

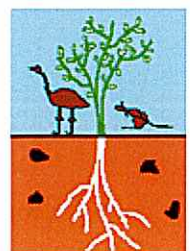


ALICE SPRINGS TURF CLUB ANNUAL ENVIRONMENTAL MONITORING REPORT

July 2024 – June 2025



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Disclaimer:

This document has been prepared by Low Ecological Services (LES) for Alice Springs Turf Club (Turf Club) in accordance with an agreement with the Turf Club. LES has prepared this document using the skill and care expected from professional scientists to provide factual and technical information and reasonable solutions to identified risks. It does not constitute legal advice.

Project:

Prepare the Annual Monitoring Report for the Alice Springs Turf Club as per the requirements of EPL 208-02.

Approved by:

Approval	Name	Signature	Date
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Certification:

I Tony McGovern, Chief Executive Officer, ASTC, have reviewed this report and I confirm that to the best of my knowledge and ability all the information provided in the report is true and accurate.

Signature:



Date:

2 September 2025

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1. Executive Summary

The Annual Monitoring Report covers monitoring activity in the year from 1st of July 2024 to 31 June 2025. Environmental monitoring activity and results within this period include the following:

- **Groundwater samples** were drawn from 5 bores on the 13 November 2024 and 22 May 2025. Field data collected during both sampling events recorded electrical conductivity in all bores ranging from 909 $\mu\text{S}/\text{cm}$ to 3797 $\mu\text{S}/\text{cm}$, exceeding the 20-250 $\mu\text{S}/\text{cm}$ trigger value stipulated in EP208-2. Previous reports have recommended an increase to the trigger values to reflect the normal values of local groundwater.
Bore RN03685 located 300m upstream of the racetrack adjacent to the Todd River recorded pH values of 10.27 and 10.5, and turbidity of 190 and 74.6. Bores RN04541 and RN03098 also recorded levels exceeding trigger values for pH and turbidity, however only marginally so. While exceeding stipulated trigger values, these levels have remained consistent across the monitoring program for EPL208/208-2 and a likely naturally occurring. Previous reports have recommended an increase to the trigger values to better reflect the natural values of local groundwater. All other field values were within stipulated trigger values.
Analytical Groundwater results showed bore RN018251 exceeded trigger values for zinc while RN018252 exceed values for copper and zinc. While above trigger values, they are well below the Australian Drinking Water Guidelines 2011 investigation levels and are likely natural. RN03685, located 300m upstream, exceeded values for copper, zinc, lead and cadmium. As this bore is upstream of the Turf Club, it is unlikely that it is due to activities conducted at Pioneer Park; infiltration of Todd River flood waters through the porous sand is the likely source. It is recommended that RN03685 is replaced with a more suitable upstream bore.
- **Waste oil** was sampled on seven occasions during the monitoring period. A bulk sampling method was used to extract five samples from a 25,000L container holding lesser amounts of waste oil. Three samples were analysed for general chemistry, one for PCBs and one sample for PFAS. All analyses showed a chemical composition expected for waste oil, and PCBs and PFAS were below limit of reporting on all occasions.
- A total of 80000 litres was applied to the track during the 24/25 monitoring period, consisting of;
 - 9 September 2024 – 20000 litres
 - 14 October 2024 – 20000 litres
 - 1 December 2024 – 20000 litres
 - 9 April 2025 – 20000 Litres
- **Surface water** was sampled on the 1st of April 2025 after two weeks providing 60mm rainfall. Four of five previous sites were sampled (site 1, St Mary's creek, had no surface water and was not sampled). Field data showed exceedances of trigger values for DO% and pH at site 4, which is located at the inner northeast corner of the racetrack, where water runs off the sloping track to the location. Analytical results showed hydrocarbon, copper and zinc exceeded trigger values at site 4. Samplers noted a visible sheen on the surface and are not surprised about the results. Due to the location of site 4, it is unlikely

that this runoff from the track will impact the surrounding areas beyond the racetrack. Soil sampling at that site on the 12th of June showed that hydrocarbons were undetectable at depths 200mm and below.

Exceedances in stipulated trigger values for zinc (3 of 4 sites) and copper (4 of 4 sites) were also recorded. These levels are unlikely to be from waste oil dispersal due to the analytical profile of the waste oil compared to the profile of the surface water and the lack of TPH recorded in the surface water samples.

- **Near track soil sampling** conducted on the 12th of June 2025 showed that only two sites (S01, S03) sampled have hydrocarbon detected to a depth of 300mm. Both sites are located next to a drain way that runs parallel with Heath Road to the south of the Turf Club. A low amount of PFAS was also detected in these two sites and, like the hydrocarbon, has likely come from Heath Road rather than activities at the Turf Club. It is recommended to take soil samples from the other side of Heath Road to compare.
- Monitoring results continue to imply that the risk of any significant oil quantity migrating from the track into soil, groundwater or nearby watercourses is very low. No ground water samples collected in this reporting period contained hydrocarbons above limits of laboratory reporting. Metal levels for some bore samples exceeded stipulated trigger values however these are likely to be naturally occurring in the local groundwater.

2. Introduction

The Alice Springs Turf Club Incorporated (Turf Club) commissions Low Ecological Services (LES) to undertake environmental monitoring required under Environmental Protection Licence (EPL) 208-02, commenced 8 August 2024 for five years, notably conditions 40, 41 and 42. This includes the Turf Club providing the Northern Territory Environmental Protection Agency (NTEPA) with a monitoring report with each annual return. This Monitoring Report has been prepared in accordance with the requirements of the NTEPA Guideline for Reporting on Environmental Monitoring.

3. Monitoring Objectives

Consistent with the EMP developed by Low Ecological Services for the Turf Club, under EPL 208 - 02 and NTEPA guidelines, the Turf Club's monitoring objectives are:

- Determine baseline environmental conditions;
- Monitor short and long term trends;
- Determine the potential environmental effects arising from management activities;
- Monitor the quality and condition of groundwater, surface water and soil in the area surrounding the racecourse;
- Monitor compliance with Australian standards and other regulatory requirements; and
- Identify any required remediation and/or mitigation measures.



Figure 1 Map of Monitoring Locations, surface and groundwater flow from North to South

4. Monitoring System

4.1 Sampling Program and Laboratory Analysis

This report details the sampling and analysis of soils, groundwater and surface water from within the vicinity of the Turf Club to identify environmental issues potentially arising from the application of waste oil to the racetrack surface. Condition 25 of the EPL provides: *The licensee must conduct soil, surface water and groundwater monitoring in accordance with section 10 of the EMP, which under 10.1.2 provides:*

- Groundwater monitoring: 5 bores sampled twice yearly in April and October, irrespective of applications of waste oil on the racetrack or other approved dispersal areas.

- Soil monitoring: 10 sample sites from which soil is collected for laboratory analysis annually, to detect any lateral or vertical movement of hydrocarbon through the soil
- Waste oil penetration depth testing; 3 randomly selected racetrack sites adjacent to the track oil laydown area in which soil is sampled at 10-20 cm intervals to a minimum 60cm; to be conducted every three years, next due in 2026.
- Surface water analysis; to be collected following very high rainfall from water in St Mary's Creek and adjacent to the racetrack that is likely to contain runoff from the racetrack.
- Waste Oil Characterisation; Samples to be taken from the delivery truck outlet and analysed by NATA accredited laboratory with results provided to NTEPA prior to application of oil to the racetrack or other areas as licensed.

Condition 26 of EPL208-02 provides: *Prior to the application of listed waste (per Table 1) to the Alice Springs Racecourse, the licensee must submit to the NT EPA the laboratory results of a representative sample of the listed waste to be applied, demonstrating its composition is not contaminated by other listed waste including, but not limited to, polychlorinated biphenyls (PCBs) and per-and polyfluoroalkyl substances (PFAS).*

4.2 Waste Oil Sampling

Waste oil was sampled seven times during the reporting period on the following dates;

- 11 July 2024
- 31 July 2024
- 8 August 2024
- 28 August 2024
- 3 October 2024
- 8 November 2024
- 6 March 2025

On each occasion, five representative samples of waste oil were sent for lab analysis using a bulk sampling process from a 25000 litre tank of waste oil. Four of those samples are sent to ALS laboratories for general chemistry and PCB analysis, and one is sent to Eurofins Labs for PFAS analysis.

4.3 Groundwater Sampling

Groundwater sampling is designed to detect contamination of groundwater systems if waste oil contaminants migrate from the track through the soil profile into groundwater.

Groundwater sampling was undertaken twice during the 2024-25 reporting period; 13 November 2024 and 22 May 2025. Standard procedures applied for each sampling includes bore inspection to note any factors that may impact laboratory results, measuring static water level and recording electronic meter readings. Sampling uses new bailers for every sample to ensure there is no cross contamination between bores and samples. A minimum of 10 litres of water is purged / bailed out. Field data is measured during the purging to determine stability of purged water composition using a calibrated YSI (Pro Quatro) water quality meter. Field data parameters noted include:

- Water Temperature;
- Electrical Conductivity ($\mu\text{S}/\text{cm}$);
- Dissolved Oxygen (% sat);
- Dissolved Oxygen (mg/L);
- pH;
- Turbidity.

Following purging and recording field data, samples are collected as per laboratory standards in sample containers provided and specified by the laboratory, including appropriate preservative/s for analytes as required. All samples are labelled and placed into a cooled esky and couriered to the ALS laboratory in Sydney within specified holding times. Lab analysis results are discussed in section 6.2.

4.3.1 Assessment Criteria

Parameter	Units	Trigger Values in EPL 208 Attachment B	Australian Drinking Water Guidelines 2011
Laboratory Parameters			
pH	pH units	6.0-8.0	
Temperature	$^{\circ}\text{C}$	N/A	
Turbidity	NTU	2-15	
Electrical Conductivity	$\mu\text{S}/\text{cm}$	20-250	
Dissolved Oxygen	% Saturation	80-110	
BTEX			
Benzene	mg/L	0.3	
Toluene	mg/L	0.3	
Ethylbenzene	mg/L	0.005	
Xylenes	mg/L	0.075	
Heavy Metals			
Arsenic	mg/L	0.094	0.01
Cadmium	mg/L	0.0004	0.002
Chromium	mg/L	0.006	0.05
Copper	mg/L	0.0018	2
Lead	mg/L	0.0056	0.01
Mercury	mg/L	0.0019	0.001
Nickel	mg/L	0.013	0.02
Zinc	mg/L	0.015	3
Total Recoverable Hydrocarbons (TRH)			
Total TPH C10-C36	mg/L	0.6	
PFAS/PFOS			
Sum of PFOS and PFHxS	$\mu\text{g}/\text{L}$		0.07
PFOA	$\mu\text{g}/\text{L}$		0.56

Table 1 Groundwater Assessment Criteria

4.4 Surface Water Sampling

Surface water sampling is designed to detect contamination of surface water runoff from the Turf Club through the migration of oil from the track into the adjacent soils including the interior and exterior of the track and the St Marys Creek drainage, through rainfall and surface drainage. Surface water samples are collected opportunistically after large falls of rain when water pools at these sites.

Surface water was sampled on April 1st after ≈ 60mm of rain fell during the week up to and including 1st of April

4.4.1 Assessment Criteria

Parameter	Units	Trigger Values in EPL 208 Attachment B	Australian Drinking Water Guidelines 2011
Laboratory Parameters			
pH	pH units	6.0-8.0	
Temperature	°C	N/A	
Turbidity	NTU	2-15	
Electrical Conductivity	µS/cm	20-250	
Dissolved Oxygen	% Saturation	80-110	
BTEX			
Benzene	mg/L	0.3	
Toluene	mg/L	0.3	
Ethylbenzene	mg/L	0.005	
Xylenes	mg/L	0.075	
Heavy Metals			
Arsenic	mg/L	0.094	0.01
Cadmium	mg/L	0.0004	0.002
Chromium	mg/L	0.006	0.05
Copper	mg/L	0.0018	2
Lead	mg/L	0.0056	0.01
Mercury	mg/L	0.0019	0.001
Nickel	mg/L	0.013	0.02
Zinc	mg/L	0.015	3
Total Recoverable Hydrocarbons (TRH)			
Total TPH C10-C36	mg/L	0.6	
PFAS/PFOS			
Sum of PFOS and PFHxS	ug/L		0.07
PFOA	ug/L		0.56

Table 2 Surface Water Assessment Criteria

4.5 Near Track Soil Sampling

Near track soil sampling is designed to detect any migration of waste oil from approved dispersal sites to the surrounding environment. As per the Environmental Management Plan 2022-2027, near track soil sampling is conducted annually

4.5.1 Assessment Criteria

Analyte	Units	NEPM-HILs	NEPM-ESLs
BTEXN			
Benzene	mg/kg		65
Toluene	mg/kg		105
Ethylbenzene	mg/kg		125
Xylenes	mg/kg		45
Heavy Metals			
Arsenic	mg/kg	300	
Cadmium	mg/kg	90	
Chromium	mg/kg	300	
Copper	mg/kg	17 000	
Lead	mg/kg	600	
Mercury	mg/kg	80	
Nickel	mg/kg	1 200	
Zinc	mg/kg	30 000	
Total Petroleum Hydrocarbons (TPH)			
TPH C6-C10	mg/kg		800
TPH C10-C16	mg/kg		1000
TPH C16-C34	mg/kg		3500
TPH C34-C40	mg/kg		10 000

Table 3 Soil Assessment Criteria

Soil sampling was conducted on the 12th of June 2025. An extra site was added for this sampling event (S11/ Surface Water site 4, which had a very visible sheen during sampling and the highest amount of hydrocarbon out of all the surface water samples). PFAS control sites were also sampled.

4.6 Racetrack Soil Sampling to Test Depth of Oil Penetration

As per EPL208-2, No soil sampling was conducted during this reporting period.

Racetrack soil sampling is due to be conducted in 2026.

4.7 Quality Control and Assurance

All samples were collected in appropriate laboratory supplied sampling containers, as per laboratory requirements. The sample containers were placed into an ice chilled esky and transported to the laboratory under standard chain of custody (COC) procedures to a National

Association of Testing authorities (NATA) accredited laboratory (ALS in Sydney) for analysis within required holding times.

Disposable and/or dedicated sampling equipment is used where required between each sample and sampling location. Where sampling equipment is of a non-disposable nature, decontamination of sampling equipment is carried out between each sample and sampling location.

4.7.1 Laboratory Analyses

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

Upon sampling and analysis, the NATA accredited ALS laboratory conducts the following quality control procedures as part of their internal Quality Control Report:

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

4.7.2 Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intra-laboratory 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%.

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

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

4.7.4 Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intra-laboratory 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.

5. Waste Oil Sampling Results

Laboratory Reports / Certificates of Analysis for samples collected during this monitoring period are given in full in Appendix 3,7,9,11,13. Results summarised in Table 4 below

Waste Oil was sampled on seven occasions during the 2024/2025 monitoring period. None of the results from lab analysis were out of the ordinary, all were within the expected parameters for waste oil.

5.1 PFASs

Laboratory Reports / Certificates of Analysis for samples collected during this monitoring period are given in full in Appendices 4,5,6,8,10,12,14. Results summarised in table 4 below

One bulk PFAS sample was taken during each sampling event. All samples were below the limit of reporting

5.2 PCBs

Laboratory results/ Certificates of analysis for samples collected during this monitoring period are given in full in Appendix 3,7,9,11,13. Results summarised in Table 4 below

Table 4 Waste Oil Summary Table

Test/Method	Units	Average	Max	Min
PCB (ASTM D4059 mod)				
PCB Total	mg/kg	<LOR	<LOR	<LOR
Metals				
Aluminium (Al)	ppm	13.9	38.0	3.0
Chromium (CR)	ppm	2.7	20.0	1.0
Iron (Fe)	ppm	75.3	241.0	27.0
Copper (Cu)	ppm	10.3	33.0	5.0
Lead (Pb)	ppm	2.5	20.0	1.0
Tin (Sn)	ppm	2.0	20.0	1.0
Nickel (Ni)	ppm	2.1	20.0	1.0
Silver (Ag)	ppm	3.2	17.0	1.0
Contaminates and Additives				
Silicon (Si)	ppm	25.8	49.0	12.0
Sodium (Na)	ppm	11.1	71.0	3.0

Potassium (K)	ppm	42.0	80.0	9.0
Molybdenum (Mo)	ppm	100.7	674.0	4.0
Boron (B)	ppm	51.7	135.0	5.0
Magnesium (Mg)	ppm	208.6	1030.0	10.0
Calcium (Ca)	ppm	1164.9	1816.0	510.0
Zinc (Zn)	ppm	713.6	1250.0	496.0
Phosphorus (P)	ppm	677.2	1140.0	463.0
Lithium (Li)	ppm	3.3	20.0	1.0
Physical Tests				
Fuel (% by G.C)	%	14.7	27.6	9.2
Water (%) (FTIR)	%	1.6	3.6	0.2
Soot (%) (FTIR)	%	5.8	23.2	0.1
Oxidation (Abs) (FTIR)	Abs	17.4	58.1	8.2
Sulphation (Abs) (FTIR)	Abs	14.8	38.1	8.6
Viscosity (cSt, 100°C)	cSt, 100°C	11.4	19.9	8.5
PQ Index	Index	44.8	326.0	10.0
Total Base Number (FTIR)	mgKOH/g	2.9	5.2	1.1
Fuel (%)	%	8.1	14.0	6.0
PFAS				
Sum of PFAS	ug/kg	<LOR	<LOR	<LOR

6. Groundwater Sampling Results

6.1 Site Observations

Water quality field measurements are presented below in Table 5. Readings that exceed trigger values are highlighted. A synopsis of these results is presented here.

- Groundwater temperatures were within a narrow range from 24.7-27.1
- Electrical conductivity ranged from 909µS/cm to 3797 µS/cm; (Trigger value 20-250 µS/cm).
- Dissolved oxygen (DO) concentrations ranged from 13 % saturation to 34.9 % saturation; (Trigger value 80-110%)
- Field pH levels ranged from 7.64-10.5; (Trigger value 6.0 – 8.0)
- Turbidity levels ranged from 0.54 NTU to 190 NTU. (trigger value 2 – 15)
- During sampling on 13 November 2024, despite the screw on cap being present on the well casing, evidence of a dead mammal was found in bore RN03098 (figure 2)– fur, skin was on the bailer, water was slightly greasy with a strong odour. This didn't seem to affect the overall quality of the bore as the readings were consistent with previous sampling. Evidence of animal was gone from the same bore during the following sampling on 22 May 2025.



Figure 2 (left) Fur on baiter – RN03098, 13/11/2024 (right) Clean baiter – RN03098 22/05/2025

Bore No.	Date/Time Sampled	Depth to Water (m)	Water Temp (°C)	Elec. Cond. (µS/cm)	DO (% sat)	DO (mg/L)	pH	Turbidity (NTU)	Comments
RN3685	13/11/24 10:30am	Start 13.23m	26.5	1516	28.1	2.24	10.27	190	Earthy odour, slow discharge, Turbid
		Fin 17.48m 14.55m	24.7	1579	34.9	2.82	10.5	74.6	Very brown, lots of sediment
RN04541	13/11/24 11:00am	Start 14.76 Fin 15.48	27.1	1691	15.2	1.2	7.64	21.6	No odour, weird colour.
		15.7m	26.2	1873	20.1	1.60	7.52	32.9	Water clear in tube, discoloured in bucket (same as previous sampling)
RN03098	13/11/24 11:40am	Start 14.085	27.1	909	13	1.02	7.54	35.1	Evidence of dead mammal in bore – fur, skin was on bailer, water slightly greasy with a strong odour
		Fin 14.215 15.7m	25.5	997	22.1	1.78	7.59	21.7	Water clear in tube, discoloured in bucket
RN018251	13/11/24 12:15pm	Start 15.24 Fin 15.23	26.6	3682	21.6	1.70	7.44	2.68	Clear, no odour, good recharge
		16.03	25.3	3797	23.4	1.9	7.29	1.02	Clear
RN018252	13/11/24 13:00pm	Start 15.05 Fin 14.95	25.8	1669	25.2	2.03	7.18	4.1	Clear, no odour, good recharge
		15.715	25.5	1982	28.3	2.27	7.31	0.54	Clear

Table 5 Groundwater Field Data

6.2 Laboratory Results

6.2.1 General Chemistry

Laboratory reports (analytical results) for the two sets of groundwater / bore samples are presented in full in Appendix 1 and 2. All analytes sampled for; including heavy metals, BTEX and TPH were below the limit of reporting (LOR) or the adopted trigger values, except for copper, zinc, lead, and in one instance, cadmium. Exceedances of the trigger values for copper, zinc, lead and cadmium are presented below in Table 6 and discussed in Section 10.2.

Sample Date	Bore	Copper (mg/L)	Lead (mg/L)	Zinc (mg/L)	Cadmium (mg/L)
Trigger Value		0.0018	0.0056	0.015	0.0004
13/11/2024	RN03685		0.496	70.6	-
	RN018252	0.033	-	0.123	-
	RN03098	-	-		-
	RN018251	-	-	0.022	-
	RN04541	-	-	-	-
22/05/2025	RN03685	0.021	0.81	129	0.0007
	RN018252	0.325	-	0.07	-
	RN03098	-	-	-	-
	RN018251	-	-	0.018	-
	RN04541	-	-	-	-

Table 6 Groundwater Trigger Exceedances

6.2.2 PFAS

Due to the increased interest in PFAS sampling for environmental purposes, LES began sampling for PFAS on 22 May 2024 (Previous monitoring period).

Results from the 22 May 2024 sampling event showed a detectable amount of PFAS in a sample collected from RN018251. As such, sampling on 13 Nov 2024 and 22 May 2025 re-sampled RN018251, as well as one other bore, chosen at random on each event. These results exceeded the recently established NEMP 3.0 guidelines for PFAS and PFOS for drinking water.

