cd, Co, Cu, Cr, Hg, Mn, Ni, Pb, Se, Zn, V, Fe

Relinquished by:	Kelsey Lees	Relinquished by:		Relinquished by:	
Date and time:	21/11/24 3pm 4pm	Date and time:		Date and time:	
Company:	Tonkin	Company:		Company:	
Signature	[signature]	Signature		Signature	
Received in good condition by:	Parsmal	Received in good condition by:		Received in good condition by:	
Date and Time:	21/11 4pm	Date and Time:		Date and Time:	
Company:	Eurofins	Company:		Company:	
Signature	[signature]	Signature		Signature	

Sample Preservation:

Samples must be transported and stored in a chilled or cold condition at all times

COC must remain with samples

ANALYSING LABORATORY:
Please email sample receipt to the environmental@tonkin.com.au email IMMEDIATELY on receipt of samples and return original COC with final results

14.4°C
+0.1°C
14.5°C on IB

Tonkin Consulting
Level 2, 170 Frome Street
Adelaide
SA 5000

Attention: **Kelsey Lees**

Report **1163239-W**
Project name Mitcham Environmental Monitoring
Project ID 240365
Received Date Nov 21, 2024

Client Sample ID			**LLFG8**	**EHGW7**	**TB02**	**RINS02**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins Sample No.			**M24-No0062128**	**M24-No0062129**	**M24-No0062130**	**M24-No0062131**
Date Sampled			**Nov 21, 2024**	**Nov 21, 2024**	**Nov 21, 2024**	**Nov 21, 2024**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	-	-
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	-	-
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	-	-
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	-	-
TRH C10-C36 (Total)	0.1	mg/L	< 0.1	< 0.1	-	-
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	< 0.02	-	-
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	-	-
TRH >C10-C16 less Naphthalene (F2)*[N01]	0.05	mg/L	< 0.05	< 0.05	-	-
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	-	-
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	-	-
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1	< 0.1	-	-
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	-	-
Toluene	0.001	mg/L	< 0.001	< 0.001	-	-
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	-	-
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	-	-
o-Xylene	0.001	mg/L	< 0.001	< 0.001	-	-
Xylenes - Total*	0.003	mg/L	< 0.003	< 0.003	-	-
4-Bromofluorobenzene (surr.)	1	%	110	89	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.01	mg/L	< 0.01	< 0.01	-	-
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	0.001	mg/L	< 0.001	< 0.001	-	-
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001	-	-
Anthracene	0.001	mg/L	< 0.001	< 0.001	-	-
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001	-	-
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001	-	-
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	< 0.001	< 0.001	-	-
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001	< 0.001	-	-
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001	-	-
Chrysene	0.001	mg/L	< 0.001	< 0.001	-	-
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001	< 0.001	-	-
Fluoranthene	0.001	mg/L	< 0.001	< 0.001	-	-
Fluorene	0.001	mg/L	< 0.001	< 0.001	-	-

Client Sample ID			LLFG8	EHGW7	TB02	RINS02
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M24-No0062128	M24-No0062129	M24-No0062130	M24-No0062131
Date Sampled			Nov 21, 2024	Nov 21, 2024	Nov 21, 2024	Nov 21, 2024
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001	-	-
Naphthalene	0.001	mg/L	< 0.001	< 0.001	-	-
Phenanthrene	0.001	mg/L	< 0.001	< 0.001	-	-
Pyrene	0.001	mg/L	< 0.001	< 0.001	-	-
Total PAH*	0.001	mg/L	< 0.001	< 0.001	-	-
2-Fluorobiphenyl (surr.)	1	%	109	107	-	-
p-Terphenyl-d14 (surr.)	1	%	129	147	-	-
Phenols (Halogenated)						
2-Chlorophenol	0.003	mg/L	< 0.003	< 0.003	-	-
2.4-Dichlorophenol	0.003	mg/L	< 0.003	< 0.003	-	-
2.4.5-Trichlorophenol	0.01	mg/L	< 0.01	< 0.01	-	-
2.4.6-Trichlorophenol	0.01	mg/L	< 0.01	< 0.01	-	-
2.6-Dichlorophenol	0.003	mg/L	< 0.003	< 0.003	-	-
4-Chloro-3-methylphenol	0.01	mg/L	< 0.01	< 0.01	-	-
Pentachlorophenol	0.01	mg/L	< 0.01	< 0.01	-	-
Tetrachlorophenols - Total	0.03	mg/L	< 0.03	< 0.03	-	-
Total Halogenated Phenol*	0.01	mg/L	< 0.01	< 0.01	-	-
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	0.1	mg/L	< 0.1	< 0.1	-	-
2-Methyl-4.6-dinitrophenol	0.03	mg/L	< 0.03	< 0.03	-	-
2-Nitrophenol	0.01	mg/L	< 0.01	< 0.01	-	-
2.4-Dimethylphenol	0.003	mg/L	< 0.003	< 0.003	-	-
2.4-Dinitrophenol	0.03	mg/L	< 0.03	< 0.03	-	-
2-Methylphenol (o-Cresol)	0.003	mg/L	< 0.003	< 0.003	-	-
3&4-Methylphenol (m&p-Cresol)	0.006	mg/L	< 0.006	< 0.006	-	-
Total cresols*	0.01	mg/L	< 0.01	< 0.01	-	-
4-Nitrophenol	0.03	mg/L	< 0.03	< 0.03	-	-
Dinoseb	0.1	mg/L	< 0.1	< 0.1	-	-
Phenol	0.003	mg/L	< 0.003	< 0.003	-	-
Phenol-d6 (surr.)	1	%	119	119	-	-
Total Non-Halogenated Phenol*	0.1	mg/L	< 0.1	< 0.1	-	-
Ammonia (as N)	0.01	mg/L	0.20	0.10	-	-
Biochemical Oxygen Demand (BOD-5 Day)	5	mg/L	7.4	< 5	-	-
Chemical Oxygen Demand (COD)	25	mg/L	230	120	-	-
Chloride	1	mg/L	760	1300	-	-
Chromium (hexavalent)	0.005	mg/L	< 0.005	< 0.005	-	-
Chromium (trivalent)	0.005	mg/L	< 0.005	< 0.005	-	-
Conductivity (at 25 °C)	10	uS/cm	1900	4800	-	-
Cyanide (total)	0.005	mg/L	< 0.005	< 0.005	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.32	-	-
Nitrate (as N)	0.02	mg/L	< 0.02	0.32	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	-	-
Organic Nitrogen (as N)*	0.2	mg/L	0.2	0.6	-	-
pH (at 25 °C)	0.1	pH Units	7.9	7.9	-	-
Sulphate (as SO4)	5	mg/L	200	130	-	-
Total Dissolved Solids Dried at 180 °C ± 2 °C	10	mg/L	2300	3000	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	0.7	-	-
Total Nitrogen (as N)*	0.2	mg/L	0.4	1.0	-	-