Laboratory reports (analytical results) for the two sets of groundwater / bore PFAS samples are presented in full in Appendix 1 and 2, summary table presented below in table 7

Test/Method	Units	LOR	Sample Date			
			13-Nov-24		22-May-25	
			RN018251	RN03098	RN018251	RN018252
Perfluoroalkyl Sulfonic Acids						
Perfluoropropane sulfonic acid (PFPrS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	0.03	<0.02	0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.07	<0.01	0.07	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.04	<0.01	0.03	<0.01
Perfluorononane sulfonic acid (PFNS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
PFAS Sums						
Sum of PFAS	µg/L	0.01	0.14	<0.01	0.12	<0.01
Sum of PFHxS and PFOS	µg/L	0.01	0.11	<0.01	0.1	<0.01
Sum of PFAS (WA DER List)	µg/L	0.01	0.14	<0.01	0.12	<0.01

Table 7 Groundwater PFAS results

7. Surface Water Sampling Results

Surface water was sampled on the 1st of April 2025 after two weeks of good rainfall of $\approx 60\text{mm}$. Site 1 (St Mary's Creek) was not sampled as there was no surface water, likely due to very high drainage in the sandy creek. All other sites were sampled. Surface water was collected using syringes and stainless-steel cups to bail water into a bucket for measurements and sampling. (figure 3) A turbidity meter was unavailable as it was interstate for calibration, no turbidity readings were taken.

7.1 Site Observations



Figure 3 - Collecting surface water using a stainless steel cup (L) Bucket with collected water and YSI reader *

Field data is presented below in Table 8 with exceedances in trigger values highlighted. Site 4 was the only site that fell outside trigger values in two categories; Dissolved Oxygen (%) was 77.6 (TV 80-110) and pH was 5.83 (TV 6.0-8.0).

Table 8 Surface water field data table

Site #	Time	Water Temp (°C)	Elec. Cond (µS/cm)	DO (%sat)	DO (mg/L)	pH	Turbidity (NTU)	Comments
1	Not sampled, no surface water. Site is in creek with very rapid drainage							
2	12:30	20.6	22.9	89.7	8.03	7.58		Water bailed into bucket, sample taken from bucket. No visible sheen
3	13:20	22.1	21.8	81.8	7.14	7.34		Water bailed into bucket, sample taken from bucket. No visible sheen
4	13:00	21.2	94.5	77.6	6.87	5.83		Water bailed into bucket, sample taken from bucket. Very visible sheen on water.

5	11:45	20.6	28.4	80.5	7.24	8		Water bailed into bucket, sample taken from bucket No visible sheen..
---	-------	------	------	------	------	---	--	--

7.2 Laboratory Results

Laboratory reports (analytical results) are presented in full in Appendix 15. All sites provided in EPL 208 appendix B. Exceedances in trigger values are provided below in table 9 and discussed in section 10.4

	Copper (mg/L)	Zinc (mg/L)	TPH (sum) (mg/L)
	Trigger	Trigger	Trigger
	0.0018	0.015	0.6
Site 2	0.002	-	-
Site 3	0.004	0.016	-
Site 4	0.008	0.209	10.1
Site 5	0.003	0.018	-

Table 9 - Surface Water analytical summary

8. Soil Sampling Results

8.1 Laboratory Results

Laboratory reports (analytical results) for the soil samples are presented in full in Appendix 16. All analytes sampled for; including heavy metals, BTEX and TPH were below the limit of reporting (LOR) or the adopted trigger values.

Four sites recorded hydrocarbon levels above the limit of reporting below 100mm depth; S01, S03, S05, S11 (which is the extra soil site sampled). Of these, S01 and S03 recorded hydrocarbon levels above the limit of reporting at a depth of up to 300mm. The levels are presented shown in figure 4 below. Results are discussed in section 10

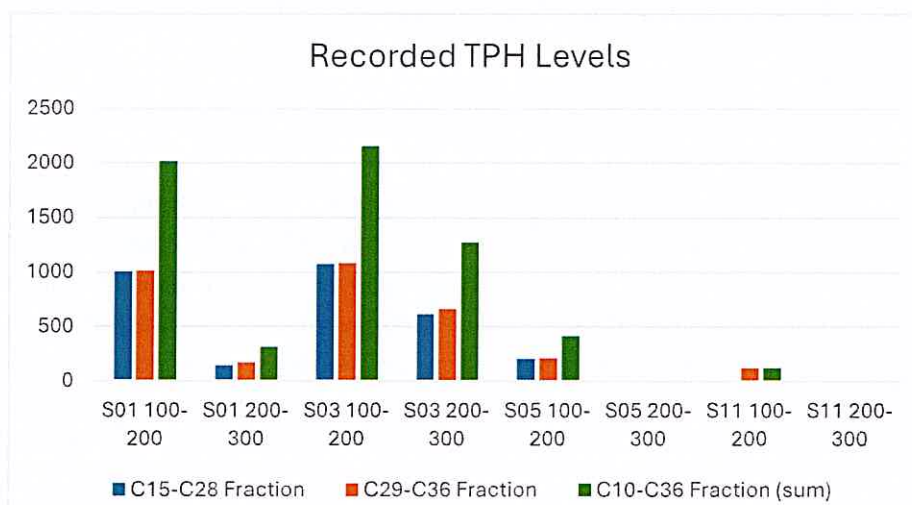


Figure 4 TPH Levels. Depth is in millimetres

8.2 PFAS

Two control sites, SC1 and SC2 and three randomly selected sites, S01, S03, S08 were sampled for PFAS. The two control sites and three other sites were sampled from a depth of 100-200mm. There are currently no adopted trigger values for PFAS in EPL208-02.

The two control sites and S08 were below the limit of reporting (0.0002mg/kg). S01 recorded a PFAS level of 0.0005mg/kg and S03 recorded 0.0004mg/kg. These results exceeded the recently established NEMP 3.0 guidelines for PFAS and PFOS. These results are discussed in section 10

9. Racetrack Soil Sampling

No racetrack soil sampling was performed during this reporting period. The racetrack soil was previously sampled on 13 January 2023 which showed a low amount of hydrocarbons detected at a depth of up to 400mm. Considering waste oil has been regularly applied to the racetrack surface for about 47 years, vertical migration of waste oil below the racetrack is not considered a significant environmental risk. Soil Sampling is due to be conducted during the 2025/2026 monitoring period.

10. Discussion and Interpretation of Results

10.1 Waste Oil

10.1.1 General Chemistry

All analysis of the waste oil sampled in this monitoring period showed that the oil sampled had a typical chemical constituency for waste oil and PCBs were under the limit of reporting on all analyses during this monitoring period.

1.1.1 PFAS

All analysis of the waste oil sampled in this monitoring period showed all analytes (PFASs, PFCAs, PFSAAs, FTSAAs) were less than the limits of reporting.

10.2 Groundwater

Metals Results:

Exceedances in trigger values were found to have occurred in three monitoring bores. RN03685 exceeded trigger values for copper, zinc, lead and cadmium, RN018252 exceeded trigger values for copper and zinc, and RN018251 exceed the trigger value for zinc. The elevated values of these metals have been broadly consistent since monitoring around the Turf Club began and are likely naturally occurring levels, rather than contamination from the waste oil. It is worth noting that the exceedance in trigger value for cadmium was in the upstream bore, and is unlikely to be affected by Turf Club activities.

PFAS Results

PFAS above trigger levels was detected in samples from bore RN018251 after both sampling events. It is unlikely that the PFAS has come from the application of waste oil as PFAS has not been detected in waste oil since LES has began sampling oil for it in 2023, as well as no other bore detecting PFAS. Due to RN018251 being located in between two application areas, further monitoring is recommended.

Field Measurements:

All field measurements exceeded the trigger value for electrical conductivity for the five bores sampled on both occasions sampled. Previous annual monitoring reports have questioned whether the stipulated trigger values are appropriate for this project. The EPL208 (Attachment B) trigger values 20-250 $\mu\text{S}/\text{cm}$ for electrical conductivity are very low values for groundwater in central Australia. In *A preliminary overview of groundwater quality in the Northern Territory*, (McDonald, 1993) an average value of 3549 $\mu\text{S}/\text{cm}$ is reported for arid zone water bores taken from a total of 12,508 samples.

Bore **RN3685** had consistently has poorer water quality than the other four bores sampled (figure 4). Previous annual reports have questioned whether this bore is appropriate to use as an upstream control as the bore is consistently poorer than the other bores. During the 24/25 monitoring period, **RN3685** had consistently higher pH (10.27-10.5) and turbidity (74.6-190

NTU) compared to the other bores (7.18-7.64) (35.1-0.54NTU). Visually, the water is very “cloudy” with lots of sediment compared to the other monitoring bores. This trend is consistent with previous monitoring reports.

Two other bores exceeded the trigger value for turbidity (2-15NTU); **RN04541**(21.6-32.9NTU) and **RN03098** (35.1-21.7NTU). These turbidity values are consistent with previous reporting periods and are likely natural.

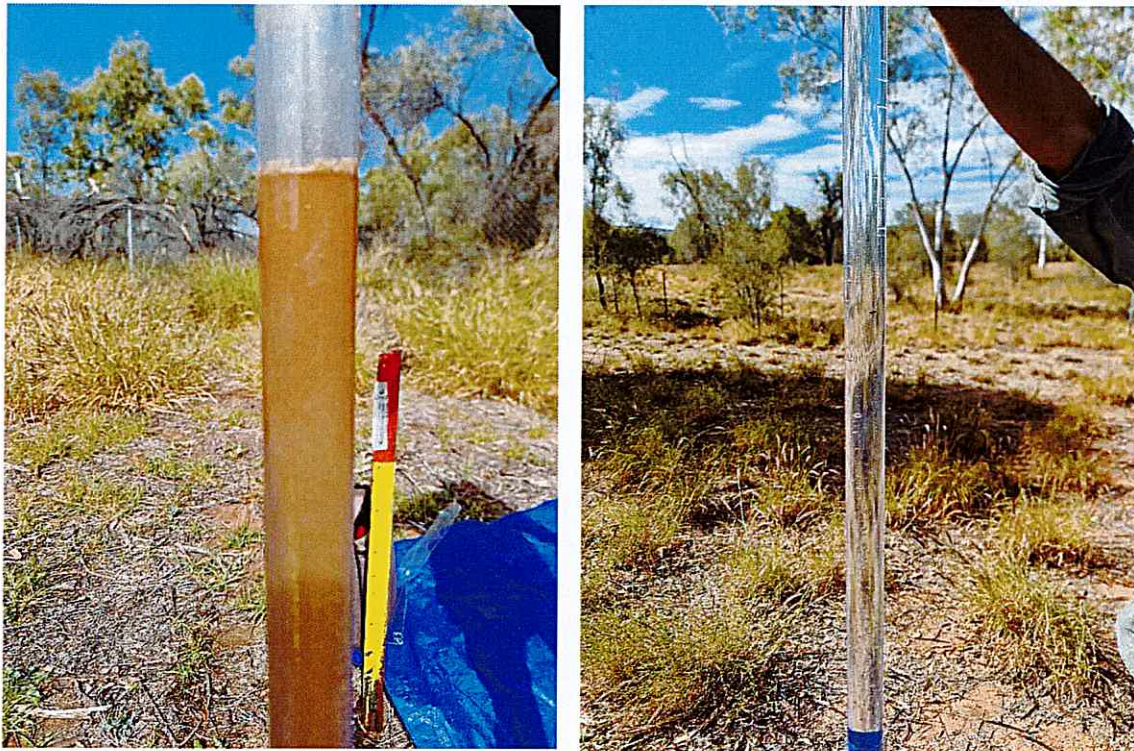


Figure 5 - (left) RN03685 upstream bore “normal” water quality (right) RN18252 downstream bore “normal” water quality (usually the cleanest)

10.3 Surface Water

Analysis of surface water samples found that most analytes were below the limit of reporting (LOR) or below specified trigger values. The trigger exceedances were for copper (all sites sampled), Zinc (all sites except site 2) and TPH at site 4.

Site 4 is located directly next to the inside of the track (figure 1) and due to this location, it is unsurprising that larger rainfall events result in sheet flow across the sloping racetrack producing measurable amounts of hydrocarbon in surface water at this site adjacent to the track. Samplers noticed and recorded the presence of a visible “sheen” on the water surface at site 4 and expected a high level of hydrocarbon in the sample. The higher amount of zinc and copper are also unsurprising. This may also explain the lower pH and DO% compared to the other sites sampled. Previous surface water sampling events, notably 11/10/22 also found elevated levels of hydrocarbons and zinc in this location adjacent to the track

The low frequency of these rainfall events suggests that the probability of any significant deposition and accumulation of hydrocarbon in the soil at site 4 over time is low. Near track soil sampling found that hydrocarbons were not present at a depth 200mm or below.

Site 4 shows that oil will migrate in surface water during rainfall. The inward slope of the track will cause the majority of runoff to flow to the inside, containing surface water contamination to the inner area of the racecourse. It is likely that similar areas of the racetrack will have similar levels of hydrocarbon in the surface water due to water runoff flowing to the inside of the sloped track.

It is unlikely that the exceedance in copper at all sites is due to the waste oil dispersal. The analytical profile of the waste oil shows that it contains a relatively little amount of copper compared to other metals, which have not been detected in the surface water samples collected. The lack of TPH detected in these samples would also suggest that the copper found in the surface water samples is either natural, or has come from another source. Copper (and zinc) levels, while exceeding the stipulated trigger values outlined in EPL 208-2, are only marginally above those trigger levels and are well below the Australian Drinking Water Guidelines 2011 for copper (2mg/L) and zinc (3mg/L)

Near Track Soil Sampling

Analysis of near track soil samples found that all analytes were below the limit of reporting (LOR) or below specified trigger values. The two sites (S01 and S03) with hydrocarbon levels detected in the 200-300mm samples are located next to a drain way that runs parallel to Heath Road, which is likely to be a major contributor to hydrocarbon levels as none of the other sites sampled recorded hydrocarbon at 200-300mm. Both sites have recorded hydrocarbon at 200-300mm in previous years at higher levels.

Sites S01 and S03 are also the only sites that have recorded PFAS levels above the limit of reporting. Due to the location of these sites, and the absence of PFAS in the waste oil sampled, it is likely that the PFAS detection is from road runoff or other sources.

11. Conclusions and Recommendations

Waste Oil sampling during this monitoring period showed normal characterisation for waste oil, and no levels of PFASs or PCBs above the limits of reporting.

Surface water sampling showed that oil will migrate from the track with large amounts of rainfall, and the Alice Springs Turf Club should continue to ensure that water runoff from the track and other oiled area is contained. This will ensure that oil will not contaminate surrounding waterways and lands. Near track soils sampling shows that hydrocarbon present in track runoff does not penetrate further than 200mm vertically into the soil.

Surface water samples were shown to contain hydrocarbons washed from the racetrack at one site of four sampled – Site 4, adjacent to the racetrack near the northeast corner. Given samplers observed evidence of sheet flow across the track to site 4 at the time of sampling, this result was expected. It is likely that similar areas of the racetrack will have similar levels of

hydrocarbon in the surface water due to water runoff flowing to the inside of the sloped track, containing it within the track area. As mentioned in section 10.3, it is unlikely that the copper found in all of the surface water samples has come from waste dispersal activities.

Groundwater was sampled twice during the reporting period. Results for bore RN03685, 450 m upstream from the race track, continued to have unusual readings compared to the other monitoring bores, suggesting this bore may be subject to pollution from river flows, and should be replaced. The exceedances of metals trigger values have been consistent with previous monitoring and are likely to be naturally occurring levels. The exceedance of electrical conductivity in all monitoring bores is likely due to the low trigger values outlined in EPL208 attachment B at 20-250µs/cm. In *A preliminary overview of groundwater quality in the Northern Territory*, (McDonald, 1993) an average value of 3549 µs/cm is reported for arid zone water bores taken from a total of 12,508 samples. Exceedances in trigger values for turbidity in ground water were also recorded, but are notionally 'natural' and do not present issue of concern relating to the application of waste oil on the racetrack

Recommendations

- Alter the electrical conductivity trigger values set out in the EMP to better reflect naturally occurring levels
- Investigate potential upstream bores to replace RN03685 as it is usually polluted with sediments and is a poor control bore for upstream monitoring.
- Continue to allow adequate lead time between waste oil sampling, testing and derivation of results, and scheduled waste oil applications to the racetrack
- Locate surface water control sites if possible and add to the sampling routine.
- During the 2025/2026 monitoring period, take PFAS samples from all monitoring bores to identify potential vectors for the PFAS detected in RN018251
- During the 2025/2026 monitoring period, re-sample soil sites S01 and S03 and take a control sample from the southern side of Heath Road to compare to sites S01 and S03
- Continue to adhere to the sampling schedule as set out in section 10 of the 2022 EMP and continue to uphold the highest level of care in sampling methods and sample management to mitigate risk of contamination and aberrative lab results.

12. References

McDonald, J. C. (1993). *A preliminary overview of groundwater quality in the Northern Territory* Journal of Australian Geology and Geophysics .

13. Appendices

13.1 Appendix 1 – Ground Water Lab Results 13/11/2024



CERTIFICATE OF ANALYSIS

Work Order	ES2437295	Page	1 of 7
Client	LOW ECOLOGICAL SERVICES	Laboratory	Environmental Division Sydney
Contact	MR BILL LOW	Contact	Customer Services ES
Address	PO BOX 3130 ALICE SPRINGS NT, AUSTRALIA 0871 : +61 08 89 555 222	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 08 89 555 222	Telephone	: +61-2-8784 8555
Project	Turf Club	Date Samples Received	: 15-Nov-2024 12:45
Order number	: 20241311JR	Date Analysis Commenced	: 19-Nov-2024
C-O-C number	: ---	Issue Date	: 22-Nov-2024 17:28
Sampler	: ---		
Site	: ---		
Quote number	EN0333		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

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

Signatories	Position	Accreditation Category
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwardy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Sanjesh Jyoti	Senior Chemist Volailles	Sydney Organics, Smithfield, NSW

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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

A = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the OSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy OSM 5.1 aligned, NATA accredited method.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m,p-Xylene and o-Xylene at or above the LOR.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTfDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to OSM 5.4 (US DoD) requirements.

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**Analytical Results**

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		RN003685		RN018252		RH003098		RN018251		RN004541	
		Sampling date / time		13-Nov-2024 10:30		13-Nov-2024 13:00		13-Nov-2024 11:40		13-Nov-2024 12:15		13-Nov-2024 11:00	
Compound	CAS Number	LOR	Unit	ES2437295-001		ES2437295-002		ES2437295-003		ES2437295-004		ES2437295-005	
				Result		Result		Result		Result			
EG0201: Total Metals by ICP-MS													
Arsenic	7440-38-2	0.001	mg/L	<0.001		<0.001		<0.001		<0.001		<0.001	
Cadmium	7440-43-9	0.0001	mg/L	0.0003		<0.0001		<0.0001		<0.0001		<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001		<0.001		<0.001		<0.001		<0.001	
Copper	7440-50-8	0.001	mg/L	0.009		0.033		<0.001		<0.001		<0.001	
Nickel	7440-02-0	0.001	mg/L	0.002		0.002		<0.001		0.002		<0.001	
Lead	7439-92-1	0.001	mg/L	0.496		<0.001		<0.001		<0.001		<0.001	
Zinc	7440-66-6	0.005	mg/L	70.6		0.123		0.006		0.022		<0.005	
EG0351: Total Recoverable Mercury by FIMS													
Mercury	7439-97-6	0.0001	mg/L	<0.0001		<0.0001		<0.0001		<0.0001		<0.0001	
EP080074: Total Petroleum Hydrocarbons													
C6 - C9 Fraction	---	20	µg/L	<20		<20		<20		<20		<20	
C10 - C14 Fraction	---	50	µg/L	<50		<50		<50		<50		<50	
C15 - C28 Fraction	---	100	µg/L	<100		<100		<100		<100		<100	
C29 - C36 Fraction	---	50	µg/L	<50		<50		<50		<50		<50	
Λ C10 - C36 Fraction (sum)	---	50	µg/L	<50		<50		<50		<50		<50	
EP080074: Total Recoverable Hydrocarbons - NEPM 2013 Fractions													
C6 - C10 Fraction	C6_C10	20	µg/L	<20		<20		<20		<20		<20	
Λ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20		<20		<20		<20		<20	
>C10 - C16 Fraction	---	100	µg/L	<100		<100		<100		<100		<100	
>C16 - C34 Fraction	---	100	µg/L	<100		<100		<100		<100		<100	
>C34 - C40 Fraction	---	100	µg/L	<100		<100		<100		<100		<100	
Λ >C10 - C40 Fraction (sum)	---	100	µg/L	<100		<100		<100		<100		<100	
Λ >C10 - C16 Fraction minus Naphthalene (F2)	---	100	µg/L	<100		<100		<100		<100		<100	
EP0800: BTEXN													
Benzene	71-43-2	1	µg/L	<1		<1		<1		<1		<1	
Toluene	108-88-3	2	µg/L	<2		<2		<2		<2		<2	

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**Analytical Results**

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		RN003685		RN018252		RN003098		RN018251		RN004541	
Compound	CAS Number	LOR	Unit	13-Nov-2024 10:30	ES2437295-001	13-Nov-2024 13:00	ES2437295-002	13-Nov-2024 11:40	ES2437295-003	13-Nov-2024 12:16	ES2437295-004	13-Nov-2024 11:00	ES2437295-005
Result													
EP080: BTEXN - Continued													
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 108-42-3	2	µg/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
^ Total Xylenes	---	2	µg/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
^ Sum of BTEX	---	1	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
EP231A: Perfluoralkyl Sulfonic Acids													
Perfluoropropane sulfonic acid (PFPrS)	423-41-0	0.02	µg/L	---	---	---	---	<0.02	<0.02	<0.02	<0.02	---	---
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	---	---	---	---	<0.02	<0.02	0.03	0.03	---	---
Perfluoropentane sulfonic acid (PFPeS)	2708-81-4	0.02	µg/L	---	---	---	---	<0.02	<0.02	<0.02	<0.02	---	---
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	---	---	---	---	<0.01	<0.01	0.07	0.07	---	---
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	---	---	---	---	<0.02	<0.02	<0.02	<0.02	---	---
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	---	---	---	---	<0.01	<0.01	0.04	0.04	---	---
Perfluorononane sulfonic acid (PFNS)	68258-12-1	0.02	µg/L	---	---	---	---	<0.02	<0.02	<0.02	<0.02	---	---
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	---	---	---	---	<0.02	<0.02	<0.02	<0.02	---	---
EP231B: Perfluoralkyl Carboxylic Acids													
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	---	---	---	---	<0.1	<0.1	<0.1	<0.1	---	---
Perfluoropentanoic acid (PFPeA)	2700-60-3	0.02	µg/L	---	---	---	---	<0.02	<0.02	<0.02	<0.02	---	---
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	---	---	---	---	<0.02	<0.02	<0.02	<0.02	---	---
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	---	---	---	---	<0.02	<0.02	<0.02	<0.02	---	---
Perfluorooctanoic acid (PFOA)	335-87-1	0.01	µg/L	---	---	---	---	<0.01	<0.01	<0.01	<0.01	---	---
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	---	---	---	---	<0.02	<0.02	<0.02	<0.02	---	---
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	---	---	---	---	<0.02	<0.02	<0.02	<0.02	---	---

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Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		Result		Result		Result		Result	
Compound	CAS Number	LOR	Sampling date / time	Unit	Result	Result	Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Confirmed											
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	13-Nov-2024 10:30	µg/L	—	—	<0.02	<0.02	<0.02	<0.02	—
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	13-Nov-2024 10:30	µg/L	—	—	<0.02	<0.02	<0.02	<0.02	—
Perfluorotridecanoic acid (PFTriDA)	72826-94-8	0.02	13-Nov-2024 11:40	µg/L	—	—	<0.02	<0.02	<0.02	<0.02	—
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	13-Nov-2024 11:40	µg/L	—	—	<0.05	<0.05	<0.05	<0.05	—
Perfluorohexadecanoic acid (PFHxDA)	87005-18-6	0.05	13-Nov-2024 11:40	µg/L	—	—	<0.05	<0.05	<0.05	<0.05	—
EP231C: Perfluoroalkyl Sulfonamides											
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	13-Nov-2024 10:30	µg/L	—	—	<0.02	<0.02	<0.02	<0.02	—
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	13-Nov-2024 10:30	µg/L	—	—	<0.05	<0.05	<0.05	<0.05	—
N-Ethyl perfluorooctane sulfonamide (EFOSA)	4151-50-2	0.05	13-Nov-2024 10:30	µg/L	—	—	<0.05	<0.05	<0.05	<0.05	—
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-06-7	0.05	13-Nov-2024 10:30	µg/L	—	—	<0.05	<0.05	<0.05	<0.05	—
N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	1691-69-2	0.05	13-Nov-2024 10:30	µg/L	—	—	<0.05	<0.05	<0.05	<0.05	—
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	13-Nov-2024 10:30	µg/L	—	—	<0.02	<0.02	<0.02	<0.02	—
N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	2691-50-3	0.02	13-Nov-2024 10:30	µg/L	—	—	<0.02	<0.02	<0.02	<0.02	—
EP231D: (n:2) Fluorotelomer Sulfonic Acids											
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	7571-24-72-4	0.05	13-Nov-2024 10:30	µg/L	—	—	<0.05	<0.05	<0.05	<0.05	—
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-07-2	0.05	13-Nov-2024 10:30	µg/L	—	—	<0.05	<0.05	<0.05	<0.05	—
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	13-Nov-2024 10:30	µg/L	—	—	<0.05	<0.05	<0.05	<0.05	—
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-80-0	0.05	13-Nov-2024 10:30	µg/L	—	—	<0.05	<0.05	<0.05	<0.05	—



Page : 7 of 7
Work Order : ES2437285
Client : LOW ECOLOGICAL SERVICES
Project : Turf Club

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	C/S Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137
EP234S: PFAS Surrogate			
13C4-PFOS	---	60	120
13C8-PFOA	---	60	120

Page : 6 of 7
Work Order : ES2437295
Client : LOW ECOLOGICAL SERVICES
Project : Turf Club

**Analytical Results**

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		Sample ID		Sample ID		Sample ID		Sample ID	
Compound	CAS Number	LOR	Sampling date / time	Unit	Result	Result	Result	Result	Result	Result	Result
EP231P: PFAS Summ											
Sum of PFAS	---	0.01	---	µg/L	---	---	---	---	---	---	---
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	---	µg/L	---	---	---	---	---	---	---
Sum of PFAS (WA DER List)	---	0.01	---	µg/L	---	---	---	---	---	---	---
EP080S: TPH(VBTEX Surrogates											
1,2-Dichloroethane-D4	17060-07-0	2	---	%	124	84.8	122	109	110	110	110
Toluene-D8	2037-26-5	2	---	%	117	89.2	117	99.2	100	100	100
4-Bromofluorobenzene	480-00-4	2	---	%	111	83.5	112	99.7	101	101	101
EP231S: PFAS Surrogate											
13C4-PFOS	---	0.02	---	%	---	---	104	104	---	---	---
13C8-PFOA	---	0.02	---	%	---	---	114	118	---	---	---

13.2 Appendix 2 – Ground Water Lab Results 22/05/2025



CERTIFICATE OF ANALYSIS	
Work Order	: ES2515804
Client	: LOW ECOLOGICAL SERVICES
Contact	: MR BILL LOW
Address	: PO BOX 3130 ALICE SPRINGS NT, AUSTRALIA 0871
Telephone	: +61 08 89 555 222
Project	: AS Turf Club
Order number	: 20250522-JR
C-O-C Number	: ---
Sampler	: Danesh Anita, James Ross
Site	: ---
Quota number	: EN333
No. of samples received	: 5
No. of samples analysed	: 5

Page : 1 of 7	
Laboratory	: Environmental Division Sydney
Contact	: Customer Services ES
Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61-2-8784 8555
Date Samples Received	: 28-May-2025 13:45
Date Analysis Commenced	: 29-May-2025
Issue Date	: 03-Jun-2025 17:03




Accreditation No. 875
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
Dian Dao	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

right solutions. right partner.



Page : 2 of 7
 Work Order : ES2515804
 Client : LOW ECOLOGICAL SERVICES
 Project : AS Turf Club

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 extractions 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

A = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5-4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m,p-Xylene and o-Xylene at or above the LOR.

Page : 3 of 7
 Work Order : ES2515804
 Client : LOW ECOLOGICAL SERVICES
 Project : AS Turf Club



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		Sample ID		Sample ID		Sample ID	
Compound		CAS Number	LOR	Sampling date / time	Unit	RN18252		RN18251	
						22-May-2025 10:55	22-May-2025 12:00	22-May-2025 12:40	22-May-2025 11:30
						ES2515804-001	ES2515804-003	ES2515804-004	ES2515804-005
						Result	Result	Result	Result
EG0201: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L			<0.001	<0.001	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L			0.0007	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L			0.005	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L			0.021	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L			0.004	<0.001	0.002	<0.001
Lead	7439-92-1	0.001	mg/L			0.810	0.002	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L			129	0.011	0.018	0.010
EG0351: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L			<0.0001	<0.0001	<0.0001	<0.0001
EP080074: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	---	20	µg/L			<20	<20	<20	<20
C10 - C14 Fraction	---	50	µg/L			<50	<50	<50	<50
C15 - C28 Fraction	---	100	µg/L			<100	<100	<100	<100
C29 - C36 Fraction	---	50	µg/L			<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	---	50	µg/L			<50	<50	<50	<50
EP080074: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L			<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L			<20	<20	<20	<20
>C10 - C16 Fraction	---	100	µg/L			<100	<100	<100	<100
>C16 - C34 Fraction	---	100	µg/L			<100	<100	<100	<100
>C34 - C40 Fraction	---	100	µg/L			<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	---	100	µg/L			<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	---	100	µg/L			<100	<100	<100	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L			<1	<1	<1	<1
Toluene	108-88-3	2	µg/L			<2	<2	<2	<2



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 Work Order : ES2515804
 Client : LOW ECOLOGICAL SERVICES
 Project : AS Turf Club

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		RN3685		RN018252		RN03098		RN018251		RN04541	
Compound	CAS Number	LOR	Unit	22-May-2025 10:55	22-May-2025 13:15	22-May-2025 12:00	22-May-2025 12:40	22-May-2025 11:30	22-May-2025 11:30	22-May-2025 11:30	22-May-2025 11:30	22-May-2025 11:30	22-May-2025 11:30
Compound	CAS Number	LOR	Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
EP080: BTEX - Confirmed													
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Xylenes	---	2	µg/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Sum of BTEX	---	1	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
EP231A: Perfluoroalkyl Sulfonic Acids													
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	---	---	---	<0.02	---	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	---	---	---	0.02	---	0.02	0.02	0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	---	---	---	<0.02	---	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	---	---	---	0.07	---	0.07	0.07	0.07	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-02-6	0.02	µg/L	---	---	---	<0.02	---	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	---	---	---	0.03	---	0.03	0.03	0.03	<0.01	<0.01
Perfluorononane sulfonic acid (PFNS)	88256-12-1	0.02	µg/L	---	---	---	<0.02	---	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	---	---	---	<0.02	---	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids													
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	---	---	---	<0.1	---	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	---	---	---	<0.02	---	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	---	---	---	<0.02	---	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	---	---	---	<0.02	---	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	---	---	---	<0.01	---	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-05-1	0.02	µg/L	---	---	---	<0.02	---	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	---	---	---	<0.02	---	<0.02	<0.02	<0.02	<0.02	<0.02

Page : 5 of 7
 Work Order : ES2515804
 Client : LOW ECOLOGICAL SERVICES
 Project : AS Turf Club



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		RN3685		RN018252		RN03098		RN018251		RN04541	
Compound	CAS Number	Sampling date / time	LOR	Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Confirmed													
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	22-May-2025 10:55	0.02	µg/L	---	---	---	---	---	<0.02	---	<0.02	---
Perfluorododecanoic acid (PFDoDA)	307-85-1	22-May-2025 13:15	0.02	µg/L	---	---	---	---	---	<0.02	---	<0.02	---
Perfluorotridecanoic acid (PFTriDA)	72826-94-8	22-May-2025 10:55	0.02	µg/L	---	---	---	---	---	<0.02	---	<0.02	---
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	22-May-2025 13:15	0.05	µg/L	---	---	---	---	---	<0.05	---	<0.05	---
Perfluorohexadecanoic acid (PFHxDA)	67805-10-5	22-May-2025 10:55	0.05	µg/L	---	---	---	---	---	<0.05	---	<0.05	---
EP231C: Perfluoroalkyl Sulfonamides													
Perfluorooctane sulfonamide (FOSA)	754-91-8	22-May-2025 10:55	0.02	µg/L	---	---	---	---	---	<0.02	---	<0.02	---
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	22-May-2025 13:15	0.05	µg/L	---	---	---	---	---	<0.05	---	<0.05	---
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	22-May-2025 10:55	0.05	µg/L	---	---	---	---	---	<0.05	---	<0.05	---
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-06-7	22-May-2025 13:15	0.05	µg/L	---	---	---	---	---	<0.05	---	<0.05	---
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1891-96-2	22-May-2025 10:55	0.05	µg/L	---	---	---	---	---	<0.05	---	<0.05	---
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	22-May-2025 13:15	0.02	µg/L	---	---	---	---	---	<0.02	---	<0.02	---
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-8	22-May-2025 10:55	0.02	µg/L	---	---	---	---	---	<0.02	---	<0.02	---
EP231D: (n:2) Fluorotelomer Sulfonic Acids													
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	22-May-2025 10:55	0.05	µg/L	---	---	---	---	---	<0.05	---	<0.05	---
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	22-May-2025 13:15	0.05	µg/L	---	---	---	---	---	<0.05	---	<0.05	---
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	22-May-2025 10:55	0.05	µg/L	---	---	---	---	---	<0.05	---	<0.05	---
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120228-60-0	22-May-2025 13:15	0.05	µg/L	---	---	---	---	---	<0.05	---	<0.05	---

Page : 6 of 7
 Work Order : ES2515804
 Client : LOW ECOLOGICAL SERVICES
 Project : AS Turf Club



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		RN03685		RN018252		RN03098		RN018251		RN04541	
Compound	CAS Number	LOR	Sampling date / time	Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result
EP231P: PFAS Summ													
Sum of PFAS	—	0.01	—	µg/L	—	—	—	—	—	0.12	—	<0.01	<0.01
Sum of PFHxS and PFOS	365-48-4/1703-23-1	0.01	—	µg/L	—	—	—	—	—	0.10	—	<0.01	<0.01
Sum of PFAS (WA DER List)	—	0.01	—	µg/L	—	—	—	—	—	0.12	—	<0.01	<0.01
EP080S: TPH(V)/BTEX Surrogates													
1,2-Dichloroethane-D4	17060-07-0	2	—	%	90.7	121	—	112	—	111	—	108	108
Toluene-D8	2037-26-5	2	—	%	95.8	112	—	116	—	118	—	117	117
4-Bromofluorobenzene	460-00-4	2	—	%	82.3	118	—	98.6	—	96.1	—	94.4	94.4
EP231S: PFAS Surrogate													
13C4-PFOS	—	0.02	—	%	—	—	—	—	—	102	—	104	104
13C8-PFOA	—	0.02	—	%	—	—	—	—	—	82.9	—	75.1	75.1



Page : 7 of 7
Work Order : ES2515804
Client : LOW ECOLOGICAL SERVICES
Project : AS Turf Club

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-6	75	131
4-Bromofluorobenzene	480-00-4	73	137
EP234S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

13.3 Appendix 3 – Waste Oil Lab General Chemistry Results 11 July 2024, 31 July 2024, 8 August 2024



Certificate of Analysis

LOW ECOLOGICAL SERVICES PTY
LTD

Lot 1858 Isotoma Road
Alice Springs NT 0871

Unit ID: A1

Compartment Name: A1

Make:

Make:

Model:

Model:

Serial No:

Serial No:

Site: Alice Springs Turf Club

Capacity:

SIF No: 704562141

Lab No: 10700074972

Date Received: 18-Aug-24

Fluid Manufacturer: Unidentified

UIN: 0ABC221

Date Reported: 12-Sep-24

Fluid Type: Oil

Testing Laboratory: Sydney Non-Routine

Fluid Grade: Unknown

TEST/METHOD	UNITS	DATE SAMPLED			DATE SAMPLED
		08-Aug-24	31-Jul-24	11-Jul-24	
PCB (ASTM D4059 mod)					
PCB Total	mg/kg	<2	<2	<2	
Metals (ppm)					
*Aluminium (Al)	ppm	14	8	28	
*Chromium (Cr)	ppm	2	1	1	
*Iron (Fe)	ppm	79	74	193	
*Copper (Cu)	ppm	9	8	8	
*Lead (Pb)	ppm	4	2	1	
*Tin (Sn)	ppm	3	1	1	
*Nickel (Ni)	ppm	2	1	1	
*Silver (Ag)	ppm	9	<1	2	
Contaminants and Additives (ppm)					
*Silicon (Si)	ppm	29	19	32	
*Sodium (Na)	ppm	8	8	8	
*Potassium (K)	ppm	24	58	10	
*Molybdenum (Mo)	ppm	674	159	9	
Boron (B)	ppm	61	98	5	
*Magnesium (Mg)	ppm	1030	381	17	
*Calcium (Ca)	ppm	845	782	868	
*Zinc (Zn)	ppm	1250	717	498	
*Phosphorus (P)	ppm	1140	694	607	
*Lithium (Li)	ppm	2	<1	<1	
Physical Tests					
Water (%) (FTIR)	%	1.2	>1	0.2	
Soot (%) (FTIR)	%	11.0	16.5	2.3	
Oxidation (Abs) (FTIR)	Abs	22.4	58.1	8.2	
Sulphation (Abs) (FTIR)	Abs	24.2	38.5	17.0	
Viscosity (cSt, 100°C)	cSt	17.4	—	8.5	
PQ Index	Index	328	17	95	
Total Base Number (FTIR)	mgKOH/g	5.2	<0.1	2.8	
Fuel (% by G.C.)	%	10.8	12.7	21.9	



Certificate of Analysis

LOW ECOLOGICAL SERVICES PTY LTD

Lot 1858 Isotoma Road
Alice Springs NT 0871

Unit ID: A2

Compartment Name: A2

Make:

Make:

Model:

Model:

Serial No:

Serial No:

Site: Alice Springs Turf Club

Capacity:

SIF No: 704562143

Lab No: 10700074973

UIN: 0ABC223

Testing Laboratory: Sydney Non-Routine

Date Received: 10-Aug-24

Date Reported: 12-Sep-24

Fluid Manufacturer: Unidentified

Fluid Type: Oil

Fluid Grade: Unknown

TEST/METHOD	UNITS	08-Aug-24	31-Jul-24	11-Jul-24
PCB (ASTM D4059 mod)				
PCB Total	mg/kg	<2	<2	<2
Metals (ppm)				
*Aluminium (Al)	ppm	7	7	36
*Chromium (Cr)	ppm	1	1	1
*Iron (Fe)	ppm	48	62	236
*Copper (Cu)	ppm	12	12	8
*Lead (Pb)	ppm	2	3	1
*Tin (Sn)	ppm	1	1	1
*Nickel (Ni)	ppm	1	1	1
*Silver (Ag)	ppm	3	1	1
Contaminants and Additives (ppm)				
*Silicon (Si)	ppm	23	23	44
*Sodium (Na)	ppm	11	10	6
*Potassium (K)	ppm	51	49	18
*Molybdenum (Mo)	ppm	393	155	9
Boron (B)	ppm	105	113	5
*Magnesium (Mg)	ppm	731	359	18
*Calcium (Ca)	ppm	657	1136	882
*Zinc (Zn)	ppm	1021	832	508
*Phosphorus (P)	ppm	635	775	514
*Lithium (Li)	ppm	1	1	<1
Physical Tests				
Water (%) (FTIR)	%	3.4	>1	0.2
Soot (%) (FTIR)	%	20.9	17.5	2.7
Oxidation (Abs) (FTIR)	Abs	20.8	18.2	8.3
Sulphation (Abs) (FTIR)	Abs	15.4	11.1	10.8
Viscosity (cSt, 100°C)	cSt	12.9	—	10.6
PQ Index	Index	61	15	118
Total Base Number (FTIR)	mgKOH/g	2.0	3.2	3.4
Fuel (%) by G.C.)	%	9.2	14.5	27.2

DIAGNOSIS:

Results were obtained on the sample as received.

NATA Accreditation No. 825, Site No. 2024. *NATA accreditation covers the performance of this service.

Diagnosed by: Kumar.Audiappan

right solution. right partner.



Certificate of Analysis

LOW ECOLOGICAL SERVICES PTY LTD

Lot 1858 Isotoma Road
Alice Springs NT 0871

Unit ID: A3

Compartment Name: A3

Make:

Make:

Model:

Model:

Serial No:

Serial No:

Site: Alice Springs Turf Club

Capacity:

SIF No: 704562144

Lab No: 10700074974

UIN: DABC225

Testing Laboratory: Sydney Non-Routine

Date Received: 10-Aug-24

Date Reported: 12-Sep-24

Fluid Manufacturer: Unidentified

Fluid Type: Oil

Fluid Grade: Unknown

TEST/METHOD

UNITS

DATE SAMPLED

DATE SAMPLED

DATE SAMPLED

DATE SAMPLED

PCB (ASTM D4059 mod)

PCB Total

mg/kg

08-Aug-24

31-Jul-24

11-Jul-24

<2

<2

<2

Metals (ppm)

*Aluminium (Al)

ppm

24

7

38

*Chromium (Cr)

ppm

20

1

1

*Iron (Fe)

ppm

58

50

241

*Copper (Cu)

ppm

33

12

8

*Lead (Pb)

ppm

20

3

1

*Tin (Sn)

ppm

20

1

1

*Nickel (Ni)

ppm

20

1

1

Silver (Ag)

ppm

17

1

1

Contaminants and Additives (ppm)

*Silicon (Si)

ppm

35

21

49

*Sodium (Na)

ppm

71

10

6

*Potassium (K)

ppm

62

54

11

*Molybdenum (Mo)

ppm

137

144

9

Boron (B)

ppm

135

87

6

*Magnesium (Mg)

ppm

348

320

18

*Calcium (Ca)

ppm

1133

1133

882

*Zinc (Zn)

ppm

733

801

514

*Phosphorus (P)

ppm

687

730

503

*Lithium (Li)

ppm

20

1

<1

Physical Tests

Water (%) (FTIR)

%

3.6

>1

0.3

Soot (%) (FTIR)

%

23.2

18.6

3.0

Oxidation (Abs) (FTIR)

Abs

18.8

23.4

8.4

Sulphation (Abs) (FTIR)

Abs

15.4

12.2

16.6

Viscosity (cSt, 100°C)

cSt

10.2

-

9.0

PQ Index

Index

34

16

119

Total Base Number (FTIR)

mgKOH/g

1.8

1.1

2.9

Fuel (%) by G.C.)

%

11.3

15.1

27.6

DIAGNOSIS:

Results were obtained on the sample as received.

NATA Accreditation No. 825. Site No. 2024. *NATA accreditation covers the performance of this service.

Diagnosed by: Kumar.Audiappan

right solution. right partner.