Client Sample ID			LLFG8	EHGW7	TB02	RINS02
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M24-No0062128	M24-No0062129	M24-No0062130	M24-No0062131
Date Sampled			Nov 21, 2024	Nov 21, 2024	Nov 21, 2024	Nov 21, 2024
Test/Reference	LOR	Unit				
Total Organic Carbon	5	mg/L	12	< 5	-	-
Phosphate total (as P)	0.01	mg/L	< 0.01	< 0.01	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	630	470	-	-
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	-	-
Hydroxide Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	-	-
Total Alkalinity (as CaCO3)	20	mg/L	630	470	-	-
Heavy Metals						
Arsenic	0.001	mg/L	-	-	-	< 0.001
Arsenic (filtered)	0.001	mg/L	0.002	< 0.001	-	-
Barium	0.02	mg/L	-	-	-	< 0.02
Barium (filtered)	0.02	mg/L	0.12	< 0.02	-	-
Beryllium	0.001	mg/L	-	-	-	< 0.001
Beryllium (filtered)	0.001	mg/L	< 0.001	< 0.001	-	-
Boron	0.05	mg/L	-	-	-	< 0.05
Boron (filtered)	0.05	mg/L	0.73	0.23	-	-
Cadmium	0.0002	mg/L	-	-	-	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	-	-
Chromium	0.001	mg/L	< 0.001	< 0.001	-	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	-	-
Cobalt	0.001	mg/L	-	-	-	< 0.001
Cobalt (filtered)	0.001	mg/L	0.007	< 0.001	-	-
Copper	0.001	mg/L	-	-	-	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	-	-
Iron	0.05	mg/L	-	-	-	< 0.05
Iron (filtered)	0.05	mg/L	0.99	< 0.05	-	-
Lead	0.001	mg/L	-	-	-	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	-	-
Manganese	0.005	mg/L	-	-	-	< 0.005
Manganese (filtered)	0.005	mg/L	1.7	0.018	-	-
Mercury	0.0001	mg/L	-	-	-	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Nickel	0.001	mg/L	-	-	-	< 0.001
Nickel (filtered)	0.001	mg/L	0.002	0.001	-	-
Selenium	0.001	mg/L	-	-	-	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	0.002	-	-
Vanadium	0.005	mg/L	-	-	-	< 0.005
Vanadium (filtered)	0.005	mg/L	< 0.005	< 0.005	-	-
Zinc	0.005	mg/L	-	-	-	< 0.005
Zinc (filtered)	0.005	mg/L	0.006	0.007	-	-
Alkali Metals						
Calcium (filtered)	0.5	mg/L	74	200	-	-
Magnesium (filtered)	0.5	mg/L	100	200	-	-
Potassium (filtered)	0.5	mg/L	14	6.4	-	-
Sodium (filtered)	0.5	mg/L	610	480	-	-

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Eurofins Suite B4A			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Nov 25, 2024	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Nov 25, 2024	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Nov 25, 2024	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Melbourne	Nov 25, 2024	14 Days
- Method: LTM-ORG-2010 BTEX and Volatile TRH			
Polycyclic Aromatic Hydrocarbons	Melbourne	Nov 25, 2024	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (Halogenated)	Melbourne	Nov 25, 2024	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Melbourne	Nov 25, 2024	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Total Recoverable Hydrocarbons	Melbourne	Nov 25, 2024	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Biochemical Oxygen Demand (BOD-5 Day)	Melbourne	Nov 25, 2024	2 Days
- Method: LTM-INO-4010 Biochemical Oxygen Demand (BOD5) in Water			
Chemical Oxygen Demand (COD)	Melbourne	Nov 25, 2024	28 Days
- Method: LTM-INO-4220 Determination of COD in Water			
Conductivity (at 25 °C)	Melbourne	Nov 25, 2024	28 Days
- Method: LTM-INO-4030 Conductivity			
Cyanide (total)	Melbourne	Nov 25, 2024	14 Days
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
pH (at 25 °C)	Melbourne	Nov 25, 2024	6 Hours
- Method: LTM-GEN-7090 pH in water by ISE			
Total Organic Carbon	Melbourne	Nov 25, 2024	28 Days
- Method: LTM-INO-4060 Total Organic Carbon in water and soil			
Phosphate total (as P)	Melbourne	Nov 25, 2024	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Heavy Metals	Melbourne	Nov 25, 2024	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Heavy Metals (filtered)	Melbourne	Nov 25, 2024	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Mobil Metals : Metals M15	Melbourne	Nov 25, 2024	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Eurofins Suite B11C filtered: Na/K/Ca/Mg	Melbourne	Nov 25, 2024	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, NH3, Total P			
Ammonia (as N)	Melbourne	Nov 25, 2024	28 Days
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA			
Nitrate & Nitrite (as N)	Melbourne	Nov 25, 2024	28 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Nitrate (as N)	Melbourne	Nov 25, 2024	28 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Nitrite (as N)	Melbourne	Nov 25, 2024	2 Days
- Method: LTM-INO-4450 Nitrogens by Discrete Analyser			
Organic Nitrogen (as N)*	Melbourne	Nov 22, 2024	7 Days
- Method: APHA 4500 Organic Nitrogen (N)			
Total Kjeldahl Nitrogen (as N)	Melbourne	Nov 25, 2024	28 Days

Description	Testing Site	Extracted	Holding Time
- Method: APHA 4500-Norg B,D Total Kjeldahl Nitrogen by FIA			
Eurofins Suite B11E: Cl/SO4/Alkalinity			
Chloride	Melbourne	Nov 25, 2024	28 Days
- Method: LTM-INO-4090 Chloride by Discrete Analyser			
Sulphate (as SO4)	Melbourne	Nov 25, 2024	28 Days
- Method: LTM-INO-4110 Sulfate by Discrete Analyser			
Alkalinity (speciated)	Melbourne	Nov 25, 2024	14 Days
- Method: LTM-INO-4250 Alkalinity by Electrometric Titration			
Chromium (speciated)			
Chromium (hexavalent)	Melbourne	Nov 25, 2024	28 Days
- Method: LTM-INO-4100 Hexavalent Chromium by Spectrometric detection			
Total Dissolved Solids Dried at 180 °C ± 2 °C	Melbourne	Nov 25, 2024	28 Days
- Method: LTM-INO-4170 Total Dissolved Solids in Water			

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Project Name: Mitcham Environmental Monitoring
Project ID: 240365

Order No.:
Report #: 1163239
Phone:
Fax:

Received: Nov 21, 2024 4:00 PM
Due: Nov 28, 2024
Priority: 5 Day
Contact Name: Kelsey Lees

Eurofins Analytical Services Manager : Karl Bulow

Sample Detail	Arsenic	Arsenic (filtered)	Barium	Barium (filtered)	Beryllium	Beryllium (filtered)	Biochemical Oxygen Demand (BOD-5 Day)	Boron	Boron (filtered)	Cadmium	Cadmium (filtered)	Chemical Oxygen Demand (COD)	Chromium	Chromium (filtered)	Cobalt	Cobalt (filtered)	Conductivity (at 25 °C)	Copper	Copper (filtered)	Cyanide (total)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH (at 25 °C)	Phosphate total (as P)	Selenium	Selenium (filtered)	Total Organic Carbon	TRH C6-C10	Vanadium	Vanadium (filtered)	Zinc	Zinc (filtered)	Chromium (speciated)	Eurofins Suite B4A	Eurofins Suite B19D: Total N, TKN, NOx,	Eurofins Suite B11E: Cl/SO4/Alkalinity	Total Dissolved Solids Dried at 180 °C ± 2 °C	Eurofins Suite B11C filtered: Na/K/Ca/Mg
Melbourne Laboratory - NATA # 1261 Site # 1254	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
External Laboratory																																															

No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																												
1	LLFG8	Nov 21, 2024		Water	M24-No0062128		X		X		X	X		X		X	X		X	X		X		X		X		X		X		X	X	X		X	X		X		X	X	X	X	X	X	X
2	EHGW7	Nov 21, 2024		Water	M24-No0062129		X		X		X	X		X		X	X		X	X		X		X		X		X		X		X	X	X		X	X		X		X	X	X	X	X	X	X
3	TB02	Nov 21, 2024		Water	M24-No0062130																																	X												
4	RINS02	Nov 21, 2024		Water	M24-No0062131	X		X		X			X		X			X			X			X		X		X		X		X				X		X										
Test Counts						1	2	1	2	1	2	2	1	2	1	2	2	1	2	1	2	2	1	2	1	2	1	2	1	2	1	2	1	2	2	2	1	2	1	2	2	2	2	2	2	2