13.4 Appendix 4 – Waste Oil PFAS Results 11/07/2024



Environment Testing

Certificate of Analysis

Low Ecological Services Pty Ltd
25 Isotoma Road
Connellan
NT 0873



NATA Accredited
Accreditation Number 1281
Site Number 20784 & 2780

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: Bill Low

Report 1118313-S
Project name TURF CLUB WASTE OIL SAMPLING
Received Date Jul 18, 2024

Client Sample ID			P1
Sample Matrix			Oil
Eurofins Sample No.			B24-J10039035
Date Sampled			Jul 11, 2024
Test/Reference	LOR	Unit	
Perfluoroalkyl carboxylic acids (PFCAs)			
Perfluorobutanoic acid (PFBA) ⁽¹⁾	5	ug/kg	< 5
Perfluoropentanoic acid (PFPeA) ⁽¹⁾	5	ug/kg	< 5
Perfluorohexanoic acid (PFHxA) ⁽¹⁾	5	ug/kg	< 5
Perfluoroheptanoic acid (PFHpA) ⁽¹⁾	5	ug/kg	< 5
Perfluorooctanoic acid (PFOA) ⁽¹⁾	5	ug/kg	< 5
Perfluorononanoic acid (PFNA) ⁽¹⁾	5	ug/kg	< 5
Perfluorodecanoic acid (PFDA) ⁽¹⁾	5	ug/kg	< 5
Perfluoroundecanoic acid (PFUnDA) ⁽¹⁾	5	ug/kg	< 5
Perfluorododecanoic acid (PFDoDA) ⁽¹⁾	5	ug/kg	< 5
Perfluorotridecanoic acid (PFTrDA) ⁽¹⁾	5	ug/kg	< 5
Perfluorotetradecanoic acid (PFTeDA) ⁽¹⁾	5	ug/kg	< 5
13C4-PFBA (surr.)	1	%	100
13C5-PFPeA (surr.)	1	%	74
13C5-PFHxA (surr.)	1	%	48
13C4-PFHpA (surr.) [*]	1	%	51
13C8-PFOA (surr.)	1	%	69
13C5-PFNA (surr.)	1	%	43
13C6-PFDA (surr.)	1	%	81
13C2-PFUnDA (surr.)	1	%	54
13C2-PFDoDA (surr.)	1	%	58
13C2-PFTeDA (surr.) [*]	1	%	20
Perfluoroalkyl sulfonamido substances			
Perfluorooctane sulfonamide (FOSA) ⁽¹⁾	5	ug/kg	< 5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA) ⁽¹⁾	5	ug/kg	< 5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA) ⁽¹⁾	5	ug/kg	< 5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE) ⁽¹⁾	5	ug/kg	< 5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE) ⁽¹⁾	5	ug/kg	< 5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) ⁽¹⁾	10	ug/kg	< 10
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) ⁽¹⁾	10	ug/kg	< 10
13C8-FOSA (surr.) [*]	1	%	16
D3-N-MeFOSA (surr.) [*]	1	%	16
D5-N-EtFOSA (surr.) [*]	1	%	6.4
D7-N-MeFOSE (surr.) [*]	1	%	36



Environment Testing

Client Sample ID			P1
Sample Matrix			Oil
Eurofins Sample No.			B24-J10039035
Date Sampled			Jul 11, 2024
Test/Reference	LOR	Unit	
Perfluoroalkyl sulfonamido substances			
D9-N-EtFOSE (surr.)*	1	%	< 1
D5-N-EtFOSAA (surr.)*	1	%	< 1
D3-N-MeFOSAA (surr.)	1	%	16
Perfluoroalkyl sulfonic acids (PFASs)			
Perfluorobutanesulfonic acid (PFBS) ^(N1)	5	ug/kg	< 5
Perfluorononanesulfonic acid (PFNS) ^(N15)	5	ug/kg	< 5
Perfluoropropanesulfonic acid (PFPrS) ^(N15)	5	ug/kg	< 5
Perfluoropentanesulfonic acid (PFPeS) ^(N15)	5	ug/kg	< 5
Perfluorohexanesulfonic acid (PFHxS) ^(N1)	5	ug/kg	< 5
Perfluoroheptanesulfonic acid (PFHpS) ^(N15)	5	ug/kg	< 5
Perfluorooctanesulfonic acid (PFOS) ^(N1)	5	ug/kg	< 5
Perfluorodecanesulfonic acid (PFDS) ^(N15)	5	ug/kg	< 5
I3C3-PFBS (surr.)*	1	%	57
I8O2-PFHxS (surr.)*	1	%	124
I3C8-PFOS (surr.)	1	%	18
n:2 Fluorotelomer sulfonic acids (n:2 FTSA)			
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2 FTSA) ^(N1)	5	ug/kg	< 5
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2 FTSA) ^(N1)	10	ug/kg	< 10
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2 FTSA) ^(N1)	5	ug/kg	< 5
1H,1H,2H,2H-perfluorododecanesulfonic acid (10:2 FTSA) ^(N1)	5	ug/kg	< 5
I3C2-4:2 FTSA (surr.)*	1	%	45
I3C2-6:2 FTSA (surr.)	1	%	103
I3C2-8:2 FTSA (surr.)*	1	%	122
I3C2-10:2 FTSA (surr.)	1	%	43
PFASs Summations			
Sum (PFHxS + PFOS)*	5	ug/kg	< 5
Sum of US EPA PFAS (PFOS + PFOA)*	5	ug/kg	< 5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	5	ug/kg	< 5
Sum of WA DWER PFAS (n=10)*	10	ug/kg	< 10
Sum of PFASs (n=30)*	50	ug/kg	< 50

13.5 Appendix 5 – Waste Oil PFAS Lab Results 31/07/2024



Environment Testing

Certificate of Analysis

Low Ecological Services Pty Ltd
25 Isotoma Road
Connellan
NT 0873



NATA Accredited
Accreditation Number 1281
Site Number 20784 & 2780

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: Bill Low

Report 1125701-S
Project name TURF CLUB WASTE OIL SAMPLING
Received Date Aug 07, 2024

Client Sample ID			P1
Sample Matrix			Oil
Eurofins Sample No.			B24-
Date Sampled			Au0016662
Test/Reference	LOR	Unit	Jul 31, 2024
Perfluoroalkyl carboxylic acids (PFCAs)			
Perfluorobutanoic acid (PFBA) ^{N11}	5	ug/kg	< 100
Perfluoropentanoic acid (PFPeA) ^{N11}	5	ug/kg	< 100
Perfluorohexanoic acid (PFHxA) ^{N11}	5	ug/kg	< 100
Perfluoroheptanoic acid (PFHpA) ^{N11}	5	ug/kg	< 100
Perfluorooctanoic acid (PFOA) ^{N11}	5	ug/kg	< 100
Perfluorononanoic acid (PFNA) ^{N11}	5	ug/kg	< 100
Perfluorodecanoic acid (PFDA) ^{N11}	5	ug/kg	< 100
Perfluoroundecanoic acid (PFUnDA) ^{N11}	5	ug/kg	< 100
Perfluorododecanoic acid (PFDoDA) ^{N11}	5	ug/kg	< 100
Perfluorotridecanoic acid (PFTrDA) ^{N15}	5	ug/kg	< 100
Perfluorotetradecanoic acid (PFTeDA) ^{N11}	5	ug/kg	< 100
13C4-PFBA (surr.)	1	%	102
13C5-PFPeA (surr.)	1	%	130
13C5-PFHxA (surr.)	1	%	110
13C4-PFHpA (surr.) [*]	1	%	118
13C8-PFOA (surr.)	1	%	108
13C5-PFNA (surr.)	1	%	100
13C6-PFDA (surr.)	1	%	106
13C2-PFUnDA (surr.)	1	%	168
13C2-PFDoDA (surr.)	1	%	131
13C2-PFTeDA (surr.) [*]	1	%	152
Perfluoroalkyl sulfonamido substances			
Perfluorooctane sulfonamide (FOSA) ^{N11}	5	ug/kg	< 100
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA) ^{N11}	5	ug/kg	< 100
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA) ^{N11}	5	ug/kg	< 100
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE) ^{N11}	5	ug/kg	< 100
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE) ^{N11}	5	ug/kg	< 100
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) ^{N11}	10	ug/kg	< 100
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) ^{N11}	10	ug/kg	< 100
13C8-FOSA (surr.) [*]	1	%	71
D3-N-MeFOSA (surr.) [*]	1	%	137
D5-N-EtFOSA (surr.) [*]	1	%	154



Environment Testing

Client Sample ID			P1
Sample Matrix			Oil
Eurofins Sample No.			B24-Au0016662
Date Sampled			Jul 31, 2024
Test/Reference	LOR	Unit	
Perfluoroalkyl sulfonamido substances			
D7-N-MeFOSE (surr.) ¹	1	%	154
D8-N-EtFOSE (surr.) ¹	1	%	138
D6-N-EtFOSAA (surr.) ¹	1	%	120
D3-N-MeFOSAA (surr.)	1	%	92
Perfluoroalkyl sulfonic acids (PFASs)			
Perfluorobutanesulfonic acid (PFBS) ¹¹¹	5	ug/kg	< 100
Perfluorononanesulfonic acid (PFNS) ¹¹²	5	ug/kg	< 100
Perfluoropropanesulfonic acid (PFPrS) ¹¹³	5	ug/kg	< 100
Perfluoropentanesulfonic acid (PFPeS) ¹¹⁴	5	ug/kg	< 100
Perfluorohexanesulfonic acid (PFHxS) ¹¹¹	5	ug/kg	< 100
Perfluoroheptanesulfonic acid (PFHpS) ¹¹⁵	5	ug/kg	< 100
Perfluorooctanesulfonic acid (PFOS) ¹¹¹	5	ug/kg	< 100
Perfluorodecanesulfonic acid (PFDS) ¹¹⁶	5	ug/kg	< 100
13C3-PFBS (surr.) ¹	1	%	128
18O2-PFHxS (surr.) ¹	1	%	113
13C8-PFOS (surr.)	1	%	108
n:2 Fluorotelomer sulfonic acids (n:2 FTSA)			
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2 FTSA) ¹¹¹	5	ug/kg	< 100
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2 FTSA) ¹¹¹	10	ug/kg	< 100
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2 FTSA) ¹¹¹	5	ug/kg	< 100
1H,1H,2H,2H-perfluorododecanesulfonic acid (10:2 FTSA) ¹¹¹	5	ug/kg	< 100
13C2-4:2 FTSA (surr.) ¹	1	%	82
13C2-6:2 FTSA (surr.)	1	%	98
13C2-8:2 FTSA (surr.) ¹	1	%	74
13C2-10:2 FTSA (surr.)	1	%	267
PFASs Summations			
Sum (PFHxS + PFOS) ¹	5	ug/kg	< 100
Sum of US EPA PFAS (PFOS + PFOA) ¹	5	ug/kg	< 100
Sum of enHealth PFAS (PFHxS + PFOS + PFOA) ¹	5	ug/kg	< 100
Sum of WA DWER PFAS (n=10) ¹	10	ug/kg	< 100
Sum of PFASs (n=30) ¹	50	ug/kg	< 100

13.6 Appendix 6 – Waste Oil PFAS Lab Results 08/08/2024



Environment Testing

Certificate of Analysis

Low Ecological Services Pty Ltd
25 Isotoma Road
Connellan
NT 0873



NATA Accredited
Accreditation Number 1281
Site Number 20794 & 2780

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: Bill Low

Report 1127890-S

Project name TURF CLUB WASTE OIL SAMPLING

Received Date Aug 13, 2024

Client Sample ID			P-1
Sample Matrix			Oil
Eurofins Sample No.			B24-Au0033605
Date Sampled			Aug 08, 2024
Test/Reference	LOR	Unit	
Perfluoroalkyl carboxylic acids (PFCAs)			
Perfluorobutanoic acid (PFBA) ^(N1)	5	ug/kg	< 5
Perfluoropentanoic acid (PFPeA) ^(N1)	5	ug/kg	< 5
Perfluorohexanoic acid (PFHxA) ^(N1)	5	ug/kg	< 5
Perfluoroheptanoic acid (PFHpA) ^(N1)	5	ug/kg	< 5
Perfluorooctanoic acid (PFOA) ^(N1)	5	ug/kg	< 5
Perfluorononanoic acid (PFNA) ^(N1)	5	ug/kg	< 5
Perfluorodecanoic acid (PFDA) ^(N1)	5	ug/kg	< 5
Perfluoroundecanoic acid (PFUnDA) ^(N1)	5	ug/kg	< 5
Perfluorododecanoic acid (PFDoDA) ^(N1)	5	ug/kg	< 5
Perfluorotridecanoic acid (PFTeDA) ^(N1)	5	ug/kg	< 5
Perfluorotetradecanoic acid (PFTeDA) ^(N1)	5	ug/kg	< 5
13C4-PFBA (surr.)	1	%	93
13C5-PFPeA (surr.)	1	%	57
13C5-PFHxA (surr.)	1	%	146
13C4-PFHpA (surr.) [*]	1	%	82
13C8-PFOA (surr.)	1	%	81
13C5-PFNA (surr.)	1	%	81
13C6-PFDA (surr.)	1	%	77
13C2-PFUnDA (surr.)	1	%	86
13C2-PFDoDA (surr.)	1	%	87
13C2-PFTeDA (surr.) [*]	1	%	136
Perfluoroalkyl sulfonamido substances			
Perfluorooctane sulfonamide (FOSA) ^(N1)	5	ug/kg	< 5
N-methyl-perfluoro-1-octane sulfonamide (N-MeFOSA) ^(N1)	5	ug/kg	< 5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA) ^(N1)	5	ug/kg	< 5
2-(N-methyl-perfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE) ^(N1)	5	ug/kg	< 5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE) ^(N1)	5	ug/kg	< 5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) ^(N1)	10	ug/kg	< 10
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) ^(N1)	10	ug/kg	< 10
13C8-FOSA (surr.) [*]	1	%	96
D3-N-MeFOSA (surr.) [*]	1	%	92
D5-N-EtFOSA (surr.) [*]	1	%	77



Environment Testing

Client Sample ID			P-1
Sample Matrix			Oil
Eurofins Sample No.			B24-
Date Sampled			Au0033605
Test/Reference	LOR	Unit	Aug 08, 2024
Perfluoroalkyl sulfonamido substances			
D7-N-MeFOSE (surr.) ¹	1	%	94
D9-N-EtFOSE (surr.) ¹	1	%	54
D5-N-EtFOSAA (surr.) ¹	1	%	58
D3-N-MeFOSAA (surr.)	1	%	123
Perfluoroalkyl sulfonic acids (PFASs)			
Perfluorobutanesulfonic acid (PFBS) ^(M1)	5	ug/kg	< 5
Perfluorononanesulfonic acid (PFNS) ^(M1)	5	ug/kg	< 5
Perfluoropropanesulfonic acid (PFPrS) ^(M1)	5	ug/kg	< 5
Perfluoropentanesulfonic acid (PFPeS) ^(M1)	5	ug/kg	< 5
Perfluorohexanesulfonic acid (PFHxS) ^(M1)	5	ug/kg	< 5
Perfluoroheptanesulfonic acid (PFHpS) ^(M1)	5	ug/kg	< 5
Perfluorooctanesulfonic acid (PFOS) ^(M1)	5	ug/kg	< 5
Perfluorodecanesulfonic acid (PFDS) ^(M1)	5	ug/kg	< 5
13C3-PFBS (surr.) ¹	1	%	144
18O2-PFHxS (surr.) ¹	1	%	90
13C8-PFOS (surr.)	1	%	95
n:2 Fluorotelomer sulfonic acids (n:2 FTSA)			
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2 FTSA) ^(M1)	5	ug/kg	< 5
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2 FTSA) ^(M1)	10	ug/kg	< 10
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2 FTSA) ^(M1)	5	ug/kg	< 5
1H,1H,2H,2H-perfluorododecanesulfonic acid (10:2 FTSA) ^(M1)	5	ug/kg	< 5
13C2-4:2 FTSA (surr.) ¹	1	%	81
13C2-6:2 FTSA (surr.) ¹	1	%	81
13C2-8:2 FTSA (surr.) ¹	1	%	31
13C2-10:2 FTSA (surr.) ¹	1	%	81
PFASs Summations			
Sum (PFHxS + PFOS) ¹	5	ug/kg	< 5
Sum of US EPA PFAS (PFOS + PFOA) ¹	5	ug/kg	< 5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA) ¹	5	ug/kg	< 5
Sum of WA DWER PFAS (n=10) ¹	10	ug/kg	< 10
Sum of PFASs (n=30) ¹	50	ug/kg	< 50

13.7 Appendix 7 – Waste Oil General Chemistry Lab Results

28/08/2024



Certificate of Analysis

LOW ECOLOGICAL SERVICES PTY
LTD
Lot 1858 Isotoma Road
Alice Springs NT 0871

Unit ID: A1

Compartment Name: A1

Make:

Make:

Model:

Model:

Serial No:

Serial No:

Site: Alice Springs Turf Club

Capacity:

SIF No: 704614854

Lab No: 10700075282

UIN: OABC221

Testing Laboratory: Sydney Non-Routine

Date Received: 30-Aug-24

Date Reported: 08-Sep-24

Fluid Manufacturer: Unidentified

Fluid Type: Oil

Fluid Grade: Unknown

TEST/METHOD

UNITS

DATE SAMPLED
28-Aug-24DATE SAMPLED
31-Jul-24DATE SAMPLED
11-Jul-24

PCB (ASTM D4059 mod)

PCB Total

mg/kg

<2

<2

<2

Metals (ppm)

*Aluminium (Al)

ppm

15

8

28

*Chromium (Cr)

ppm

1

1

1

*Iron (Fe)

ppm

72

74

193

*Copper (Cu)

ppm

12

8

8

*Lead (Pb)

ppm

1

2

1

*Tin (Sn)

ppm

1

1

1

*Nickel (Ni)

ppm

1

1

1

*Silver (Ag)

ppm

7

<1

2

Contaminants and Additives (ppm)

*Silicon (Si)

ppm

34

19

32

*Sodium (Na)

ppm

13

8

6

*Potassium (K)

ppm

79

56

10

*Molybdenum (Mo)

ppm

9

159

9

Boron (B)

ppm

31

98

5

*Magnesium (Mg)

ppm

21

381

17

*Calcium (Ca)

ppm

1588

782

868

*Zinc (Zn)

ppm

633

717

496

*Phosphorus (P)

ppm

634

694

507

*Lithium (Li)

ppm

<1

<1

<1

Physical Tests

Fuel (% by G.C.)

%

14.1

12.7

21.9

Water (%) (FTIR)

%

2.6

>1

0.2

Soot (%) (FTIR)

%

0.3

16.5

2.3

Oxidation (Abs) (FTIR)

Abs

20.0

58.1

8.2

Sulphation (Abs) (FTIR)

Abs

14.0

38.5

17.0

Viscosity (cSt, 100°C)

cSt

12.5

-

8.5

PQ Index

Index

18

17

95

Total Base Number (FTIR)

mgKOH/g

2.1

<0.1

2.8

DIAGNOSIS:

Results were obtained on the sample as received.

NATA Accreditation No. 825. Site No. 2024. *NATA accreditation covers the performance of this service.

Diagnosed by: Kumar.Audiappan

right solution. right partner.



Certificate of Analysis

LOW ECOLOGICAL SERVICES PTY LTD

Lot 1858 Isotoma Road
Alice Springs NT 0871

Unit ID: A2

Compartment Name: A2

Make:

Make:

Model:

Model:

Serial No:

Serial No:

Site: Alice Springs Turf Club

Capacity:

SIF No: 704614055

Lab No: 10700075283

UIN: 0ABC223

Testing Laboratory: Sydney Non-Routine

Date Received: 30-Aug-24

Date Reported: 06-Sep-24

Fluid Manufacturer: Unidentified

Fluid Type: Oil

Fluid Grade: Unknown

TEST/METHOD	UNITS	25-Aug-24	31-Jul-24	11-Jul-24
PCB (ASTM D4059 mod)				
PCB Total	mg/kg	<2	<2	<2
Metals (ppm)				
*Aluminium (Al)	ppm	15	7	36
*Chromium (Cr)	ppm	1	1	1
*Iron (Fe)	ppm	75	62	238
*Copper (Cu)	ppm	12	12	8
*Lead (Pb)	ppm	1	3	1
*Tin (Sn)	ppm	1	1	1
*Nickel (Ni)	ppm	1	1	1
Silver (Ag)	ppm	1	1	1
Contaminants and Additives (ppm)				
*Silicon (Si)	ppm	35	23	44
*Sodium (Na)	ppm	13	10	6
*Potassium (K)	ppm	78	49	18
*Molybdenum (Mo)	ppm	9	155	9
Boron (B)	ppm	28	113	5
*Magnesium (Mg)	ppm	22	359	18
*Calcium (Ca)	ppm	1882	1138	882
*Zinc (Zn)	ppm	672	832	508
*Phosphorus (P)	ppm	668	775	514
*Lithium (Li)	ppm	<1	1	<1
Physical Tests				
Fuel (% by G.C.)	%	13.5	14.5	27.2
Water (%) (FTIR)	%	2.6	>1	0.2
Soot (%) (FTIR)	%	0.3	17.5	2.7
Oxidation (Abs) (FTIR)	Abs	20.0	18.2	8.3
Sulphation (Abs) (FTIR)	Abs	14.4	11.1	16.8
Viscosity (cSt, 100°C)	cSt	9.4	-	10.6
PQ Index	Index	19	15	118
Total Base Number (FTIR)	mgKOH/g	2.1	3.2	3.4

DIAGNOSIS:

Results were obtained on the sample as received.

NATA Accreditation No. 625. Site No. 2024. *NATA accreditation covers the performance of this service.

Diagnosed by: Kumar.Audiappan

right solution. right partner.