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

mg/kg: milligrams per kilogram	**mg/L:** milligrams per litre	**ppm:** parts per million
µg/L: micrograms per litre	**ppb:** parts per billion	**%:** Percentage
org/100 mL: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units	**MPN/100 mL:** Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit	**Colour:** Pt-Co Units (CU)	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

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

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

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

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

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

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total*	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g.h.i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a.h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Phenols (Halogenated)							
2-Chlorophenol	mg/L	< 0.003			0.003	Pass	
2.4-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
2.4.5-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2.4.6-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2.6-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
4-Chloro-3-methylphenol	mg/L	< 0.01			0.01	Pass	
Pentachlorophenol	mg/L	< 0.01			0.01	Pass	
Tetrachlorophenols - Total	mg/L	< 0.03			0.03	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	mg/L	< 0.1			0.1	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2-Methyl-4.6-dinitrophenol	mg/L	< 0.03			0.03	Pass	
2-Nitrophenol	mg/L	< 0.01			0.01	Pass	
2.4-Dimethylphenol	mg/L	< 0.003			0.003	Pass	
2.4-Dinitrophenol	mg/L	< 0.03			0.03	Pass	
2-Methylphenol (o-Cresol)	mg/L	< 0.003			0.003	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/L	< 0.006			0.006	Pass	
4-Nitrophenol	mg/L	< 0.03			0.03	Pass	
Dinoseb	mg/L	< 0.1			0.1	Pass	
Phenol	mg/L	< 0.003			0.003	Pass	
Method Blank							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Biochemical Oxygen Demand (BOD-5 Day)	mg/L	< 5			5	Pass	
Chemical Oxygen Demand (COD)	mg/L	< 25			25	Pass	
Chloride	mg/L	< 1			1	Pass	
Chromium (hexavalent)	mg/L	< 0.005			0.005	Pass	
Conductivity (at 25 °C)	uS/cm	< 10			10	Pass	
Cyanide (total)	mg/L	< 0.005			0.005	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	mg/L	< 10			10	Pass	
Total Organic Carbon	mg/L	< 5			5	Pass	
Phosphate total (as P)	mg/L	< 0.01			0.01	Pass	
Method Blank							
Heavy Metals							
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Barium (filtered)	mg/L	< 0.02			0.02	Pass	
Beryllium (filtered)	mg/L	< 0.001			0.001	Pass	
Boron (filtered)	mg/L	< 0.05			0.05	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Cobalt (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Vanadium (filtered)	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium (filtered)	mg/L	< 0.5			0.5	Pass	
Magnesium (filtered)	mg/L	< 0.5			0.5	Pass	
Potassium (filtered)	mg/L	< 0.5			0.5	Pass	
Sodium (filtered)	mg/L	< 0.5			0.5	Pass	
Method Blank							
Sulphate (as SO4)	mg/L	< 5			5	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Barium	mg/L	< 0.02			0.02	Pass	
Beryllium	mg/L	< 0.001			0.001	Pass	
Boron	mg/L	< 0.05			0.05	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Cobalt	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Vanadium	mg/L	< 0.005			0.005	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	118			70-130	Pass	
TRH C10-C14	%	88			70-130	Pass	
TRH C6-C10	%	119			70-130	Pass	
TRH >C10-C16	%	82			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	114			70-130	Pass	
Toluene	%	112			70-130	Pass	
Ethylbenzene	%	115			70-130	Pass	
m&p-Xylenes	%	113			70-130	Pass	
Xylenes - Total*	%	113			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	80			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	97			70-130	Pass	
Acenaphthylene	%	101			70-130	Pass	
Anthracene	%	122			70-130	Pass	
Benz(a)anthracene	%	103			70-130	Pass	
Benzo(a)pyrene	%	103			70-130	Pass	
Benzo(b&j)fluoranthene	%	107			70-130	Pass	
Benzo(g.h.i)perylene	%	99			70-130	Pass	
Benzo(k)fluoranthene	%	112			70-130	Pass	
Chrysene	%	130			70-130	Pass	
Dibenz(a.h)anthracene	%	86			70-130	Pass	
Fluoranthene	%	95			70-130	Pass	
Fluorene	%	125			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	88			70-130	Pass	
Naphthalene	%	94			70-130	Pass	
Phenanthrene	%	99			70-130	Pass	
Pyrene	%	103			70-130	Pass	
LCS - % Recovery							
Phenols (Halogenated)							
2-Chlorophenol	%	105			25-140	Pass	
2.4-Dichlorophenol	%	103			25-140	Pass	
2.4.5-Trichlorophenol	%	111			25-140	Pass	
2.4.6-Trichlorophenol	%	110			25-140	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2.6-Dichlorophenol	%	107			25-140	Pass	
4-Chloro-3-methylphenol	%	104			25-140	Pass	
Pentachlorophenol	%	73			25-140	Pass	
Tetrachlorophenols - Total	%	81			25-140	Pass	
LCS - % Recovery							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	%	59			25-140	Pass	
2-Methyl-4.6-dinitrophenol	%	94			25-140	Pass	
2-Nitrophenol	%	98			25-140	Pass	
2.4-Dimethylphenol	%	118			25-140	Pass	
2.4-Dinitrophenol	%	83			25-140	Pass	
2-Methylphenol (o-Cresol)	%	99			25-140	Pass	
3&4-Methylphenol (m&p-Cresol)	%	94			25-140	Pass	
4-Nitrophenol	%	46			25-140	Pass	
Dinoseb	%	111			25-140	Pass	
Phenol	%	83			25-140	Pass	
LCS - % Recovery							
Ammonia (as N)	%	107			70-130	Pass	
Chemical Oxygen Demand (COD)	%	91			70-130	Pass	
Chloride	%	107			70-130	Pass	
Chromium (hexavalent)	%	108			70-130	Pass	
Conductivity (at 25 °C)	%	100			70-130	Pass	
Cyanide (total)	%	103			70-130	Pass	
Nitrate & Nitrite (as N)	%	119			70-130	Pass	
Nitrite (as N)	%	114			70-130	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	%	100			70-130	Pass	
Total Organic Carbon	%	120			70-130	Pass	
Phosphate total (as P)	%	102			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO3)	%	92			70-130	Pass	
Total Alkalinity (as CaCO3)	%	95			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic (filtered)	%	101			80-120	Pass	
Boron (filtered)	%	104			80-120	Pass	
Cadmium (filtered)	%	102			80-120	Pass	
Chromium	%	100			80-120	Pass	
Chromium (filtered)	%	102			80-120	Pass	
Cobalt (filtered)	%	100			80-120	Pass	
Copper (filtered)	%	101			80-120	Pass	
Iron (filtered)	%	107			80-120	Pass	
Lead (filtered)	%	103			80-120	Pass	
Manganese (filtered)	%	101			80-120	Pass	
Mercury (filtered)	%	105			80-120	Pass	
Nickel (filtered)	%	101			80-120	Pass	
Selenium (filtered)	%	103			80-120	Pass	
Zinc (filtered)	%	102			80-120	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium (filtered)	%	96			80-120	Pass	
Magnesium (filtered)	%	102			80-120	Pass	
Potassium (filtered)	%	96			80-120	Pass	
LCS - % Recovery							