Certificate of Analysis

LOW ECOLOGICAL SERVICES PTY LTD

Lot 1858 Isotoma Road
Alice Springs NT 0871

Unit ID: A3

Compartment Name: A3

Make:

Make:

Model:

Model:

Serial No:

Serial No:

Site: Alice Springs Turf Club

Capacity:

SIF No: 704614956

Lab No: 10700075284

UIN: DABC225

Testing Laboratory: Sydney Non-Routine

Date Received: 30-Aug-24

Date Reported: 08-Sep-24

Fluid Manufacturer: Unidentified

Fluid Type: Oil

Fluid Grade: Unknown

TEST/METHOD	UNITS	DATE SAMPLED	DATE SAMPLED	DATE SAMPLED	DATE SAMPLED
		28-Aug-24	31-Jul-24	11-Jul-24	
PCB (ASTM D4059 mod)					
PCB Total	mg/kg	<2	<2	<2	
Metals (ppm)					
*Aluminium (Al)	ppm	15	7	38	
*Chromium (Cr)	ppm	1	1	1	
*Iron (Fe)	ppm	78	50	241	
*Copper (Cu)	ppm	12	12	8	
*Lead (Pb)	ppm	1	3	1	
*Tin (Sn)	ppm	1	1	1	
*Nickel (Ni)	ppm	1	1	1	
Silver (Ag)	ppm	1	1	1	
Contaminants and Additives (ppm)					
*Silicon (Si)	ppm	35	21	49	
*Sodium (Na)	ppm	13	10	6	
*Potassium (K)	ppm	80	54	11	
*Molybdenum (Mo)	ppm	9	144	9	
Boron (B)	ppm	23	97	6	
*Magnesium (Mg)	ppm	22	320	18	
*Calcium (Ca)	ppm	1709	1133	882	
*Zinc (Zn)	ppm	683	601	514	
*Phosphorus (P)	ppm	678	730	503	
*Lithium (Li)	ppm	<1	1	<1	
Physical Tests					
Fuel (% by G.C.)	%	13.5	15.1	27.6	
Water (%) (FTIR)	%	2.4	>1	0.3	
Soot (%) (FTIR)	%	0.2	18.6	3.0	
Oxidation (Abs) (FTIR)	Abs	18.2	23.4	8.4	
Sulphation (Abs) (FTIR)	Abs	14.1	12.2	16.8	
Viscosity (cSt, 100°C)	cSt	19.9	—	9.0	
PQ Index	Index	19	16	119	
Total Base Number (FTIR)	mgKOH/g	2.6	1.1	2.9	
Fuel (%)	%	14			

DIAGNOSIS:

Results were obtained on the sample as received.

NATA Accreditation No. 525, Site No. 2024. *NATA accreditation covers the performance of this service.

Diagnosed by: Kumar.Audiappan

right solution. right partner.

13.8 Appendix 8 – Waste Oil PFAS lab Results 28/08/2024



Environment Testing

Certificate of Analysis

Low Ecological Services Pty Ltd
25 Isotoma Road
Connellan
NT 0873



NATA Accredited
Accreditation Number 1281
Site Number 20794 & 2780

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: Bill Low

Report 1134750-S

Project name TURF CLUB WASTE OIL SAMPLING

Received Date Sep 02, 2024

Client Sample ID			P1
Sample Matrix			Oil
Eurofins Sample No.			B24- Se0001199
Date Sampled			Aug 28, 2024
Test/Reference	LOR	Unit	
Perfluoroalkyl carboxylic acids (PFCAs)			
Perfluorobutanoic acid (PFBA) ^(M)	5	ug/kg	< 5
Perfluoropentanoic acid (PFPeA) ^(M)	5	ug/kg	< 5
Perfluorohexanoic acid (PFHxA) ^(M)	5	ug/kg	< 5
Perfluoroheptanoic acid (PFHpA) ^(M)	5	ug/kg	< 5
Perfluorooctanoic acid (PFOA) ^(M)	5	ug/kg	< 5
Perfluorononanoic acid (PFNA) ^(M)	5	ug/kg	< 5
Perfluorodecanoic acid (PFDA) ^(M)	5	ug/kg	< 5
Perfluoroundecanoic acid (PFUnDA) ^(M)	5	ug/kg	< 5
Perfluorododecanoic acid (PFDoDA) ^(M)	5	ug/kg	< 5
Perfluorotridecanoic acid (PFTriDA) ^(M)	5	ug/kg	< 5
Perfluorotetradecanoic acid (PFTeDA) ^(M)	5	ug/kg	< 5
13C4-PFBA (surr.)	1	%	86
13C5-PFPeA (surr.)	1	%	128
13C5-PFHxA (surr.)	1	%	124
13C4-PFHpA (surr.) [*]	1	%	76
13C8-PFOA (surr.)	1	%	86
13C5-PFNA (surr.)	1	%	61
13C8-PFDA (surr.)	1	%	77
13C2-PFUnDA (surr.)	1	%	80
13C2-PFDoDA (surr.)	1	%	126
13C2-PFTeDA (surr.) [*]	1	%	100
Perfluoroalkyl sulfonamido substances			
Perfluorooctane sulfonamide (FOSA) ^(M)	5	ug/kg	< 5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA) ^(M)	5	ug/kg	< 5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA) ^(M)	5	ug/kg	< 5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE) ^(M)	5	ug/kg	< 5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE) ^(M)	5	ug/kg	< 5
N-ethyl-perfluorooctanesulfonamidacetic acid (N-EtFOSAA) ^(M)	10	ug/kg	< 10
N-methyl-perfluorooctanesulfonamidacetic acid (N-MeFOSAA) ^(M)	10	ug/kg	< 10
13C8-FOSA (surr.) [*]	1	%	97
D3-N-MeFOSA (surr.) [*]	1	%	78
D5-N-EtFOSA (surr.) [*]	1	%	70



Environment Testing

Client Sample ID			P1
Sample Matrix			Oil
Eurofins Sample No.			B24-
Date Sampled			Se0001199
Test/Reference	LOR	Unit	Aug 28, 2024
Perfluoroalkyl sulfonamido substances			
D7-N-MeFOSE (surr.) ¹	1	%	51
D8-N-EtFOSE (surr.) ¹	1	%	66
D5-N-EtFOSAA (surr.) ¹	1	%	92
D3-N-MeFOSAA (surr.)	1	%	96
Perfluoroalkyl sulfonic acids (PFASs)			
Perfluorobutanesulfonic acid (PFBS) ⁽¹⁾⁽¹⁾	5	ug/kg	< 5
Perfluorononanesulfonic acid (PFNS) ⁽¹⁾⁽¹⁾	5	ug/kg	< 5
Perfluoropropanesulfonic acid (PFPrS) ⁽¹⁾⁽¹⁾	5	ug/kg	< 5
Perfluoropentanesulfonic acid (PFPeS) ⁽¹⁾⁽¹⁾	5	ug/kg	< 5
Perfluorohexanesulfonic acid (PFHxS) ⁽¹⁾⁽¹⁾	5	ug/kg	< 5
Perfluoroheptanesulfonic acid (PFHpS) ⁽¹⁾⁽¹⁾	5	ug/kg	< 5
Perfluorooctanesulfonic acid (PFOS) ⁽¹⁾⁽¹⁾	5	ug/kg	< 5
Perfluorodecanesulfonic acid (PFDS) ⁽¹⁾⁽¹⁾	5	ug/kg	< 5
13C3-PFBS (surr.) ¹	1	%	44
18O2-PFHxS (surr.) ¹	1	%	90
13C8-PFOS (surr.)	1	%	90
n:2 Fluorotelomer sulfonic acids (n:2 FTSA)			
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2 FTSA) ⁽¹⁾⁽¹⁾	5	ug/kg	< 5
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2 FTSA) ⁽¹⁾⁽¹⁾	10	ug/kg	< 10
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2 FTSA) ⁽¹⁾⁽¹⁾	5	ug/kg	< 5
1H,1H,2H,2H-perfluorododecanesulfonic acid (10:2 FTSA) ⁽¹⁾⁽¹⁾	5	ug/kg	< 5
13C2-4:2 FTSA (surr.) ¹	1	%	66
13C2-6:2 FTSA (surr.)	1	%	66
13C2-8:2 FTSA (surr.) ¹	1	%	31
13C2-10:2 FTSA (surr.)	1	%	66
PFASs Summations			
Sum (PFHxS + PFOS) ¹	5	ug/kg	< 5
Sum of US EPA PFAS (PFOS + PFOA) ¹	5	ug/kg	< 5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA) ¹	5	ug/kg	< 5
Sum of WA DWER PFAS (n=10) ¹	10	ug/kg	< 10
Sum of PFASs (n=30) ¹	50	ug/kg	< 50

13.9 Appendix 9 - Waste Oil General Chemistry Lab Results

03/10/2024



Certificate of Analysis

LOW ECOLOGICAL SERVICES PTY
LTD
Lot 1858 Isotoma Road
Alice Springs NT 0871

Unit ID: A3

Compartment Name: A3

Make:

Make:

Model:

Model:

Serial No:

Serial No:

Site: Alice Springs Turf Club

Capacity:

SIF No: 704812024

Date Received: 04-Oct-24

Fluid Manufacturer: Unidentified

Lab No: 10700076101

Date Reported: 17-Oct-24

Fluid Type: Oil

UIN: DABC225

Fluid Grade: Unknown

Testing Laboratory: Sydney Non-Routine

		DATE SAMPLED	DATE SAMPLED	DATE SAMPLED	DATE SAMPLED
TEST/METHOD	UNITS	03-Oct-24	25-Aug-24	09-Aug-24	31-Jul-24
Metals (ppm)					
*Aluminium (Al)	ppm	12	15	24	7
*Chromium (Cr)	ppm	<1	1	20	1
*Iron (Fe)	ppm	45	76	56	50
*Copper (Cu)	ppm	12	12	33	12
*Lead (Pb)	ppm	2	1	20	3
*Tin (Sn)	ppm	1	1	20	1
*Nickel (Ni)	ppm	1	1	20	1
Silver (Ag)	ppm	4	1	17	1
Contaminants and Additives (ppm)					
*Silicon (Si)	ppm	24	35	35	21
*Sodium (Na)	ppm	4	13	71	10
*Potassium (K)	ppm	21	80	82	54
*Molybdenum (Mo)	ppm	5	9	137	144
Boron (B)	ppm	17	23	135	97
*Magnesium (Mg)	ppm	11	22	348	320
*Calcium (Ca)	ppm	1341	1709	1133	1133
*Zinc (Zn)	ppm	668	683	733	801
*Phosphorus (P)	ppm	636	678	657	730
*Lithium (Li)	ppm	<1	<1	20	1
Physical Tests					
Water (%) (FTIR)	%	0.4	2.4	3.6	>1
Soot (%) (FTIR)	%	0.6	0.2	23.2	18.6
Oxidation (Abs) (FTIR)	Abs	12.7	18.2	18.6	23.4
Sulphation (Abs) (FTIR)	Abs	18.4	14.1	15.4	12.2
Viscosity (cSt,100°C)	cSt	11.8	19.9	10.2	—
PQ Index	Index	25	19	34	18
Total Base Number (FTIR)	mgKOH/g	4.3	2.6	1.8	1.1
Fuel (%)	%	7	14		

DIAGNOSIS:

Results were obtained on the sample as received.

NATA Accreditation No. 825. Site No. 2024. *NATA accreditation covers the performance of this service.



Certificate of Analysis

LOW ECOLOGICAL SERVICES PTY LTD

Lot 1858 Isotoma Road
Alice Springs NT 0871

Unit ID: A1

Compartment Name: A1

Make:

Make:

Model:

Model:

Serial No:

Serial No:

Site:

Alice Springs Turf Club

Capacity:

SIF No: 704812022

Lab No: 10700076099

Date Received: 04-Oct-24

Fluid Manufacturer: Unidentified

UIN: 0ABC221

Date Reported: 17-Oct-24

Fluid Type: Oil

Testing Laboratory: Sydney Non-Routine

Fluid Grade: Unknown

TEST/METHOD

UNITS

DATE SAMPLED

DATE SAMPLED

DATE SAMPLED

DATE SAMPLED

03-Oct-24

26-Aug-24

08-Aug-24

31-Jul-24

Metals (ppm)

*Aluminium (Al)	ppm	13	15	14	6
*Chromium (Cr)	ppm	<1	1	2	1
*Iron (Fe)	ppm	49	72	79	74
*Copper (Cu)	ppm	13	12	9	8
*Lead (Pb)	ppm	3	1	4	2
*Tin (Sn)	ppm	1	1	3	1
*Nickel (Ni)	ppm	1	1	2	1
*Silver (Ag)	ppm	6	7	9	<1

Contaminants and Additives (ppm)

*Silicon (Si)	ppm	28	34	29	19
*Sodium (Na)	ppm	4	13	8	6
*Potassium (K)	ppm	24	79	24	58
*Molybdenum (Mo)	ppm	6	9	674	159
Boron (B)	ppm	27	31	61	96
*Magnesium (Mg)	ppm	13	21	1030	361
*Calcium (Ca)	ppm	1381	1598	845	782
*Zinc (Zn)	ppm	674	633	1250	717
*Phosphorus (P)	ppm	651	634	1140	664
*Lithium (Li)	ppm	<1	<1	2	<1

Physical Tests

Water (%) (FTIR)	%	0.5	2.6	1.2	>1
Soot (%) (FTIR)	%	1.2	0.3	11.0	16.5
Oxidation (Abs) (FTIR)	Abs	13.3	20.0	22.4	58.1
Sulphation (Abs) (FTIR)	Abs	16.2	14.0	24.2	38.5
Viscosity (cSt, 100°C)	cSt	10.4	12.5	17.4	—
PQ Index	Index	15	18	328	17
Total Base Number (FTIR)	mgKOH/g	4.1	2.1	5.2	<0.1
Fuel (%)	%	6	—	—	—

DIAGNOSIS:

Results were obtained on the sample as received.

NATA Accreditation No. 825, Site No. 2024. *NATA accreditation covers the performance of this service.

Diagnosed by: Kumar,Audiappan

right solution. right partner.



Certificate of Analysis

LOW ECOLOGICAL SERVICES PTY
LTD

Lot 1858 Isotoma Road
Alice Springs NT 0871

SIF No: 704812023
Lab No: 10700078100
UIN: DABC223
Testing Laboratory: Sydney Non-Routine

Unit ID: A2

Make:
Model:
Serial No:
Site: Alice Springs Turf Club

Date Received: 04-Oct-24
Date Reported: 17-Oct-24

Compartment Name: A2

Make:
Model:
Serial No:
Capacity:
Fluid Manufacturer: Unidentified
Fluid Type: Oil
Fluid Grade: Unknown

TEST/METHOD	UNITS	DATE SAMPLED 03-Oct-24	DATE SAMPLED 25-Aug-24	DATE SAMPLED 08-Aug-24	DATE SAMPLED 31-Jul-24
Metals (ppm)					
*Aluminium (Al)	ppm	11	15	7	7
*Chromium (Cr)	ppm	<1	1	1	1
*Iron (Fe)	ppm	43	75	48	62
*Copper (Cu)	ppm	12	12	12	12
*Lead (Pb)	ppm	1	1	2	3
*Tin (Sn)	ppm	1	1	1	1
*Nickel (Ni)	ppm	1	1	1	1
*Silver (Ag)	ppm	3	1	3	1
Contaminants and Additives (ppm)					
*Silicon (Si)	ppm	20	35	23	23
*Sodium (Na)	ppm	3	13	11	10
*Potassium (K)	ppm	21	78	51	49
*Molybdenum (Mo)	ppm	4	9	393	155
Boron (B)	ppm	15	26	105	113
*Magnesium (Mg)	ppm	10	22	731	359
*Calcium (Ca)	ppm	1283	1682	957	1136
*Zinc (Zn)	ppm	650	672	1021	832
*Phosphorus (P)	ppm	622	668	935	775
*Lithium (Li)	ppm	<1	<1	1	1
Physical Tests					
Water (%) (FTIR)	%	0.3	2.6	3.4	>1
Soot (%) (FTIR)	%	<0.1	0.3	20.9	17.5
Oxidation (Abs) (FTIR)	Abs	12.7	20.0	20.8	18.2
Sulphation (Abs) (FTIR)	Abs	17.1	14.4	15.4	11.1
Viscosity (cSt, 100°C)	cSt	11.3	9.4	12.9	-
PQ Index	Index	17	19	61	15
Total Base Number (FTIR)	mgKOH/g	4.2	2.1	2.0	3.2
Fuel (%)	%	7			-

DIAGNOSIS:

Results were obtained on the sample as received.
NATA Accreditation No. 925. Site No. 2024. *NATA accreditation covers the performance of this service.

Diagnosed by: Kumar.Audiappan

right solution. right partner.



UIN 0AE7D19

Diesel Engine

Unit No.

Unit: A4

Make

Model

Serial No.

Mfg Year:

Apparatus Type:

KV Rating

Cooling

Compartment:

Name Bulk Oil

Location

Capacity Lbs

MVA Rating:

Customer:

LOW ECOLOGICAL SERVICES PTY LTD

PO Box 3130

Alice Springs NT 0870

DIAGNOSIS

Results were obtained on the sample as received.



Normal



Severe



Abnormal



Caution



Normal

LEGEND

Certificate of Analysis

DATE SAMPLED	17-Jul-13	03-Oct-24
DATE RECEIVED	17-Jul-13	04-Oct-24
DATE COMPLETED		09-Oct-24
DATE AMENDED		
LABORATORY	Sydney Non-	

LAB NO.

SIF NO.

FLUID TYPE

SAMPLED BY:

FLUID TEMP:

TEMP GAUGE:

SYRINGES:

WO NUMBER

Fluid Reference

10700075102

704812025

CII

PCB (Aroclor 1242, 1254, 1260)

Total PCB (ASTM D4052)

mg/kg

<2



Authorised Signatory: Kumar.Audappan

This document shall not be reproduced except in full. Analysis undertaken on sample as received. Testing performed between Date Received and Date Reported unless otherwise specified. Results that fall on limits are diagnosed in accordance with customer limits & ALS Reporting guidelines. Unless a specified decision rule is requested.

For all test methods, units of measurement and measurement uncertainties, click on this link.

Page 1 of 2

13.10 Appendix 10 – Waste Oil PFAS lab Results 03/10/2024



Environment Testing

Certificate of Analysis

Low Ecological Services Pty Ltd
25 Isotoma Road
Connellan
NT 0873



NATA Accredited
Accreditation Number 1281
Site Number 20784 & 2780

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: Bill Low

Report 1147583-S
Project name TURF CLUB WASTE OIL SAMPLING
Received Date Oct 10, 2024

Client Sample ID			P-1
Sample Matrix			Oil
Eurofins Sample No.			B24- Oc0023827
Date Sampled			Oct 03, 2024
Test/Reference	LOR	Unit	
Perfluoroalkyl carboxylic acids (PFCAs)			
Perfluorobutanoic acid (PFBA) ^{N11}	5	ug/kg	< 100
Perfluoropentanoic acid (PFPeA) ^{N11}	5	ug/kg	< 100
Perfluorohexanoic acid (PFHxA) ^{N11}	5	ug/kg	< 100
Perfluoroheptanoic acid (PFHpA) ^{N11}	5	ug/kg	< 100
Perfluorooctanoic acid (PFOA) ^{N11}	5	ug/kg	< 100
Perfluorononanoic acid (PFNA) ^{N11}	5	ug/kg	< 100
Perfluorodecanoic acid (PFDA) ^{N11}	5	ug/kg	< 100
Perfluoroundecanoic acid (PFUnDA) ^{N11}	5	ug/kg	< 100
Perfluorododecanoic acid (PFDoDA) ^{N11}	5	ug/kg	< 100
Perfluorotridecanoic acid (PFTriDA) ^{N15}	5	ug/kg	< 100
Perfluorotetradecanoic acid (PFTeDA) ^{N11}	5	ug/kg	< 100
13C4-PFBA (surr.)	1	%	117
13C5-PFPeA (surr.)	1	%	116
13C5-PFHxA (surr.)	1	%	130
13C4-PFHpA (surr.)	1	%	130
13C8-PFOA (surr.)	1	%	128
13C5-PFNA (surr.)	1	%	122
13C6-PFDA (surr.)	1	%	122
13C2-PFUnDA (surr.)	1	%	157
13C2-PFDoDA (surr.)	1	%	126
13C2-PFTeDA (surr.)	1	%	172
Perfluoroalkyl sulfonamido substances			
Perfluorooctane sulfonamide (FOSA) ^{N11}	5	ug/kg	< 100
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA) ^{N11}	5	ug/kg	< 100
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA) ^{N11}	5	ug/kg	< 100
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE) ^{N11}	5	ug/kg	< 100
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE) ^{N11}	5	ug/kg	< 100
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) ^{N11}	10	ug/kg	< 100
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) ^{N11}	10	ug/kg	< 100
13C8-FOSA (surr.)	1	%	113
D3-N-MeFOSA (surr.)	1	%	115
D5-N-EtFOSA (surr.)	1	%	120



Environment Testing

Client Sample ID			P-1
Sample Matrix			Oil
Eurofins Sample No.			B24- Oc0023827
Date Sampled			Oct 03, 2024
Test/Reference	LOR	Unit	
Perfluoroalkyl sulfonamido substances			
D7-N-MeFOSE (surr.)	1	%	99
D9-N-EtFOSE (surr.)	1	%	143
D5-N-EtFOSAA (surr.)	1	%	123
D3-N-MeFOSAA (surr.)	1	%	121
Perfluoroalkyl sulfonic acids (PFASs)			
Perfluorobutanesulfonic acid (PFBS) ^{N11}	5	ug/kg	< 100
Perfluorononanesulfonic acid (PFNS) ^{N15}	5	ug/kg	< 100
Perfluoropropanesulfonic acid (PFPrS) ^{N15}	5	ug/kg	< 100
Perfluoropentanesulfonic acid (PFPeS) ^{N15}	5	ug/kg	< 100
Perfluorohexanesulfonic acid (PFHxS) ^{N11}	5	ug/kg	< 100
Perfluoroheptanesulfonic acid (PFHpS) ^{N15}	5	ug/kg	< 100
Perfluorooctanesulfonic acid (PFOS) ^{N11}	5	ug/kg	< 100
Perfluorodecanesulfonic acid (PFDS) ^{N15}	5	ug/kg	< 100
13C3-PFBS (surr.)	1	%	120
18O2-PFHxS (surr.)	1	%	101
13C8-PFOS (surr.)	1	%	104
n:2 Fluorotelomer sulfonic acids (n:2 FTSA)			
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2 FTSA) ^{N11}	5	ug/kg	< 100
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2 FTSA) ^{N11}	10	ug/kg	< 100
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2 FTSA) ^{N11}	5	ug/kg	< 100
1H,1H,2H,2H-perfluorododecanesulfonic acid (10:2 FTSA) ^{N11}	5	ug/kg	< 100
13C2-4:2 FTSA (surr.)	1	%	78
13C2-6:2 FTSA (surr.)	1	%	90
13C2-8:2 FTSA (surr.)	1	%	73
13C2-10:2 FTSA (surr.)	1	%	138
PFASs Summations			
Sum (PFHxS + PFOS) ¹	5	ug/kg	< 100
Sum of US EPA PFAS (PFOS + PFOA) ¹	5	ug/kg	< 100
Sum of enHealth PFAS (PFHxS + PFOS + PFOA) ¹	5	ug/kg	< 100
Sum of WA DWER PFAS (n=10) ¹	10	ug/kg	< 100
Sum of PFASs (n=30) ¹	50	ug/kg	< 100

13.11 Appendix 11 – Waste Oil General Chemistry Lab Results 08/11/2024



UIN 0AFAE16

Diesel Engine

Unit No. ES2437190

Unit Details:

Make

Model

Serial No.