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Sulphate (as SO4)			%	99			70-130	Pass	
Total Kjeldahl Nitrogen (as N)			%	119			70-130	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	94			80-120	Pass	
Barium			%	96			80-120	Pass	
Beryllium			%	95			80-120	Pass	
Boron			%	97			80-120	Pass	
Cadmium			%	104			80-120	Pass	
Cobalt			%	94			80-120	Pass	
Copper			%	95			80-120	Pass	
Iron			%	102			80-120	Pass	
Lead			%	100			80-120	Pass	
Manganese			%	93			80-120	Pass	
Mercury			%	106			80-120	Pass	
Nickel			%	95			80-120	Pass	
Selenium			%	98			80-120	Pass	
Vanadium			%	99			80-120	Pass	
Zinc			%	97			80-120	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Total Recoverable Hydrocarbons				Result 1					
TRH C6-C9	M24-No0065617	NCP	%	80			70-130	Pass	
TRH C10-C14	M24-No0065828	NCP	%	79			70-130	Pass	
TRH C6-C10	M24-No0065617	NCP	%	79			70-130	Pass	
TRH >C10-C16	M24-No0065828	NCP	%	77			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M24-No0065617	NCP	%	79			70-130	Pass	
Toluene	M24-No0065617	NCP	%	78			70-130	Pass	
Ethylbenzene	M24-No0065617	NCP	%	79			70-130	Pass	
m&p-Xylenes	M24-No0065617	NCP	%	79			70-130	Pass	
o-Xylene	M24-No0065617	NCP	%	79			70-130	Pass	
Xylenes - Total*	M24-No0065617	NCP	%	79			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M24-No0065617	NCP	%	97			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M24-No0061344	NCP	%	106			70-130	Pass	
Chemical Oxygen Demand (COD)	N24-No0061591	NCP	%	88			70-130	Pass	
Chromium (hexavalent)	M24-No0067407	NCP	%	100			70-130	Pass	
Cyanide (total)	L24-No0059672	NCP	%	102			70-130	Pass	
Nitrate & Nitrite (as N)	M24-No0061428	NCP	%	102			70-130	Pass	
Nitrite (as N)	M24-No0061428	NCP	%	102			70-130	Pass	
Sulphate (as SO4)	M24-No0057744	NCP	%	109			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	B24-No0060474	NCP	%	111			70-130	Pass	
Phosphate total (as P)	M24-No0061439	NCP	%	98			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	M24-No0065789	NCP	%	99			75-125	Pass	
Barium (filtered)	M24-No0065789	NCP	%	101			75-125	Pass	
Beryllium (filtered)	M24-No0065789	NCP	%	101			75-125	Pass	
Cadmium (filtered)	M24-No0065789	NCP	%	103			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium	M24-No0062251	NCP	%	98			75-125	Pass	
Chromium (filtered)	M24-No0065789	NCP	%	101			75-125	Pass	
Cobalt (filtered)	M24-No0065789	NCP	%	98			75-125	Pass	
Copper (filtered)	M24-No0065789	NCP	%	100			75-125	Pass	
Iron (filtered)	M24-No0065789	NCP	%	99			75-125	Pass	
Lead (filtered)	M24-No0065789	NCP	%	104			75-125	Pass	
Manganese (filtered)	M24-No0065789	NCP	%	100			75-125	Pass	
Mercury (filtered)	M24-No0065789	NCP	%	97			75-125	Pass	
Nickel (filtered)	M24-No0065789	NCP	%	100			75-125	Pass	
Selenium (filtered)	M24-No0065789	NCP	%	99			75-125	Pass	
Vanadium (filtered)	M24-No0065789	NCP	%	98			75-125	Pass	
Zinc (filtered)	M24-No0065789	NCP	%	100			75-125	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium (filtered)	M24-No0065622	NCP	%	89			75-125	Pass	
Magnesium (filtered)	M24-No0065622	NCP	%	79			75-125	Pass	
Potassium (filtered)	M24-No0065622	NCP	%	92			75-125	Pass	
Sodium (filtered)	M24-No0069908	NCP	%	89			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M24-No0062251	NCP	%	98			75-125	Pass	
Barium	M24-No0062251	NCP	%	79			75-125	Pass	
Beryllium	M24-No0062251	NCP	%	99			75-125	Pass	
Boron	M24-No0061271	NCP	%	89			75-125	Pass	
Cadmium	M24-No0062251	NCP	%	98			75-125	Pass	
Cobalt	M24-No0062251	NCP	%	96			75-125	Pass	
Copper	M24-No0062251	NCP	%	97			75-125	Pass	
Iron	M24-No0062251	NCP	%	95			75-125	Pass	
Lead	M24-No0062251	NCP	%	102			75-125	Pass	
Manganese	M24-No0062251	NCP	%	76			75-125	Pass	
Mercury	M24-No0062251	NCP	%	104			75-125	Pass	
Nickel	M24-No0062251	NCP	%	96			75-125	Pass	
Selenium	M24-No0062251	NCP	%	96			75-125	Pass	
Vanadium	M24-No0062251	NCP	%	101			75-125	Pass	
Zinc	M24-No0062251	NCP	%	118			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	M24-No0070237	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	M24-No0056158	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M24-No0056158	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M24-No0056158	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C6-C10	M24-No0070237	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C10-C16	M24-No0056158	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	M24-No0056158	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	M24-No0056158	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M24-No0070237	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M24-No0070237	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M24-No0070237	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	M24-No0070237	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	M24-No0070237	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total*	M24-No0070237	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M24-No0070237	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M24-No0067407	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Acenaphthylene	M24-No0067407	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Anthracene	M24-No0067407	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benz(a)anthracene	M24-No0067407	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(a)pyrene	M24-No0067407	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(b&j)fluoranthene	M24-No0067407	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(g.h.i)perylene	M24-No0067407	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(k)fluoranthene	M24-No0067407	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chrysene	M24-No0067407	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dibenz(a.h)anthracene	M24-No0067407	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluoranthene	M24-No0067407	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluorene	M24-No0067407	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M24-No0067407	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Naphthalene	M24-No0067407	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Phenanthrene	M24-No0067407	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Pyrene	M24-No0067407	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
Phenols (Halogenated)				Result 1	Result 2	RPD			
2-Chlorophenol	M24-No0067407	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
2.4-Dichlorophenol	M24-No0067407	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
2.4.5-Trichlorophenol	M24-No0067407	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
2.4.6-Trichlorophenol	M24-No0067407	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
2.6-Dichlorophenol	M24-No0067407	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
4-Chloro-3-methylphenol	M24-No0067407	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Pentachlorophenol	M24-No0067407	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Tetrachlorophenols - Total	M24-No0067407	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass	
Duplicate									
Phenols (non-Halogenated)				Result 1	Result 2	RPD			
2-Cyclohexyl-4.6-dinitrophenol	M24-No0067407	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
2-Methyl-4.6-dinitrophenol	M24-No0067407	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass	
2-Nitrophenol	M24-No0067407	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
2.4-Dimethylphenol	M24-No0067407	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
2.4-Dinitrophenol	M24-No0067407	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass	
2-Methylphenol (o-Cresol)	M24-No0067407	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
3&4-Methylphenol (m&p-Cresol)	M24-No0067407	NCP	mg/L	< 0.006	< 0.006	<1	30%	Pass	
4-Nitrophenol	M24-No0067407	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass	
Dinoseb	M24-No0067407	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Phenol	M24-No0067407	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M24-No0064496	NCP	mg/L	0.01	0.01	15	30%	Pass	
Biochemical Oxygen Demand (BOD-5 Day)	M24-No0068428	NCP	mg/L	< 5	< 5	<1	30%	Pass	
Chemical Oxygen Demand (COD)	M24-No0061740	NCP	mg/L	2300	2300	1.0	30%	Pass	
Chloride	M24-No0065622	NCP	mg/L	5700	5900	2.0	30%	Pass	
Chromium (hexavalent)	M24-No0065828	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Conductivity (at 25 °C)	M24-No0061742	NCP	uS/cm	1900	1900	2.2	30%	Pass	
Cyanide (total)	M24-No0064860	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Nitrate & Nitrite (as N)	M24-No0064496	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M24-No0058925	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M24-No0064496	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	

Duplicate									
				Result 1	Result 2	RPD			
pH (at 25 °C)	M24-No0061742	NCP	pH Units	7.7	7.5	pass	30%	Pass	
Sulphate (as SO4)	M24-No0065622	NCP	mg/L	860	850	1.0	30%	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	M24-No0061335	NCP	mg/L	1700	1600	8.8	30%	Pass	
Total Organic Carbon	M24-No0052369	NCP	mg/L	23	**	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M24-No0061742	NCP	mg/L	380	380	1.9	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M24-No0061742	NCP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M24-No0061742	NCP	mg/L	< 20	< 20	<1	30%	Pass	
Total Alkalinity (as CaCO3)	M24-No0061742	NCP	mg/L	380	380	1.9	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	M24-No0065789	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Barium (filtered)	M24-No0065789	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Beryllium (filtered)	M24-No0065789	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	M24-No0065789	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	M24-No0062251	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium (filtered)	M24-No0065789	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cobalt (filtered)	M24-No0065789	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M24-No0065789	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	M24-No0065789	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead (filtered)	M24-No0065789	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	M24-No0065789	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury (filtered)	M24-No0065789	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	M24-No0065789	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	M24-No0065789	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Vanadium (filtered)	M24-No0065789	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc (filtered)	M24-No0065789	NCP	mg/L	< 0.005	0.005	150	30%	Fail	Q15
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium (filtered)	M24-No0065622	NCP	mg/L	190	190	2.0	30%	Pass	
Magnesium (filtered)	M24-No0065622	NCP	mg/L	470	450	3.0	30%	Pass	
Potassium (filtered)	M24-No0065622	NCP	mg/L	< 5	< 5	<1	30%	Pass	
Sodium (filtered)	M24-No0065622	NCP	mg/L	2700	2600	3.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M24-No0062251	NCP	mg/L	0.003	0.003	7.0	30%	Pass	
Barium	M24-No0062251	NCP	mg/L	0.18	0.18	<1	30%	Pass	
Beryllium	M24-No0062251	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Boron	M24-No0062251	NCP	mg/L	0.43	0.42	3.0	30%	Pass	
Cadmium	M24-No0062251	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Cobalt	M24-No0062251	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M24-No0062251	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M24-No0062251	NCP	mg/L	0.52	0.53	<1	30%	Pass	
Lead	M24-No0062251	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M24-No0062251	NCP	mg/L	0.17	0.17	<1	30%	Pass	
Mercury	M24-No0062251	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M24-No0062251	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	M24-No0062251	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Vanadium	M24-No0062251	NCP	mg/L	0.006	0.007	11	30%	Pass	
Zinc	M24-No0062251	NCP	mg/L	0.018	0.015	17	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Harry Bacalis	Analytical Services Manager
Caitlin Breeze	Senior Analyst-Inorganic
Carroll Lee	Senior Analyst-Organic
Carroll Lee	Senior Analyst-Volatile
Emily Rosenberg	Senior Analyst-Metal
Luke Holt	Senior Analyst-Inorganic
Mary Makarios	Senior Analyst-Inorganic
Mary Makarios	Senior Analyst-Metal
Mele Singh	Senior Analyst-Volatile

Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

SF11: CHAIN OF CUSTODY

REF: 240365

COPY

tonkin

Laboratory Name:	Eurofins MGT
Laboratory Address:	6 Monterey Road, Dandenong South VIC 3175
Laboratory Contact:	Karl Bulow
phone:	0477 574 867
email:	karl.bulow@eurofinsanz.com
Quotation No:	Pricebook 2024
Delivery by:	
Consignment Note:	

Job No:	240365		
Details:	Mitcham Environmental Monitoring	Sampled by:	KL
Date Sampled:	20/11/24	Address:	Level 2, 170 Frome St, Adelaide 5000
Consultant:	Tonking Consulting	Phone:	(08) 8273 3100
Contact:	Kelsey Lees	Email:	environmental@tonkin.com.au
Email:	kelsey.lees@tonkin.com.au		

Lab Sample Identification	Sample Identification	Matrix Container / Preservation	pH, EC, TDS	TOC	Cyanide (Total)	*B19D (Nutrients)	*B11C (Cations)	*B11E (Anions)	B4A (TRH, BTEXN, PAHs, Phenols)	BOD, COD	**Dissolved Metals	Speciated Chromium	Total Metals	TRH C6-C10		
													X			
	RLW01	water	X	X	X	X	X	X	X	X	X	X				
	DUP01	water	X	X	X	X	X	X	X	X	X	X				
	DUP02	water											X *PLEASE FORWARD TO ALS			
	TB01	water														
	LL3	water	X	X	X	X	X	X	X	X	X	X				
	LL4	water	X	X	X	X	X	X	X	X	X	X				
	LLFG3	water	X	X	X	X	X	X	X	X	X	X				
	LLFG4	water	X	X	X	X	X	X	X	X	X	X				
	LLFG5	water	X	X	X	X	X	X	X	X	X	X				
	LLFG10	water	X	X	X	X	X	X	X	X	X	X				

Number of Samples:

Notes / Deviations from Standard Protocols

Please email results to our LabSync Email at ESdat_AU+TonkinConsulting@ESdatLabSync.net

*Nutrients: Total N, TKN, NOx, NO2, NO3, NH3, Total P

*Cations: Na, K, Ca, Mg

*Anions: Cl, SO4, Alkalinity (CO3, HCO3, OH, Total alkalinity, CaCO3)

**Metals: As, Ba, Be, B, Cd, Co, Cu, Cr, Hg, Mn, Ni, Pb, Se, Zn, V, Fe

Environmental Division
Melbourne
Work Order Reference
EM2420487

Telephone : + 61-3-8549 9600

Sample Preservation:
Samples must be transported and stored in a chilled or cold condition at all times
COC must remain with samples

ANALYSING LABORATORY:
Please email sample receipt to the environmental@tonkin.com.au email IMMEDIATELY on receipt of samples and return original COC with final results

Relinquished by:	Kelsey Lees
Date and time:	20/11/24 3pm
Company:	Tonkin
Signature	
Received in good condition by:	PAE …mal
Date and Time:	20/11 3pm
Company:	Eurofins
Signature	

15.3°C

Relinquished by:	Chris A
Date and time:	22/11/24
Company:	Eurofins
Signature	
Received in good condition by:	Andrew
Date and Time:	22.11.24 1203
Company:	ALS
Signature	

Relinquished	
Date and tin	
Company:	
Signature	
Received in	
Date and Ti	
Company:	
Signature	

CERTIFICATE OF ANALYSIS

Work Order	: **EM2420487**	Page	: 1 of 8
Client	: **TONKIN CONSULTING**	Laboratory	: Environmental Division Melbourne
Contact	: KELSEY LEES	Contact	: Customer Services EM
Address	: LEVEL 2, 170 FROME STREET ADELAIDE SA, AUSTRALIA 5000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9600
Project	: 240365	Date Samples Received	: 22-Nov-2024 12:03
Order number	: ----	Date Analysis Commenced	: 22-Nov-2024
C-O-C number	: ----	Issue Date	: 30-Nov-2024 14:04
Sampler	: KL		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Jarwis Nheu	Non-Metals Team Leader	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 Contract for details.