Capacity

Site

Ltrs

Alice Springs Turf Club

Compartment Details:

Name

Make

Model

Serial No.

Al

Customer:

LOW ECOLOGICAL SERVICES PTY LTD

As oil breakdown on oil unknown, diagnosis is limited. However, all wear levels appear within acceptable limits for first sample. Silicon level (dirt/abrasive material) satisfactory. Concentration of water at a severe level. Massive fuel dilution occurring. Please check recorded viscosity against requirements. Action: Please provide missing oil information at next sample submission. Recommend checking all injectors, fuel pump and internal fuel lines for fuel leak. Check all water access points (if present) for leaks. Drain all water from oil sump. Resample after corrective action to further monitor and establish wear trend. NATA Accreditation No. 825. Site No. 2024. *NATA accreditation covers the performance of this service.

Authorized Signatory - Diagnostician:

Antonio Ciarra-gallo

STOP

Severe

Excessive

Caution

Normal

LEGEND

Right Solutions • Right Partner

Certificate of Analysis

DATE SAMPLED
08-Nov-24

DATE RECEIVED
11-Nov-24

DATE REPORTED
21-Nov-24

TRIBOLOGY LABORATORY
Sydney

SAMPLE NO.
1035486591

WORK ORDER NO.
705087692

COMPONENT
OIL

OIL MAKE
Undertuned

OIL TYPE
Undertuned

OIL GRADE
Undertuned

OIL ADDED
Not Applicable

FILTER CHANGED
Not Applicable

FILTER OIL CHANGED
Not Applicable

Metals (ppm)

Aluminum (Al)
11

Iron (Fe)
1

Copper (Cu)
7

Chromium (Cr)
35

Lead (Pb)
2

Tin (Sn)
1

Silver (Ag)
5

Contaminants and Additives (ppm)

Boron (B)
19

Sodium (Na)
22

Potassium (K)
5

Phosphorus (P)
464

Molybdenum (Mo)
92

Calcium (Ca)
515

Magnesium (Mg)
210

Zinc (Zn)
520

Lithium (Li)
1

Physical Tests

Water (%) (FTIR)
1.5

Acid (%) (FTIR)
0.2

Viscosity (cSt 100°C)
9.8

RO Index
12

Oxidation (Abs) (FTIR)
13.0

Sulphation (Abs) (FTIR)
9.0

Fuel (%)
8

Total Base Number (FTIR)
2.0

The document shall not be reproduced except in full. Analysis undertaken on sample as received. Testing performed between Date Received and Date Reported unless otherwise specified. Results that fall on limits are diagnosed in accordance with customer limits & ALS Reporting guide lines, unless a specified decision rule is requested. For all test methods, units of measurement and measurement uncertainties, click on this link.

Page 1 of 2

Low Ecological Services P/L

61



UIN 0AFAE1E

Diesel Engine

Unit No. ES2437190

Unit Details:

Make	
Model	
Serial No.	
Capacity	Ltrs
Site	Alice Springs Turf Club

Compartment Details:

Name	A2
Make	
Model	
Serial No.	

Customer:	LOW ECOLOGICAL SERVICES PTY LTD
-----------	---------------------------------

DIAGNOSIS

As oil brand/grade/type on oil unknown, diagnosis is limited. However, All wear levels appear within acceptable limits for first sample. Silicon level (dirt/sealant material) satisfactory. Heavy concentration of water present. Massive fuel dilution occurring. Please check recorded viscosity against requirements. Action: Please provide missing oil information at next sample submission. Recommend checking all injectors, fuel pumps and internal fuel lines for fuel leak. Check all water access points (breathers/seals). Drain oil from unit if not already changed. Resample after corrective action to further monitor and establish wear trend. NATA Accreditation No. 825. Site No. 2024. *NATA accreditation covers the performance of this service.

Authorized Signatory - Diagnostician:
Antonio Colangelo

Severe

Abnormal

Caution

Normal

LEGEND

Right Solutions • Right Partner

Certificate of Analysis

DATE SAMPLED	08-Nov-24
DATE RECEIVED	16-Nov-24
DATE REPORTED	21-Nov-24
TRIBOLOGY LABORATORY	Sydney

SAMPLE NO. 10J05496592
TRACKING NUMBER 705087693

MACHINE COMPONENT	Hrs
OIL TYPE	Hrs
OIL MAKE	Undertested
OIL GRADE	Undertested
OIL ADDED	-
FILTER CHANGED	Ltrs
FILTER CHANGED	Hrs
OIL CHANGED	Not Applicable

Metals (ppm)

*Aluminium (Al)	10
*Nickel (Ni)	<1
*Copper (Cu)	5
*Chromium (Cr)	<1
*Iron (Fe)	33
*Lead (Pb)	<1
*Tin (Sn)	1
*Silver (Ag)	1

Contaminants and Additives (ppm)

*Silicon (Si)	18
Boron (B)	18
*Sodium (Na)	6
*Potassium (K)	9
*Phosphorus (P)	463
*Molybdenum (Mo)	94
*Calcium (Ca)	510
*Magnesium (Mg)	218
*Zinc (Zn)	524
*Lithium (Li)	1

Physical Tests

Water (%) (FTIR)	1.0
Soot (%) (FTIR)	0.2
Viscosity (cSt.100°C)	11.7
PQ Index	12
Oxidation (Abs) (FTIR)	14.0
Sulphation (Abs) (FTIR)	9.8
Fuel (%)	8
Total Base Number (FTIR)	1.8



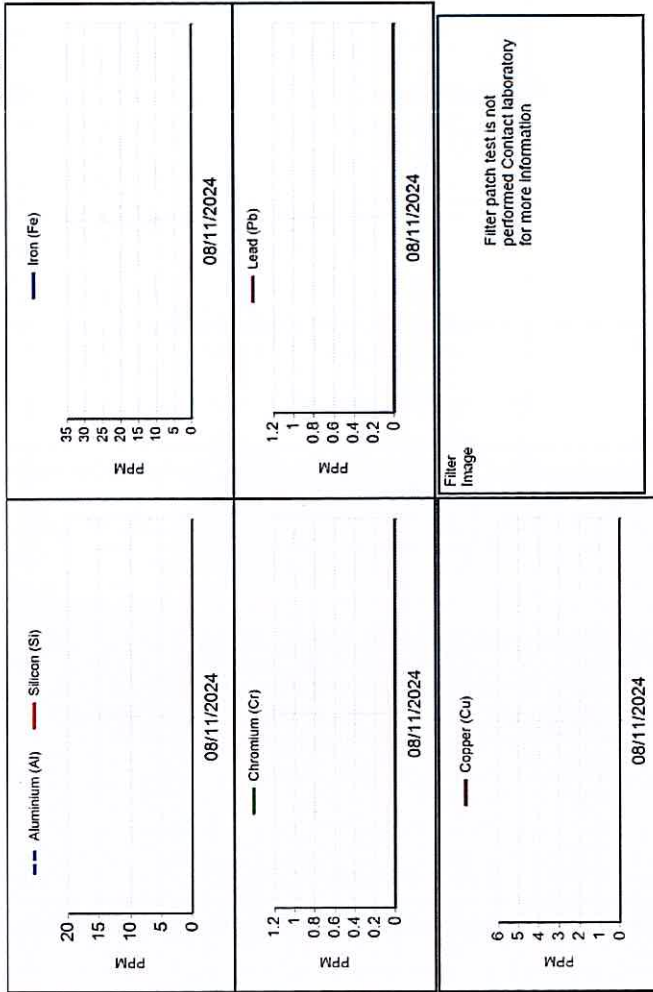
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Right Solutions • Right Partner

UIN 0AFAE1E

10205466952



0295 v1.12

Low Ecological Services Pty Ltd
Attn: Report
PO Box 3130
Alice Springs NT 0870

This analysis report is dependent upon the accurate completion of the sample submission sheet and correct sampling techniques as advised. The analysis is intended as an aid only in predicting mechanical wear and should not be regarded as a substitute for proper servicing or mechanical inspection. The company does not accept any liability whatsoever in respect of any loss or damage (including loss of profits, economic or other consequential loss or damage) however caused which may arise directly, or indirectly, as a result of the matters referred to in this analysis report.

Australia & New Zealand		International Locations	
Brisbane 26 Strand Street St Leonards QLD 4055 Phone: (07) 3330 0300	Perth 100 Barrack Street Perth WA 6000 Phone: (81) 6222 0400	U.S.A. Atlanta, Georgia Kansas City, Kansas Portland, Oregon	Canada Burlington, Ontario Edmonton, Alberta Southeast Asia Kuala Lumpur, Singapore South America Santiago de Chile Belo Horizonte, Sao Paulo, Brazil
Muswellbrook Unit 1a Industrial Close Muswellbrook NSW 2325 Phone: (02) 6641 3555	Wellington 30B Seaview Road Lower Hutt City 5012 Phone: (04) 441 655 0202	Europe Prague	

All test methods are determined by laboratory location, and customer requirements. Methods can be made available on request by contacting the testing laboratory.

Alarm limits are based on a combination of trend and OEM, client and/or ALS proprietary specifications. For more information please contact your testing laboratory.



UIN 0AFEA20

Diesel Engine

Unit No. ES2437190

Unit Details:

Make
Model
Serial No.
Capacity Ltrs
Site Alice Springs Turf Club

Compartment Details:

Name A3
Make
Model
Serial No.

Customer:

LOW ECOLOGICAL SERVICES PTY LTD

DIAGNOSIS

As oil brand/grade/type on oil unknown, diagnosis is limited. However, All wear levels appear within acceptable limits for first sample. Silicon level (dirt/sediment material) satisfactory. Heavy concentration of water present. Massive fuel dilution occurring. Please check recorded viscosity against requirements. Action: Please provide missing oil information at next sample submission. Recommend checking all injectors, fuel pumps and internal fuel lines for fuel leak. Check all water access points (breathers/seals). Drain oil from unit if not already changed. Resample after corrective action to further monitor and establish wear trend. NATA Accreditation No. 825. Site No. 2024. *NATA accreditation covers the performance of this service.

Authorized Signatory - Diagnostician:

Antonio Colangillo

Severe

Abnormal

Normal

LEGEND

Severe

Abnormal

Caution

Normal

Right Solutions • Right Partner

Certificate of Analysis

DATE SAMPLED	08-Nov-24
DATE RECEIVED	19-Nov-24
DATE REPORTED	21-Nov-24
TRIBOLOGY LABORATORY	Sydney

SAMPLE NO.	10205486883
WORK ORDER NO.	705687764
MACHINE COMPONENT	Hrs
OIL	Hrs
OIL MAKE	Unidentified
OIL TYPE	Unidentified
OIL GRADE	-
OIL ADDED	Ltrs
FILTER CHANGED	Hrs
OIL CHANGED	Not Applicable

Metals (ppm)	
*Aluminium (Al)	11
*Nickel (Ni)	<1
*Copper (Cu)	5
*Chromium (Cr)	<1
*Iron (Fe)	34
*Lead (Pb)	1
*Tin (Sn)	1
Silver (Ag)	1

Contaminants and Additives (ppm)	
*Silicon (Si)	19
Boron (B)	16
*Sodium (Na)	6
*Potassium (K)	10
*Phosphorus (P)	466
*Molybdenum (Mo)	98
*Calcium (Ca)	512
*Magnesium (Mg)	217
*Zinc (Zn)	524
*Lithium (Li)	1

Physical Tests	
Water (%) (FTIR)	1.0
Soot (%) (FTIR)	0.2
Viscosity (cSt 100°C)	9.0
PQ Index	10
Oxidation (Abs) (FTIR)	13.1
Sulphation (Abs) (FTIR)	8.6
Fuel (%)	8
Total Base Number (FTIR)	1.9



This document shall not be reproduced except in full. Analysis undertaken on sample as received. Testing performed between Date Received and Date Reported unless otherwise specified. Results that fall on limits are diagnosed in accordance with customer limits & ALS Reporting guidelines, unless a specified decision rule is requested.

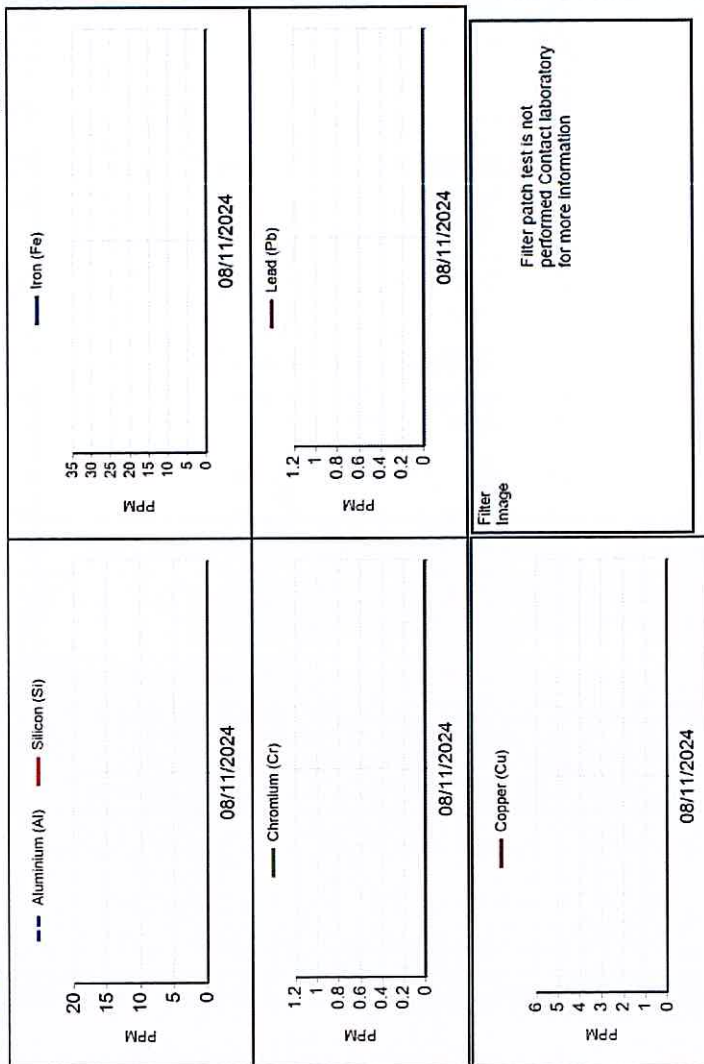
For all test methods, units of measurement and measurement uncertainties, click on this link.



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UIN 0AFEA20

10205466933



Low Ecological Services Pty Ltd
Attn: Report
PO Box 3130
Alice Springs NT 0870

This analysis report is dependent upon the accurate completion of the sample submission sheet and correct sampling techniques as advised. The analysis is intended as an aid only in predicting mechanical wear and should not be regarded as a substitute for proper servicing or mechanical inspection. The company does not accept any liability whatsoever in respect of any loss or damage (including loss of profits, economic or other consequential loss or damage) however caused which may arise directly, or indirectly, as a result of the matters referred to in this analysis report.

Australia & New Zealand		International Locations	
Brisbane 26 Shand Street Stafford QLD 4053 Phone: (07) 3325 6300	Perth 100 Bannister Road Canning Vale WA 6125 Phone: (08) 9332 0400	Sydney 2/171-175 Newson Road Wetherill Park NSW 2104 Phone: (02) 8784 3150	U.S.A. Atlanta, Georgia Kansas City, Kansas Portland, Oregon
Muswellbrook Unit 1a Industrial Close Muswellbrook NSW 2133 Phone: (02) 6541 5805 Unit 1A/8 Industrial Close		Canada Burlington, Ontario Edmonton, Alberta	
		Southeast Asia Kuala Lumpur, Singapore	
		Europe Prague	
		South America Santiago de Chile Belo Horizonte, Sao Paulo, Brazil	

All test methods are determined by laboratory location, and customer requirements. Methods can be made available on request by contacting the testing laboratory.

Alarm limits are based on a combination of trend and OEM, client and ALS laboratory specifications. For more information please contact your testing laboratory.



Work Order

: ES2437190

Client

: LOW ECOLOGICAL SERVICES

Contact

: MR BILL LOW

Address

: PO BOX 3130
ALICE SPRINGS NT, AUSTRALIA 0871

Telephone

: +61 08 80 555 222

Project

: Alice Springs Turf Club

Order number

: 20241105JR

C-O-C number

: ---

Sampler

: Danesh Anita, James Ross

Site

: ---

Quota number

: EN333

No. of samples received

: 1

No. of samples analysed

: 1

Page

: 1 of 2

Laboratory

: Environmental Division Sydney

Contact

: Customer Services ES

Address

: 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone

: +61-2-8784 8555

Date Samples Received

: 12-Nov-2024 14:49

Date Analysis Commenced

: 18-Nov-2024

Issue Date

: 22-Nov-2024 10:35

Association No. 015

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

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

Subcontracting Coordinator

WRG Subcontracting, Smithfield, NSW

right solutions. right partner.

Low Ecological Services P/L

66

Page : 2 of 2
 Work Order : ES2437190
 Client : LOW ECOLOGICAL SERVICES
 Project : Alice Springs Turf Club



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AG 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 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

o = This result is computed from individual analyte detections at or above the level of reporting

o = ALS is not NATA accredited for these tests

~ = Indicates an estimated value

- PCB in Oil (O-PCB) is conducted and not Accredited by ALS Scoredry.

Analytical Results

Sub-Matrix: OIL
 (Matrix: OIL & GAS)

Compound	CAS Number	Sample ID		A4 bulk					
		LOR	Sampling date / time						
			Unit						
O-PCB: PCBs in Oil									
Aroclor 1016	12674-11-2	0.2	mg/kg	<0.2					
Aroclor 1221	11104-26-2	0.2	mg/kg	<0.2					
Aroclor 1232	11141-16-5	0.2	mg/kg	<0.2					
Aroclor 1242	53465-21-9	0.2	mg/kg	<0.2					
Aroclor 1248	12672-35-6	0.2	mg/kg	<0.2					
Aroclor 1254	11097-69-1	0.2	mg/kg	<0.2					
Aroclor 1260	11096-35-5	0.2	mg/kg	<0.2					
Total Polychlorinated biphenyls									

13.12 Appendix 12 – Waste Oil PFAS Lab Results 08/11/2024



Environment Testing

Certificate of Analysis

Low Ecological Services Pty Ltd
25 Isotoma Road
Connellan
NT 0873



NATA Accredited
Accreditation Number 1281
Site Number 20784 & 2780

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: Bill Low

Report 1160777-5

Project name TURF CLUB WASTE OIL SAMPLING

Received Date Nov 15, 2024

Client Sample ID	LOR	Unit	P-1 Oil B24- No0041855 Nov 08, 2024
Sample Matrix			
Eurofins Sample No.			
Date Sampled			
Test/Reference	LOR	Unit	
Perfluoroalkyl carboxylic acids (PFCAs)			
Perfluorobutanoic acid (PFBA) ^(M)	5	ug/kg	< 100
Perfluoropentanoic acid (PFPeA) ^(M)	5	ug/kg	< 100
Perfluorohexanoic acid (PFHxA) ^(M)	5	ug/kg	< 100
Perfluoroheptanoic acid (PFHpA) ^(M)	5	ug/kg	< 100
Perfluorooctanoic acid (PFOA) ^(M)	5	ug/kg	< 100
Perfluorononanoic acid (PFNA) ^(M)	5	ug/kg	< 100
Perfluorodecanoic acid (PFDA) ^(M)	5	ug/kg	< 100
Perfluoroundecanoic acid (PFUnDA) ^(M)	5	ug/kg	< 100
Perfluorododecanoic acid (PFDoDA) ^(M)	5	ug/kg	< 100
Perfluorotridecanoic acid (PFTrDA) ^(M)	5	ug/kg	< 100
Perfluorotetradecanoic acid (PFTeDA) ^(M)	5	ug/kg	< 100
13C4-PFBA (surr.)	1	%	100
13C5-PFPeA (surr.)	1	%	95
13C5-PFHxA (surr.)	1	%	104
13C4-PFHpA (surr.)	1	%	102
13C8-PFOA (surr.)	1	%	93
13C5-PFNA (surr.)	1	%	97
13C6-PFDA (surr.)	1	%	97
13C2-PFUnDA (surr.)	1	%	122
13C2-PFDoDA (surr.)	1	%	99
13C2-PFTeDA (surr.)	1	%	121
Perfluoroalkyl sulfonamido substances			
Perfluorooctane sulfonamide (FOSA) ^(M)	5	ug/kg	< 100
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA) ^(M)	5	ug/kg	< 100
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA) ^(M)	5	ug/kg	< 100
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE) ^(M)	5	ug/kg	< 100
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE) ^(M)	5	ug/kg	< 100
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA) ^(M)	10	ug/kg	< 100
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) ^(M)	10	ug/kg	< 100
13C8-FOSA (surr.)	1	%	82
D3-N-MeFOSA (surr.)	1	%	95
D5-N-EtFOSA (surr.)	1	%	98

Date Reported: Nov 22, 2024

Eurofins Environment Testing 1/21 Smallwood Place, Muramba, QLD, Australia, 4172
ABN: 60 006 055 521 Telephone: +61 7 3902 4600

Page 1 of 5
Report Number: 1160777-5



Environment Testing

Client Sample ID			P-1
Sample Matrix			Oil
Eurofins Sample No.			B24-
Date Sampled			No0041855
Test/Reference	LOR	Unit	Nov 08, 2024
Perfluoroalkyl sulfonamido substances			
D7-N-MeFOSE (surr.)	1	%	78
D9-N-EFOSE (surr.)	1	%	106
D5-N-EFOSAA (surr.)	1	%	84
D3-N-MeFOSAA (surr.)	1	%	92
Perfluoroalkyl sulfonic acids (PFASs)			
Perfluorobutanesulfonic acid (PFBS) ^{N11}	5	ug/kg	< 100
Perfluorononanesulfonic acid (PFNS) ^{N15}	5	ug/kg	< 100
Perfluoropropanesulfonic acid (PFPrS) ^{N13}	5	ug/kg	< 100
Perfluoropentanesulfonic acid (PFPeS) ^{N15}	5	ug/kg	< 100
Perfluorohexanesulfonic acid (PFHxS) ^{N11}	5	ug/kg	< 100
Perfluoroheptanesulfonic acid (PFHpS) ^{N15}	5	ug/kg	< 100
Perfluorooctanesulfonic acid (PFOS) ^{N11}	5	ug/kg	< 100
Perfluorodecanesulfonic acid (PFDS) ^{N15}	5	ug/kg	< 100
13C3-PFBS (surr.)	1	%	85
18O2-PFHxS (surr.)	1	%	93
13C8-PFOS (surr.)	1	%	95
n:2 Fluorotelomer sulfonic acids (n:2 FTSA)			
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2 FTSA) ^{N11}	5	ug/kg	< 100
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2 FTSA) ^{N11}	10	ug/kg	< 100
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2 FTSA) ^{N11}	5	ug/kg	< 100
1H,1H,2H,2H-perfluorododecanesulfonic acid (10:2 FTSA) ^{N11}	5	ug/kg	< 100
13C2-4:2 FTSA (surr.)	1	%	52
13C2-6:2 FTSA (surr.)	1	%	87
13C2-8:2 FTSA (surr.)	1	%	77
13C2-10:2 FTSA (surr.)	1	%	103
PFASs Summations			
Sum (PFHxS + PFOS) [*]	5	ug/kg	< 100
Sum of US EPA PFAS (PFOS + PFOA) [*]	5	ug/kg	< 100
Sum of enHealth PFAS (PFHxS + PFOS + PFOA) [*]	5	ug/kg	< 100
Sum of WA DWER PFAS (n=10) [*]	10	ug/kg	< 100
Sum of PFASs (n=30) [*]	50	ug/kg	< 100

13.13 Appendix 13 – Waste Oil General Chemistry Lab Results 06/03/2025



Unit No. A1

Diesel Engine

Unit Details:

Make

Model

Serial No.