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

- 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.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene 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.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO2 and Fluoride to the Anions.
- 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.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DUP02	----	----	----	----
				Sampling date / time	20-Nov-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2420487-001	--------	--------	--------	--------
					Result	----	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		**7.74**	----	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		**3910**	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		**2120**	----	----	----	----
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		**646**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L		**646**	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		**163**	----	----	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		**1020**	----	----	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		**131**	----	----	----	----
Magnesium	7439-95-4	1	mg/L		**119**	----	----	----	----
Sodium	7440-23-5	1	mg/L		**642**	----	----	----	----
Potassium	7440-09-7	1	mg/L		**14**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L		<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L		**0.034**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		**0.0001**	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DUP02	----	----	----	----
				Sampling date / time	20-Nov-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2420487-001	--------	--------	--------	--------
					Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued									
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L		**0.028**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L		<0.01	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		**0.013**	----	----	----	----
Boron	7440-42-8	0.05	mg/L		**0.54**	----	----	----	----
Iron	7439-89-6	0.05	mg/L		**0.06**	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EG049F: Dissolved Trivalent Chromium									
Trivalent Chromium	16065-83-1	0.01	mg/L		<0.01	----	----	----	----
EG050F: Dissolved Hexavalent Chromium									
Hexavalent Chromium	18540-29-9	0.01	mg/L		<0.01	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		<0.004	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		<0.01	----	----	----	----
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		**0.13**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		**0.14**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**0.3**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ **Total Nitrogen as N**	----	0.1	mg/L		**0.4**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DUP02	----	----	----	----
				Sampling date / time	20-Nov-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2420487-001	--------	--------	--------	--------
					Result	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.10**	----	----	----	----
EN055: Ionic Balance									
ø Total Anions	----	0.01	meq/L		**45.1**	----	----	----	----
ø Total Cations	----	0.01	meq/L		**44.6**	----	----	----	----
ø Ionic Balance	----	0.01	%		**0.51**	----	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		**2**	----	----	----	----
EP026SP: Chemical Oxygen Demand (Spectrophotometric)									
Chemical Oxygen Demand	----	10	mg/L		**33**	----	----	----	----
EP030: Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	----	2	mg/L		<2	----	----	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	1.0	µg/L		<1.0	----	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L		<1.0	----	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L		<1.0	----	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L		<2.0	----	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L		<1.0	----	----	----	----
2.4-Dimethylphenol	105-67-9	1.0	µg/L		<1.0	----	----	----	----
2.4-Dichlorophenol	120-83-2	1.0	µg/L		<1.0	----	----	----	----
2.6-Dichlorophenol	87-65-0	1.0	µg/L		<1.0	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L		<1.0	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L		<1.0	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L		<1.0	----	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L		<2.0	----	----	----	----
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	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DUP02	----	----	----	----
				Sampling date / time	20-Nov-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2420487-001	--------	--------	--------	--------
					Result	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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	----	----	----	----
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	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DUP02	----	----	----	----
				Sampling date / time	20-Nov-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2420487-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>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	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		**30.2**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		**64.5**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	1.0	%		**103**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		**83.1**	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%		**98.2**	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		**83.9**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**102**	----	----	----	----
Toluene-D8	2037-26-5	2	%		**104**	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		**124**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
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
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

QUALITY CONTROL REPORT

Work Order	: **EM2420487**	Page	: 1 of 10
Client	: **TONKIN CONSULTING**	Laboratory	: Environmental Division Melbourne
Contact	: KELSEY LEES	Contact	: Customer Services EM
Address	: LEVEL 2, 170 FROME STREET ADELAIDE SA, AUSTRALIA 5000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9600
Project	: 240365	Date Samples Received	: 22-Nov-2024
Order number	: ----	Date Analysis Commenced	: 22-Nov-2024
C-O-C number	: ----	Issue Date	: 30-Nov-2024
Sampler	: KL		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Accreditation Category*
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Jarwis Nheu	Non-Metals Team Leader	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.

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA005P: pH by PC Titrator (QC Lot: 6210016)									
EM2420482-004	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.36	7.40	0.5	0% - 20%
EM2420462-003	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	5.79	5.75	0.7	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 6210014)									
EM2420482-004	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	807	803	0.5	0% - 20%
EM2420462-003	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	2	1	0.0	No Limit
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6213049)									
EM2420421-010	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	313	341	8.6	0% - 20%
EM2420456-003	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	8320	8110	2.6	0% - 20%
EM2420475-003	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	31200	32900	5.2	0% - 20%
EM2420501-003	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	10700	10200	5.0	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 6210015)									
EM2420482-004	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	79	78	0.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	79	78	0.0	0% - 20%
EM2420462-003	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	0.0	No Limit
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 6208648)									
EM2420487-001	DUP02	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	163	158	3.3	0% - 20%
EM2420510-009	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	326	323	0.9	0% - 20%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
ED045G: Chloride by Discrete Analyser (QC Lot: 6208650)									
EM2420487-001	DUP02	ED045G: Chloride	16887-00-6	1	mg/L	1020	1020	0.5	0% - 20%
EM2420510-009	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	1640	1680	2.0	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 6218161)									
EM2420434-003	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	<1	<1	0.0	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	<1	<1	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	<1	<1	0.0	No Limit
		ED093F: Potassium	7440-09-7	1	mg/L	<1	<1	0.0	No Limit
EM2420524-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	22	23	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	43	45	2.9	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	272	273	0.6	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	3	3	0.0	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 6218160)									
EM2418423-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.032	0.031	0.0	0% - 20%
		EG020A-F: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Barium	7440-39-3	0.001	mg/L	0.011	0.011	0.0	0% - 50%
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-F: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.166	0.163	1.9	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.018	0.021	13.1	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Boron	7440-42-8	0.05	mg/L	0.06	0.06	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	2.26	2.29	1.4	0% - 20%
EM2420452-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.012	0.012	0.0	0% - 50%
		EG020A-F: Beryllium	7440-41-7	0.001	mg/L	0.016	0.016	0.0	0% - 50%
		EG020A-F: Barium	7440-39-3	0.001	mg/L	0.020	0.018	6.7	0% - 50%
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-F: Cobalt	7440-48-4	0.001	mg/L	0.215	0.217	1.0	0% - 20%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	15.6	16.0	2.9	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.235	0.236	0.4	0% - 20%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG020F: Dissolved Metals by ICP-MS (QC Lot: 6218160) - continued									
EM2420452-001	Anonymous	EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.524	0.518	1.2	0% - 20%
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Boron	7440-42-8	0.05	mg/L	1.52	1.48	2.8	0% - 20%
		EG020A-F: Iron	7439-89-6	0.05	mg/L	386	386	0.1	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 6218162)									
EM2420496-003	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EM2420434-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 6220296)									
EM2418423-001	Anonymous	EG050G-F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EM2420262-016	Anonymous	EG050G-F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 6211599)									
EM2420487-001	DUP02	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.0	No Limit
EP2417098-002	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	0.041	0.041	0.0	0% - 50%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6211341)									
EM2420354-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	5.17	5.12	1.0	0% - 20%
EM2420482-007	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.14	0.13	0.0	0% - 50%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6208649)									
EM2420487-001	DUP02	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.01	0.01	0.0	No Limit
EM2420510-009	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6211342)									
EM2420354-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	29.4	30.0	1.9	0% - 20%
EM2420482-007	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.09	0.08	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6213627)									
EM2420450-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.4	1.2	12.8	0% - 50%
EM2420515-005	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.5	0.5	0.0	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6213626)									
EM2420356-002	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.03	0.01	62.6	No Limit
EM2420450-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.04	0.04	0.0	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 6220107)									
EM2420434-002	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	<1	<1	0.0	No Limit
EM2420450-003	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	34	34	0.0	0% - 20%
EP026SP: Chemical Oxygen Demand (Spectrophotometric) (QC Lot: 6212298)									
EM2420420-011	Anonymous	EP026SP: Chemical Oxygen Demand	----	10	mg/L	369	333	10.3	0% - 20%
EM2420498-001	Anonymous	EP026SP: Chemical Oxygen Demand	----	10	mg/L	56	52	7.4	No Limit
EP030: Biochemical Oxygen Demand (BOD) (QC Lot: 6208595)									

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP030: Biochemical Oxygen Demand (BOD) (QC Lot: 6208595) - continued									
EM2420487-001	DUP02	EP030: Biochemical Oxygen Demand	----	2	mg/L	<2	<2	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 6210169)									
EM2420456-005	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 6215695)									
EM2420496-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EM2420498-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 6210169)									
EM2420456-005	Anonymous	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 6215695)									
EM2420496-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EM2420498-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 6215695)									
EM2420496-002	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
EM2420498-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit

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

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

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA005P: pH by PC Titrator (QCLot: 6210016)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	98.8	101
				----	7 pH Unit	100	99.3	101
EA010P: Conductivity by PC Titrator (QCLot: 6210014)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	97.7	85.0	119
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6213049)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	104	91.0	110
				<10	2340 mg/L	111	80.8	119
				<10	293 mg/L	96.2	91.0	110
ED037P: Alkalinity by PC Titrator (QCLot: 6210015)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	94.2	85.0	116
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 6208648)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	500 mg/L	105	90.0	110
				<1	25 mg/L	97.6	90.0	110
ED045G: Chloride by Discrete Analyser (QCLot: 6208650)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	1000 mg/L	108	90.0	110
				<1	10 mg/L	103	90.0	110
ED093F: Dissolved Major Cations (QCLot: 6218161)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	101	80.0	120
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	104	80.0	120
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	103	80.0	120
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	99.4	80.0	120
EG020F: Dissolved Metals by ICP-MS (QCLot: 6218160)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	99.9	89.0	111
EG020A-F: Beryllium	7440-41-7	0.001	mg/L	<0.001	0.1 mg/L	98.2	85.0	112
EG020A-F: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	104	83.6	113
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	94.2	83.5	111
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	96.4	83.2	109
EG020A-F: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	94.6	84.3	110
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	98.8	83.1	107
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	97.7	84.6	108

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG020F: Dissolved Metals by ICP-MS (QCLot: 6218160) - continued								
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	95.0	84.8	110
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	98.0	84.3	110
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	102	82.3	113
EG020A-F: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	95.5	83.7	110
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	104	86.3	112
EG020A-F: Boron	7440-42-8	0.05	mg/L	<0.05	0.5 mg/L	96.3	85.4	115
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	99.8	91.8	112
EG035F: Dissolved Mercury by FIMS (QCLot: 6218162)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	110	71.6	116
EG050F: Dissolved Hexavalent Chromium (QCLot: 6220296)								
EG050G-F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	103	80.0	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 6211599)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	102	77.7	116
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6211341)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	95.0	90.0	110
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6208649)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	105	90.0	110
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6211342)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	99.1	90.0	110
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6213627)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	5 mg/L	102	70.0	117
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6213626)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	2.21 mg/L	90.9	71.9	114
EP005: Total Organic Carbon (TOC) (QCLot: 6220107)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	91.6	81.2	110
EP026SP: Chemical Oxygen Demand (Spectrophotometric) (QCLot: 6212298)								
EP026SP: Chemical Oxygen Demand	----	10	mg/L	<10	500 mg/L	104	89.7	111
EP030: Biochemical Oxygen Demand (BOD) (QCLot: 6208595)								
EP030: Biochemical Oxygen Demand	----	2	mg/L	<2	198 mg/L	99.3	79.5	122
EP075(SIM)A: Phenolic Compounds (QCLot: 6210170)								
EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	5 µg/L	35.2	17.8	51.1
EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	5 µg/L	80.7	43.2	107
EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	5 µg/L	78.3	39.2	98.7
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	10 µg/L	71.1	35.5	91.3

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP075(SIM)A: Phenolic Compounds (QCLot: 6210170) - continued								
EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	5 µg/L	122	34.4	124
EP075(SIM): 2.4-Dimethylphenol	105-67-9	1	µg/L	<1.0	5 µg/L	85.3	44.4	112
EP075(SIM): 2.4-Dichlorophenol	120-83-2	1	µg/L	<1.0	5 µg/L	91.0	45.3	115
EP075(SIM): 2.6-Dichlorophenol	87-65-0	1	µg/L	<1.0	5 µg/L	92.5	44.3	116
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	5 µg/L	95.6	46.6	117
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	1	µg/L	<1.0	5 µg/L	92.1	38.2	122
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	1	µg/L	<1.0	5 µg/L	95.9	43.2	123
EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	10 µg/L	76.5	48.1	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 6210170)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	78.7	42.8	114
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	87.9	48.6	119
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	87.4	47.0	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	93.6	49.5	119
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	95.9	49.4	121
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	94.3	48.4	122
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	88.0	50.3	124
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	94.5	50.0	126
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	85.7	49.4	127
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	98.1	48.7	126
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	95.7	54.5	134
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	97.0	56.1	134
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	97.3	55.6	135
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	93.1	54.4	126
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	92.3	54.5	126
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	92.2	54.4	126
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6210169)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4421 µg/L	101	47.2	122
EP071: C15 - C28 Fraction	----	100	µg/L	<100	15219 µg/L	108	52.9	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	7904 µg/L	108	50.4	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6215695)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	100	66.2	134
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6210169)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6085 µg/L	105	49.1	125

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6210169) - continued								
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	20300 µg/L	108	51.6	128
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1456 µg/L	113	47.2	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6215695)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	98.9	66.2	132
EP080: BTEXN (QCLot: 6215695)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	98.7	68.8	127
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	100	72.9	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	99.9	71.7	130
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	109	72.3	136
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	111	75.9	134
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	102	68.3	131

Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 6208648)							
EM2420510-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	72.3	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 6208650)							
EM2420510-001	Anonymous	ED045G: Chloride	16887-00-6	400 mg/L	# Not Determined	70.0	142
EG020F: Dissolved Metals by ICP-MS (QCLot: 6218160)							
EM2418423-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	95.4	76.6	124
		EG020A-F: Beryllium	7440-41-7	0.2 mg/L	96.9	73.0	120
		EG020A-F: Barium	7440-39-3	0.2 mg/L	100	75.0	127
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	91.3	74.6	118
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	94.1	71.0	135
		EG020A-F: Cobalt	7440-48-4	0.2 mg/L	90.6	78.0	132
		EG020A-F: Copper	7440-50-8	0.2 mg/L	94.4	76.0	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	92.7	75.0	133
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	90.0	64.0	134
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	94.3	73.0	131
		EG020A-F: Vanadium	7440-62-2	0.2 mg/L	91.3	73.0	131

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 6218160) - continued							
EM2418423-001	Anonymous	EG020A-F: Zinc	7440-66-6	0.2 mg/L	100	75.0	131
EG035F: Dissolved Mercury by FIMS (QCLot: 6218162)							
EM2420434-004	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	111	70.0	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 6220296)							
EM2418423-002	Anonymous	EG050G-F: Hexavalent Chromium	18540-29-9	0.5 mg/L	108	80.0	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 6211599)							
EM2420531-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	93.8	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6211341)							
EM2420356-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	92.3	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 6208649)							
EM2420510-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	81.5	80.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6211342)							
EM2420356-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	94.0	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6213627)							
EM2420408-005	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	25 mg/L	106	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6213626)							
EM2420356-001	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	93.6	70.0	130
EP005: Total Organic Carbon (TOC) (QCLot: 6220107)							
EM2420434-003	Anonymous	EP005: Total Organic Carbon	----	100 mg/L	97.9	76.6	125
EP026SP: Chemical Oxygen Demand (Spectrophotometric) (QCLot: 6212298)							
EM2420482-001	Anonymous	EP026SP: Chemical Oxygen Demand	----	500 mg/L	108	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6215695)							
EM2420496-001	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	70.6	33.9	126
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6215695)							
EM2420496-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	68.3	34.0	122
EP080: BTEXN (QCLot: 6215695)							
EM2420496-001	Anonymous	EP080: Benzene	71-43-2	20 µg/L	88.2	56.3	133
		EP080: Toluene	108-88-3	20 µg/L	90.5	60.4	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2420487**	Page	: 1 of 10
Client	: **TONKIN CONSULTING**	Laboratory	: Environmental Division Melbourne
Contact	: KELSEY LEES	Telephone	: +61-3-8549 9600
Project	: 240365	Date Samples Received	: 22-Nov-2024
Site	: ----	Issue Date	: 30-Nov-2024
Sampler	: KL	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