Capacity

Site

Ltrs

Alice Springs Turf Club

Compartment Details:

Name

Make

Model

Serial No.

A1

Customer:

LOW ECOLOGICAL SERVICES PTY. LTD

DIAGNOSIS

Results were obtained on the sample as received.
NATA Accreditation No. 825, Site No. 2024. NATA
accreditation covers the performance of this service.

Authorized Signatory - Diagnostician:

Kumar Ausdappan

LEGEND

Normal

Abnormal

Caution

Normal

Right Solutions • Right Partner

Certificate of Analysis									
DATE SAMPLED	DATE RECEIVED	DATE REPORTED	TRIBUTORY LABORATORY	SAMPLE NO.	TRACKING NUMBER	WORK ORDER NO.	LABORATORY COMPONENT	OIL MAKE	OIL TYPE
06-Mar-25	03-Oct-24	28-Aug-24	Sydney Non-Routine	10700075382	10700075382	704614954	Unidentified	Oil	Unknown
10-Mar-25	04-Oct-24	30-Aug-24	Sydney Non-Routine	10700076099	10700076099	704613022	Unidentified	Oil	Unknown
07-Apr-25	17-Oct-24	17-Sep-24	Sydney Non-Routine	10700074972	10700074972	704623111	Unidentified	Oil	Unknown
08-Sep-24	12-Sep-24	14-Aug-24	Sydney Non-Routine	10700074640	10700074640	704483211	Unidentified	Oil	Unknown
11-Jul-24	02-Jul-24	02-Jul-24	Sydney Non-Routine	10700074262	10700074262	704400887	Unidentified	Oil	Unknown
Metals (ppm)									
*Aluminum (Al)	4	13	15	14	6	1	28		
*Nickel (Ni)	<1	1	1	2	1	1	8		
*Copper (Cu)	5	13	12	9	8	1	1		
*Chromium (Cr)	<1	<1	1	2	1	1	1		
*Iron (Fe)	27	49	72	79	74	74	193		
*Lead (Pb)	1	3	1	4	2	1	1		
*Tin (Sn)	1	1	1	3	1	1	1		
*Silver (Ag)	3	6	7	9	<1	<1	2		
Contaminants and Additives (ppm)									
*Sulfur (S)	12	26	34	29	19	32			
*Boron (B)	113	27	31	61	96	5			
*Sodium (Na)	10	4	13	8	6	6			
*Potassium (K)	70	24	79	24	56	10			
*Phosphorus (P)	802	651	634	1140	694	507			
*Molybdenum (Mo)	33	6	9	674	159	9			
*Calcium (Ca)	1750	1381	1598	845	762	866			
*Magnesium (Mg)	145	13	21	1030	361	17			
*Zinc (Zn)	847	674	633	1250	717	495			
*Lithium (Li)	<1	<1	<1	2	<1	<1			
Physical Tests									
Fuel (% by G.C.)	9.8	0.5	14.1	10.8	12.7	21.9			
Water (%) (FTIR)	3.3	1.2	2.6	1.2	>1	0.2			
Soot (%) (FTIR)	0.1	1.2	0.3	11.0	16.5	2.3			
Viscosity (cSt 100°C)	10.4	10.4	12.5	17.4	—	8.5			
PO Index	12	15	18	326	17	95			
Oxidation (Abs) (FTIR)	15.5	13.3	20.0	22.4	58.1	8.2			
Sulphation (Abs) (FTIR)	10.1	16.2	14.0	24.2	38.5	17.0			
Total Base Number (FTIR)	<0.1	4.1	2.1	5.2	<0.1	2.8			

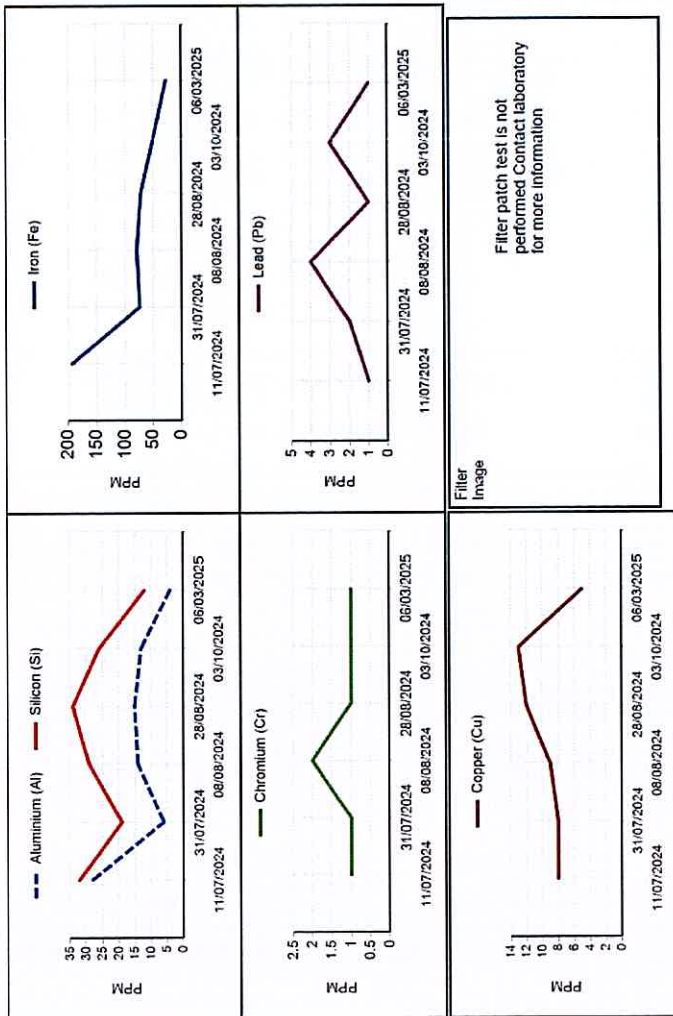
This document shall not be reproduced except in full. Analysis undertaken on sample as received. Testing performed between Date Received and Date Reported unless otherwise specified.
Results that fall on limits are diagnosed in accordance with customer limits & ALS Reporting guidelines, unless a specified decision rule is requested.
For all test methods, units of measurement and measurement uncertainties, click on this link.



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UIN 0ABC221

10700075617



0259 v1.12

Low Ecological Services Pty Ltd
Attn: Report
PO Box 3130
Alice Springs NT 0870

All test methods are determined by laboratory location, and customer requirements must be made available on request by contacting the testing laboratory.

Alarm limits are based on a combination of trend and OEM, client and/or ALS proprietary specifications. For more information please contact your testing laboratory.

Page 2 of 2

This analysis report is dependent upon the accurate completion of the sample submission sheet and correct sampling techniques as advised. The analysis is intended as an aid only in predicting mechanical wear and should not be regarded as a substitute for proper servicing or mechanical inspection. The company does not accept any liability whatsoever in respect of any loss or damage (including loss of profits, economic or other consequential loss or damage) however caused which may arise directly, or indirectly, as a result of the matters referred to in this analysis report.

Australia & New Zealand		International Locations	
Brisbane 25 Chapel Street Sturtville QLD 4053 Phone: (07) 3528 6300	Perth 100 Bankers Road Canning Vale WA 6155 Phone: (08) 9232 0400	U.S.A. Atlanta, Georgia Kunasa City, Kansas Portland, Oregon	Canada Burlington, Ontario Edmonton, Alberta
	Sydney 3171-175 Newson Road Werribee Park NSW 2164 Phone: (02) 8788 3150		South East Asia Kuala Lumpur, Singapore
Muswellbrook Unit 1a Industrial Close Muswellbrook NSW 2325 Phone: (02) 65413865 Unit 1A/9 Industrial Close**		Europe Prague Santiago de Chile Belo Horizonte, Sao Paulo, Brazil	



UIN 0ABC223

Diesel Engine

Unit No. A2

Unit Details:

Make

Model

Capacity

Site

Compartment Details:

Name

Make

Model

Serial No.

Customer:

LOW ECOLOGICAL SERVICES PTY LTD

DIAGNOSIS

Results were obtained on the sample as received.

NATA Accreditation No. 825, Site No. 2024. NATA

accreditation covers the performance of this service.

Authorized Signatory - Diagnostician:

Kumar Audappan

LEGEND

Normal

Abnormal

Caution

Right Solutions • Right Partner

Certificate of Analysis

DATE SAMPLED	06-Mar-25	03-Oct-24	28-Aug-24	08-Aug-24	31-Jul-24	11-Jul-24
DATE RECEIVED	10-Mar-25	04-Oct-24	30-Aug-24	19-Aug-24	02-Aug-24	15-Jul-24
DATE REPORTED	07-Apr-25	17-Oct-24	06-Sep-24	12-Sep-24	14-Aug-24	24-Jul-24
TRIBUTORY LABORATORY	Sydney Non-Routine	Sydney Non-Routine	Sydney Non-Routine	Sydney Non-Routine	Sydney Non-Routine	Sydney Non-Routine

SAMPLE NO.	10700075618	10700076100	10700075283	10700074973	10700074641	10700074283
TRACKING NUMBER	705637781	704812023	704614955	704562143	704482212	704400688
WORK ORDER NO.						
MACHINE						
COMPONENT						

OIL	Undetected	Undetected	Undetected	Undetected	Undetected	Undetected
OIL MAKE	Oil	Oil	Oil	Oil	Oil	Oil
OIL TYPE	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
OIL GRADE	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
OIL FILTER	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
OIL CHANGED						

Metals (ppm)	4	11	15	7	7	36
*Aluminium (Al)	1	1	1	1	1	1
*Nickel (Ni)	5	12	12	12	12	8
*Copper (Cu)	<1	<1	1	1	1	1
*Chromium (Cr)	27	43	75	48	62	236
*Iron (Fe)	1	1	1	1	1	1
*Lead (Pb)	1	1	1	1	1	1
*Tin (Sn)	1	1	1	1	1	1
*Silver (Ag)	1	3	1	3	1	1

Contaminants and Additives (ppm)	12	20	35	23	23	44
*Silicon (Si)	76	15	26	105	113	5
*Boron (B)	11	3	13	11	10	6
*Sodium (Na)	72	21	78	51	49	18
*Potassium (K)	815	622	668	935	775	514
*Phosphorus (P)	33	4	9	393	155	9
*Molybdenum (Mo)	1769	1283	1682	957	1136	882
*Calcium (Ca)	145	10	22	731	359	18
*Magnesium (Mg)	869	650	672	1021	832	508
*Zinc (Zn)	<1	<1	<1	1	1	<1
*Lithium (Li)						

Physical Tests	9.8	13.5	9.2	14.5	27.2
Fuel (% by G.C.)	3.3	2.6	3.4	>1	0.2
Water (%) (FTIR)	0.1	<0.1	0.3	20.9	17.5
Soot (%) (FTIR)	9.9	11.3	9.4	12.9	2.7
Viscosity (cSt, 100°C)	13	17	19	15	10.6
PQ Index	15.3	12.7	20.0	18.2	8.3
Oxidation (Abs) (FTIR)	9.7	17.1	14.4	11.1	16.8
Sulphation (Abs) (FTIR)	2.8	4.2	2.1	3.2	3.4
Total Base Number (FTIR)					

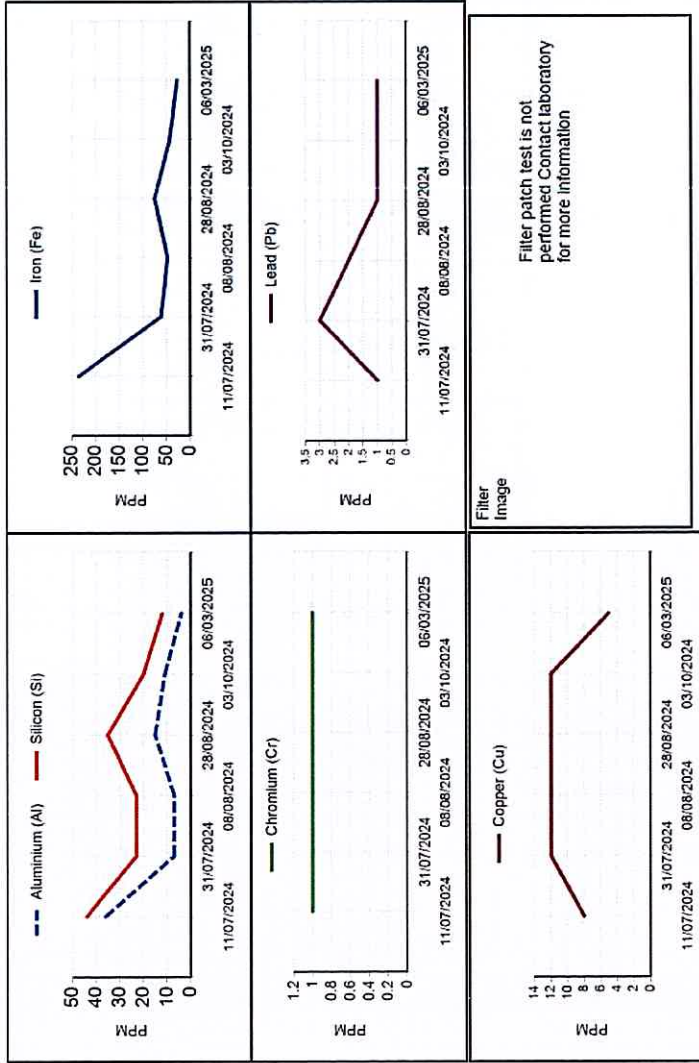
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UN 0ABC223

10700075618



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Australia & New Zealand		International Locations	
Brisbane 28 Sand Street Stuffed QLD 4053 Phone: (07) 3326 6300	Perth 100 Bannister Road Canning Vale WA 6155 Phone: (08) 9232 0400	U.S.A. Atlanta, Georgia Kansas City, Kansas Portland, Oregon	Canada Burlington, Ontario Edmonton, Alberta
	Sydney 2/171-176 Newton Road Wentworth NSW 2164 Phone: (02) 9766 3150		Southeast Asia Kuala Lumpur, Singapore
	Muswellbrook Unit 11 Industrial Close Muswellbrook NSW 2333 Phone: (02) 6541 3855 Unit 1A/6 Industrial Close		South America Santiago de Chile Belo Horizonte, Sao Paulo, Brazil
Wellington 365 Stavely Road Lower Hut 5010 Ph +64 (4) 568 6202		Europe Prague	

Low Ecological Services Pty Ltd
Attn: Report
PO Box 3130
Alice Springs NT 0870

0298 v1.12

All test methods are determined by laboratory location, and customer requirements. Methods can be made available on request by contacting the testing laboratory.

Alarm limits are based on a combination of trend and OEM, client and/or ALS proprietary specifications. For more information please contact your testing laboratory.

Page 2 of 2



Unit No. A3

Diesel Engine

Unit Details:

Make

Model

Serial No.

Capacity

Site

Alice Springs Turf Club

Compartment Details:

Name

Make

Model

Serial No.

Customer:

LOW ECOLOGICAL SERVICES PTY LTD

DIAGNOSIS

Results were obtained on the sample as received.
NATA Accreditation No. 825, Site No. 2024. *NATA
accreditation covers the performance of this service.

Authorized Signatory - Diagnostician:

Kumar.Audappan

Normal

Abnormal

Caution

Normal

LEGEND

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Certificate of Analysis

DATE SAMPLED	06-Mar-25	03-Oct-24	28-Aug-24	08-Aug-24	31-Jul-24	11-Jul-24
DATE RECEIVED	10-Mar-25	04-Oct-24	30-Aug-24	19-Aug-24	02-Aug-24	15-Jul-24
DATE REPORTED	07-Apr-25	17-Oct-24	06-Sep-24	12-Sep-24	14-Aug-24	24-Jul-24
TRIBOLOGY LABORATORY	Sydney Non-Routine	Sydney Non-Routine	Sydney Non-Routine	Sydney Non-Routine	Sydney Non-Routine	Sydney Non-Routine

SAMPLE NO.	10700075619	10700076101	10700075284	10700074924	10700074542	10700074264
WORK ORDER NO.	705683782	704812024	704814956	704862144	704862213	704400689
MACHINE COMPONENT	Oil	Oil	Oil	Oil	Oil	Oil

OIL MAKE	Unidentified	Unidentified	Unidentified	Unidentified	Unidentified	Unidentified
OIL TYPE	Oil	Oil	Oil	Oil	Oil	Oil
OIL GRADE	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
OIL ADDED	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
FILTER CHANGED	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
FILTER	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
OIL CHANGED	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

Metals (ppm)	3	12	15	24	7	38
*Aluminum (Al)	1	1	1	20	1	1
*Nickel (Ni)	6	12	12	33	12	8
*Copper (Cu)	<1	<1	1	20	1	1
*Chromium (Cr)	27	45	76	56	50	241
*Iron (Fe)	1	2	1	20	3	1
*Lead (Pb)	1	1	1	20	1	1
*Tin (Sn)	4	4	1	17	1	1
*Silver (Ag)						

Contaminants and Additives (ppm)	12	24	35	35	21	49
*Silicon (Si)	79	17	23	135	97	6
*Boron (B)	11	4	13	71	10	6
*Sodium (Na)	72	21	80	62	54	11
*Potassium (K)	838	636	678	687	730	503
*Phosphorus (P)	34	5	9	137	144	9
*Molybdenum (Mo)	1816	1341	1709	1133	1133	882
*Calcium (Ca)	147	11	22	346	320	18
*Magnesium (Mg)	850	668	683	733	801	514
*Zinc (Zn)	<1	<1	<1	20	1	<1
*Lithium (Li)						

Physical Tests	10.1	0.4	13.5	11.3	15.1	27.6
Fuel (% by G.C.)	3.3	0.6	2.4	3.6	>1	0.3
Water (%) (FTIR)	0.1	11.6	0.2	23.2	18.6	3.0
Soot (%) (FTIR)	10.5	14	19	10.2	-	9.0
Viscosity (cSt, 100°C)	14	25	19	34	16	119
PQ Index	15.4	12.7	18.2	18.6	23.4	8.4
Oxidation (Abs) (FTIR)	9.8	16.4	14.1	15.4	12.2	16.6
Sulphation (Abs) (FTIR)	2.9	4.3	2.6	1.8	1.1	2.9
Total Base Number (FTIR)						

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Results that fall on limits are diagnosed in accordance with customer limits & ALS Reporting Guidelines, unless a specified decision rule is requested.
For all test methods, units of measurement and measurement uncertainties, click on this link.