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

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
ED045G: Chloride by Discrete Analyser	EM2420510--001	Anonymous	**Chloride**	16887-00-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural DUP02	----	----	----	26-Nov-2024	20-Nov-2024	**6**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Analytical Methods	Method	Count: QC	Count: Regular	Rate (%): Actual	Rate (%): Expected	Quality Control Specification
Laboratory Duplicates (DUP)						
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	20	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) DUP02	**20-Nov-2024**	**----**	----	**----**	**26-Nov-2024**	20-Nov-2024	×

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P)							
DUP02	20-Nov-2024	----	----	----	26-Nov-2024	18-Dec-2024	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H)							
DUP02	20-Nov-2024	----	----	----	26-Nov-2024	27-Nov-2024	✓
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P)							
DUP02	20-Nov-2024	----	----	----	26-Nov-2024	04-Dec-2024	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G)							
DUP02	20-Nov-2024	----	----	----	22-Nov-2024	18-Dec-2024	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G)							
DUP02	20-Nov-2024	----	----	----	22-Nov-2024	18-Dec-2024	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F)							
DUP02	20-Nov-2024	----	----	----	28-Nov-2024	18-Dec-2024	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)							
DUP02	20-Nov-2024	----	----	----	28-Nov-2024	19-May-2025	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)							
DUP02	20-Nov-2024	----	----	----	28-Nov-2024	18-Dec-2024	✓
EG050F: Dissolved Hexavalent Chromium							
Clear Plastic Bottle - NaOH Filtered (EG050G-F)							
DUP02	20-Nov-2024	----	----	----	28-Nov-2024	18-Dec-2024	✓
EK026SF: Total CN by Segmented Flow Analyser							
Black Opaque Plastic Bottle - NaOH (EK026SF)							
DUP02	20-Nov-2024	----	----	----	27-Nov-2024	04-Dec-2024	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G)							
DUP02	20-Nov-2024	----	----	----	29-Nov-2024	18-Dec-2024	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G)							
DUP02	20-Nov-2024	----	----	----	22-Nov-2024	22-Nov-2024	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G)							
DUP02	20-Nov-2024	----	----	----	29-Nov-2024	18-Dec-2024	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
DUP02	**20-Nov-2024**	**27-Nov-2024**	18-Dec-2024	✓	**28-Nov-2024**	18-Dec-2024	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
DUP02	**20-Nov-2024**	**27-Nov-2024**	18-Dec-2024	✓	**28-Nov-2024**	18-Dec-2024	✓
EP005: Total Organic Carbon (TOC)							
Amber TOC Vial - Sulfuric Acid (EP005)							
DUP02	**20-Nov-2024**	**----**	----	----	**28-Nov-2024**	18-Dec-2024	✓
EP026SP: Chemical Oxygen Demand (Spectrophotometric)							
Clear Plastic Bottle - Sulfuric Acid (EP026SP)							
DUP02	**20-Nov-2024**	**----**	----	----	**25-Nov-2024**	18-Dec-2024	✓
EP030: Biochemical Oxygen Demand (BOD)							
Clear Plastic Bottle - Natural (EP030)							
DUP02	**20-Nov-2024**	**----**	----	----	**22-Nov-2024**	22-Nov-2024	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
DUP02	**20-Nov-2024**	**25-Nov-2024**	27-Nov-2024	✓	**27-Nov-2024**	04-Jan-2025	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
DUP02	**20-Nov-2024**	**25-Nov-2024**	27-Nov-2024	✓	**27-Nov-2024**	04-Jan-2025	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
DUP02	**20-Nov-2024**	**25-Nov-2024**	27-Nov-2024	✓	**27-Nov-2024**	04-Jan-2025	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
DUP02	**20-Nov-2024**	**26-Nov-2024**	04-Dec-2024	✓	**27-Nov-2024**	04-Dec-2024	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071)							
DUP02	**20-Nov-2024**	**25-Nov-2024**	27-Nov-2024	✓	**27-Nov-2024**	04-Jan-2025	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
DUP02	**20-Nov-2024**	**26-Nov-2024**	04-Dec-2024	✓	**27-Nov-2024**	04-Dec-2024	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
DUP02	**20-Nov-2024**	**26-Nov-2024**	04-Dec-2024	✓	**27-Nov-2024**	04-Dec-2024	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Alkalinity by Auto Titrator	ED037-P	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Biochemical Oxygen Demand (BOD)	EP030	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chemical Oxygen Demand (COD) (Spectrophotometric)	EP026SP	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	9	**22.22**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Dissolved	EG050G-F	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	1	**200.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	10	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	36	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by Auto Titrator	ED037-P	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Biochemical Oxygen Demand (BOD)	EP030	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chemical Oxygen Demand (COD) (Spectrophotometric)	EP026SP	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	9	**22.22**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Dissolved	EG050G-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Control Samples (LCS) - Continued							
pH by Auto Titrator	EA005-P	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	10	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	36	**8.33**	**7.50**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Biochemical Oxygen Demand (BOD)	EP030	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chemical Oxygen Demand (COD) (Spectrophotometric)	EP026SP	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Dissolved	EG050G-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	36	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chemical Oxygen Demand (COD) (Spectrophotometric)	EP026SP	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Dissolved	EG050G-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP005	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	20	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Alkalinity by Auto Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) on a settled supernatant aliquot of the sample using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm.
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Trivalent Chromium - Dissolved	EG049G-F	WATER	In house: Referenced to APHA 3500 Cr-B & 3120/3125. Trivalent Chromium is the difference between total dissolved and dissolved hexavalent chromium.

Analytical Methods	Method	Matrix	Method Descriptions
Hexavalent Chromium by Discrete Analyser - Dissolved	EG050G-F	WATER	In house: Referenced to APHA 3500 Cr-A & B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined directly on water sample by Descrete Analyser as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM Schedule B(3).
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C&O / ASTM D7511 / ISO 14403. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030E. This method is compliant with NEPM Schedule B(3)
Total Organic Carbon	EP005	WATER	In house: Referenced to APHA 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM Schedule B(3)
Chemical Oxygen Demand (COD) (Spectrophotometric)	EP026SP	WATER	In house: Referenced to APHA 5220 D. Samples are digested with a known excess of an acidic potassium dichromate solution using silver sulfate as a catalyst. The chromium is reduced from the Cr (VI) oxidation state to the Cr (III) state by the oxygen present in the organic material. Both of these chromium species are coloured and absorb in the visible region of (400nm & 600nm) the spectrum. The oxidisable organic matter can be calculated in terms of oxygen equivalents.

Analytical Methods	Method	Matrix	Method Descriptions
Biochemical Oxygen Demand (BOD)	EP030	WATER	In house: Referenced to APHA 5210 B. The 5-Day BOD test provides an empirical measure of the oxygen consumption capacity of a given water. A portion of the sample is diluted into oxygenated, nutrient rich water, and a seed added to begin biological decay. The initial dissolved oxygen content is measured, then the bottle is sealed and incubated for five days. The remaining dissolved oxygen is measured, and from the difference, the demand for oxygen, by biological decay, is determined. This method is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.