Low Ecological Services P/L

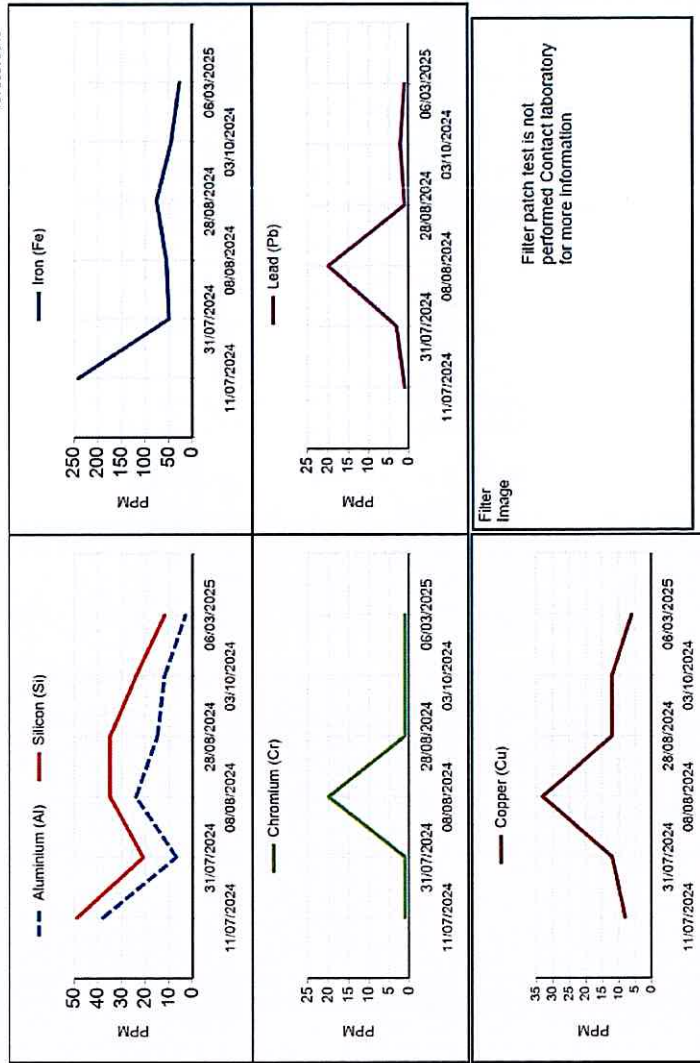
74



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UIN 0ABC225

10700075619



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Attn: Report
PO Box 3130
Alice Springs NT 0870

0255 v1.12

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Australia & New Zealand		International Locations	
Brisbane 20 Shand Street Stallford QLD 4053 Phone: (07) 3320 6300	Perth	U.S.A. Atlanta, Georgia Kansas City, Kansas Portland, Oregon	Canada Burlington, Ontario Edmonton, Alberta
	Sydney		Southeast Asia Kuala Lumpur, Singapore
	Wellington		South America Santiago de Chile Belo Horizonte, Sao Paulo, Brazil
Muswellbrook Unit 1a Industrial Close Muswellbrook NSW 2333 Phone: (02) 6541 3805 Unit 1A0 Industrial Close			

All test methods are determined by laboratory location, and customer requirements. Methods can be made available on request by contacting the testing laboratory.

Alarm limits are based on a combination of trend and OEM, client and/or ALS proprietary specifications. For more information please contact your testing laboratory.



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UIN 0AE7D19

No Data Available	No Data Available	No Data Available
No Data Available	No Data Available	No Data Available
No Data Available	Filter Image	Filter patch test is not performed Contact laboratory for more information
Samples are tested as received. Fluid and unit information is reproduced in report as supplied by client. Services are based on samples and information supplied including any comments or observations. Results are based on interpretations of the generated test results and historical data. Certain test results appearing in this report may have been generated at other ALS Tibology laboratories.		

Low Ecological Services Pty Ltd
Attn: Report
PO Box 3130
Alice Springs NT 0870

0470 v1.1

Australia & New Zealand

Brisbane
28 Shand Street
Spring Creek QLD 4127
Phone: (07) 3323 0300

Sydney
2171-171 Market Road
Westcott Park NSW 2164
Phone: (02) 8788 3150

Muswellbrook
Unit 3/8 Redwood Circle
Muswellbrook NSW 2333
Phone: (02) 85413565

Perth
100 Barnard Road
Spearwood WA 6108
Phone: (08) 9332 0400

Wellington
368 Seaview Road
Lower Hutt 5010
Ph: +64 (4) 568 0302

International Locations

U.S.A.
Atlanta, Georgia
Kansas City, Kansas
Portland, Oregon
Valley View, Ohio
Phoenix, Arizona

Canada
Burlington, Ontario
Edmonton, Alberta

Southeast Asia
Kuala Lumpur, Singapore

Europe
Prague

South America
Santiago de Chile,
Belo Horizonte Brazil

All test methods are determined by laboratory location, and customer requirements. Methods can be made available on request by contacting the testing laboratory.

Alarm limits are based on a combination of trend and OEM, client and/or ALS proprietary specifications. For more information please contact your testing laboratory.

13.14 Appendix 14 – Waste Oil PFAS Lab Results 06/03/2025



Environment Testing

Certificate of Analysis

Low Ecological Services Pty Ltd
25 Isotoma Road
Connellan
NT 0873



NATA Accredited
Accreditation Number 1281
Site Number 20704 & 2780

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, method testing, calibration,
inspection, proficiency testing scheme providers and
reference materials producers reports and certificates.

Attention: WATER
Report 1197459-S
Project name
Project ID TURF CLUB WASTE OIL SAMPLING
Received Date Mar 13, 2025

Client Sample ID			P-1
Sample Matrix			Oil
Eurofins Sample No.			B25-
Date Sampled			Ma0029378
Test/Reference	LOR	Unit	Mar 06, 2025
Perfluoroalkyl carboxylic acids (PFCA's)			
Perfluorobutanoic acid (PFBA) ^(N1)	5	ug/kg	< 100
Perfluoropentanoic acid (PFPeA) ^(N1)	5	ug/kg	< 100
Perfluorohexanoic acid (PFHxA) ^(N1)	5	ug/kg	< 100
Perfluoroheptanoic acid (PFHpA) ^(N1)	5	ug/kg	< 100
Perfluorooctanoic acid (PFOA) ^(N1)	5	ug/kg	< 100
Perfluorononanoic acid (PFNA) ^(N1)	5	ug/kg	< 100
Perfluorodecanoic acid (PFDA) ^(N1)	5	ug/kg	< 100
Perfluoroundecanoic acid (PFUnDA) ^(N1)	5	ug/kg	< 100
Perfluorododecanoic acid (PFDoDA) ^(N1)	5	ug/kg	< 100
Perfluorotridecanoic acid (PFTrDA) ^(N1)	5	ug/kg	< 100
Perfluorotetradecanoic acid (PFTeDA) ^(N1)	5	ug/kg	< 100
13C4-PFBA (sum.)	1	%	117
13C5-PFPeA (sum.)	1	%	105
13C5-PFHxA (sum.)	1	%	111
13C4-PFHpA (sum.)	1	%	108
13C8-PFOA (sum.)	1	%	109
13C5-PFNA (sum.)	1	%	102
13C6-PFDA (sum.)	1	%	103
13C2-PFUnDA (sum.)	1	%	134
13C2-PFDoDA (sum.)	1	%	102
13C2-PFTeDA (sum.)	1	%	68
Perfluoroalkyl sulfonamido substances			
Perfluorooctane sulfonamide (FOSA) ^(N1)	5	ug/kg	< 100
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA) ^(N1)	5	ug/kg	< 100
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA) ^(N1)	5	ug/kg	< 100
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFQSE) ^(N1)	5	ug/kg	< 100
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFQSE) ^(N1)	5	ug/kg	< 100
N-ethylperfluorooctanesulfonamidoacetic acid (N-EtFOSA) ^(N1)	10	ug/kg	< 100
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSA) ^(N1)	10	ug/kg	< 100
13C8-FOSA (sum.)	1	%	105
D3-N-MeFOSA (sum.)	1	%	107



eurofins

Environment Testing

Client Sample ID			P-1
Sample Matrix			Oil
Eurofins Sample No.			B25-
Date Sampled			Ma0029378
Test/Reference	LOR	Unit	Mar 06, 2025
Perfluoroalkyl sulfonamido substances			
D5-N-EiFOSA (surr.)	1	%	103
D7-N-MeFOSE (surr.)	1	%	42
D9-N-EiFOSE (surr.)	1	%	50
D5-N-EiFOsAA (surr.)	1	%	123
D3-N-MeFOsAA (surr.)	1	%	104
Perfluoroalkyl sulfonic acids (PFASs)			
Perfluorobutanesulfonic acid (PFBS) ⁽¹⁾	5	ug/kg	< 100
Perfluorononanesulfonic acid (PFNS) ⁽¹⁾	5	ug/kg	< 100
Perfluoropropanesulfonic acid (PFPrS) ⁽¹⁾	5	ug/kg	< 100
Perfluoropentanesulfonic acid (PFPeS) ⁽¹⁾	5	ug/kg	< 100
Perfluorohexanesulfonic acid (PFHxS) ⁽¹⁾	5	ug/kg	< 100
Perfluoroheptanesulfonic acid (PFHpS) ⁽¹⁾	5	ug/kg	< 100
Perfluorooctanesulfonic acid (PFOS) ⁽¹⁾	5	ug/kg	< 100
Perfluorodecanesulfonic acid (PFDS) ⁽¹⁾	5	ug/kg	< 100
13C3-PFBS (surr.)	1	%	113
18O2-PFHxS (surr.)	1	%	111
13C8-PFOS (surr.)	1	%	100
n:2 Fluorotelomer sulfonic acids (n:2 FTSA)			
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2 FTSA) ⁽¹⁾	5	ug/kg	< 100
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2 FTSA) ⁽¹⁾	10	ug/kg	< 100
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2 FTSA) ⁽¹⁾	5	ug/kg	< 100
1H,1H,2H,2H-perfluorododecanesulfonic acid (10:2 FTSA) ⁽¹⁾	5	ug/kg	< 100
13C2-4:2 FTSA (surr.)	1	%	109
13C2-6:2 FTSA (surr.)	1	%	120
13C2-8:2 FTSA (surr.)	1	%	99
13C2-10:2 FTSA (surr.)	1	%	223
PFASs Summations			
Sum (PFHxS + PFOS) ⁽¹⁾	5	ug/kg	< 100
Sum of US EPA PFAS (PFOS + PFOA) ⁽¹⁾	5	ug/kg	< 100
Sum of enHealth PFAS (PFHxS + PFOS + PFOA) ⁽¹⁾	5	ug/kg	< 100
Sum of WA DWER PFAS (n=10) ⁽¹⁾	10	ug/kg	< 100
Sum of PFASs (n=30) ⁽¹⁾	50	ug/kg	< 100

13.15 Appendix 15 – Surface Water Lab Results 01/04/2025



CERTIFICATE OF ANALYSIS

Page : 1 of 7

Work Order
: ES2510520

Client
: LOW ECOLOGICAL SERVICES

Contact
: MR BILL LOW

Address
: PO BOX 3130
ALICE SPRINGS NT, AUSTRALIA 0871
: *81 08 80 555 322

Telephone
: AS Turf Club

Project
: ---

Order number
: ---

C-O-C number
: ---

Sampler
: Danesh Anita, James Ross

Site
: ---

Quote number
: EN/333

No. of samples received
: 5

No. of samples analysed
: 5

Laboratory
: Environmental Division Sydney

Contact
: Customer Services ES

Address
: 277-280 Woodpark Road Smithfield NSW Australia 2164

Telephone
: *61-2-8764 8555

Date Samples Received
: 11-Apr-2025 11:00

Date Analysis Commenced
: 14-Apr-2025

Issue Date
: 22-Apr-2025 22:32




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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

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

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

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Page : 2 of 7
 Work Order : ES2510520
 Client : LOW ECOLOGICAL SERVICES
 Project : AS Turf Club

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 result is higher than the LOR, this may be due to primary sample extractions, 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

o = ALS is not NATA accredited for these tests

- = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 80mL or 250mL bottles have been tested to the legacy QSM5.1 aligned, NATA accredited method.
- EP030: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EG035: Poor matrix spike recovery was obtained for Mercury on sample ES2510162 # 2. Confirmed by re-analysis.

Page : 3 of 7
 Work Order : ES2510520
 Client : LOW ECOLOGICAL SERVICES
 Project : AS Turf Club



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Compound	CAS Number	LOR	Sample ID		Site #5	Site 2	Site 4	Site 3	Bulk
			Sampling date / time	Unit					
					01-Apr-2025 11:45 ES2510520-001	01-Apr-2025 12:30 ES2510520-002	01-Apr-2025 13:00 ES2510520-003	01-Apr-2025 13:20 ES2510520-004	01-Apr-2025 11:45 ES2510520-005
					Result	Result	Result	Result	Result
EG0201: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	—
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	—
Chromium	7440-47-3	0.001	mg/L		0.001	0.002	0.001	0.005	—
Copper	7440-50-8	0.001	mg/L		0.003	0.002	0.008	0.004	—
Nickel	7440-02-0	0.001	mg/L		<0.001	0.001	0.004	0.003	—
Lead	7439-92-1	0.001	mg/L		0.001	0.001	<0.001	0.004	—
Zinc	7440-66-8	0.005	mg/L		0.018	0.014	0.209	0.016	—
EG0351: Total Recoverable Mercury by FIMS									
Mercury	7439-97-8	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	—
EP080071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	—	20	µg/L		<20	<20	<20	<20	—
C10 - C14 Fraction	—	50	µg/L		<50	<50	1190	<50	—
C15 - C28 Fraction	—	100	µg/L		<100	<100	7950	<100	—
C29 - C36 Fraction	—	50	µg/L		<50	<50	950	<50	—
* C10 - C36 Fraction (sum)	—	50	µg/L		<50	<50	10100	<50	—
EP080071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	—
* C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	—
>C10 - C16 Fraction	—	100	µg/L		<100	<100	2140	<100	—
>C16 - C34 Fraction	—	100	µg/L		<100	<100	7680	<100	—
>C34 - C40 Fraction	—	100	µg/L		<100	<100	<100	<100	—
* >C10 - C40 Fraction (sum)	—	100	µg/L		<100	<100	9820	<100	—
* >C10 - C16 Fraction minus Naphthalene (F2)	—	100	µg/L		<100	<100	2140	<100	—
EP1000: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	—
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	—

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 Work Order : ES2510520
 Client : LOW ECOLOGICAL SERVICES
 Project : AS Turf Club



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		Site #5		Site 2		Site 4		Site 3		Bulk	
Compound	CAS Number	LOR	Sampling date / time	Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result
EP080: BTEX - Continued													
Ethylbenzene	100-41-4	2		µg/L	<2	<2	<2	<2	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3	2		µg/L	<2	<2	<2	<2	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2		µg/L	<2	<2	<2	<2	<2	<2	<2	<2	<2
Σ Total Xylenes	---	2		µg/L	<2	<2	<2	<2	<2	<2	<2	<2	<2
Σ Sum of BTEX	---	1		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5		µg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5
EP231A: Perfluoroalkyl Sulfonic Acids													
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02		µg/L	---	---	---	---	---	---	---	<0.02	<0.02
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02		µg/L	---	---	---	---	---	---	---	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02		µg/L	---	---	---	---	---	---	---	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-48-4	0.01		µg/L	---	---	---	---	---	---	---	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-82-8	0.02		µg/L	---	---	---	---	---	---	---	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01		µg/L	---	---	---	---	---	---	---	<0.01	<0.01
Perfluorononane sulfonic acid (PFNS)	68256-12-1	0.02		µg/L	---	---	---	---	---	---	---	<0.02	<0.02
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02		µg/L	---	---	---	---	---	---	---	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids													
Perfluorobutanoic acid (PFBA)	375-22-4	0.1		µg/L	---	---	---	---	---	---	---	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02		µg/L	---	---	---	---	---	---	---	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02		µg/L	---	---	---	---	---	---	---	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02		µg/L	---	---	---	---	---	---	---	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-87-1	0.01		µg/L	---	---	---	---	---	---	---	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-85-1	0.02		µg/L	---	---	---	---	---	---	---	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02		µg/L	---	---	---	---	---	---	---	<0.02	<0.02

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Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		Site #5	Site 2	Site 4	Site 3	Bulk
Compound	CAS Number	Unit	Sampling date / time	Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoroundecanoic acid (PFUnDA)	2068-64-8	µg/L	0.02	---	---	---	---	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	µg/L	0.02	---	---	---	---	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-04-8	µg/L	0.02	---	---	---	---	<0.02
Perfluorotetradecanoic acid (PFTeDA)	378-06-7	µg/L	0.05	---	---	---	---	<0.05
Perfluorohexadecanoic acid (PFHxDA)	67805-19-5	µg/L	0.05	---	---	---	---	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	µg/L	0.02	---	---	---	---	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31508-32-8	µg/L	0.05	---	---	---	---	<0.05
N-Ethyl perfluorooctane sulfonamide (EFOSA)	4151-50-2	µg/L	0.05	---	---	---	---	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	µg/L	0.05	---	---	---	---	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	1681-99-2	µg/L	0.05	---	---	---	---	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2345-31-9	µg/L	0.02	---	---	---	---	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	2891-50-9	µg/L	0.02	---	---	---	---	<0.02
EP231D: (n-2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	µg/L	0.05	---	---	---	---	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-87-2	µg/L	0.05	---	---	---	---	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	38108-34-4	µg/L	0.05	---	---	---	---	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120228-90-0	µg/L	0.05	---	---	---	---	<0.05



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Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		Site #5		Site 2		Site 4		Site 3		Bulk	
Compound	CAS Number	Sampling date / time	LOR	Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result
EP231P: PFAS Summs													
Sum of PFAS	---	---	0.01	µg/L	---	---	---	---	---	---	---	<0.01	<0.01
Sum of PFHxS and PFOS	355-40-4/1763-23-1	---	0.01	µg/L	---	---	---	---	---	---	---	<0.01	<0.01
Sum of PFAS (W/ DER List)	---	---	0.01	µg/L	---	---	---	---	---	---	---	<0.01	<0.01
EP080S: TPHV/BTEX Surrogates													
1,2-Dichloroethane-D4	17060-07-0	2	%	---	110	96.2	---	103	---	104	---	---	---
Toluene-D8	2037-28-5	2	%	---	108	109	---	114	---	114	---	---	---
4-Bromofluorobenzene	460-00-4	2	%	---	118	113	---	116	---	117	---	---	---
EP231S: PFAS Surrogate													
13C4-PFOS	---	---	0.02	%	---	---	---	---	---	---	---	95.9	---
13C8-PFOA	---	---	0.02	%	---	---	---	---	---	---	---	103	---



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Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP0805: TPH(WJBTEX Surrogates)			
1,2-Dichloroethane-D4	17059-07-0	72	143
Toluene-D8	2037-28-5	75	131
4-Bromofluorobenzene	460-00-4	73	137
EP2115: PFAS Surrogate			
13C4-PFOS	---	60	120
13C8-PFOA	---	60	120

13.16 Appendix 16 – Near Track Soil Sampling Results 12/06/2025



CERTIFICATE OF ANALYSIS	
Work Order : ES2518293	Page : 1 of 17
Client : LOW ECOLOGICAL SERVICES	Laboratory : Environmental Division Sydney
Contact : MR BILL LOW	Contact : Customer Services ES
Address : PO BOX 3130	Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61 08 89 655 222	Telephone : +61-2-8784 8555
Project : ALICE SPRINGS NT, AUSTRALIA 0871	Date Samples Received : 18-Jun-2025 11:30
Order Number : Annual Soil Monitoring	Date Analysis Commenced : 18-Jun-2025
C-O-C number : 20250813JR	Issue Date : 24-Jun-2025 14:16
Sampler : James Ross / Danesh Anita	
Site : ---	
Quote number : EN/333	
No. of samples received : 24	
No. of samples analysed : 24	



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
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fajdar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fajdar	Organic Coordinator	Sydney Organics, Smithfield, NSW

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 Project : Annual Soil Monitoring



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/gestate 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
- o = ALS is not NATA accredited for these tests.
- ~ = Indicates an estimated value.

- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per USEPA 1631 limits where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

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 Client : LOW ECOLOGICAL SERVICES
 Project : Annual Soil Monitoring



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Compound	CAS Number	LOR	Sampling date / time	Unit	Sample ID	S01_TC_100-200 12-Jun-2025 11:40 ES2518293-001 Result	S01_TC_200-300 12-Jun-2025 11:40 ES2518293-002 Result	S02_TC_100-200 12-Jun-2025 12:05 ES2518293-003 Result	S02_TC_200-300 12-Jun-2025 12:05 ES2518293-004 Result	S03_TC_100-200 12-Jun-2025 12:35 ES2518293-005 Result
EA055: Moisture Content										
Moisture Content	---	1.0	%			5.4	7.7	4.9	4.6	3.6
EQ005(ED183): Total Metals by ICP-AES										
Arsenic	7440-38-2	5	mg/kg			<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg			<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg			18	30	20	13	12
Copper	7440-50-8	5	mg/kg			11	15	11	7	6
Lead	7439-92-1	5	mg/kg			8	7	8	<5	5
Nickel	7440-02-0	2	mg/kg			9	15	10	7	6
Zinc	7440-68-6	5	mg/kg			54	37	52	18	26
EQ05T: Total Recoverable Mercury by FIMS										
Mercury	7439-97-8	0.1	mg/kg			<0.1	<0.1	<0.1	<0.1	<0.1
EP056: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	---	0.1	mg/kg			<0.1	<0.1	<0.1	<0.1	<0.1
EP060071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	---	10	mg/kg			<10	<10	<10	<10	<10
C10 - C14 Fraction	---	50	mg/kg			<50	<50	<50	<50	<50
C15 - C28 Fraction	---	100	mg/kg			1000	140	<100	<100	1070
C29 - C36 Fraction	---	100	mg/kg			1010	170	<100	<100	1080
* C10 - C36 Fraction (sum)	---	50	mg/kg			2010	310	<50	<50	2150
EP060071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions										
C6 - C10 Fraction	C6_C10	10	mg/kg			<10	<10	<10	<10	<10
* C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg			<10	<10	<10	<10	<10
>C10 - C16 Fraction	---	50	mg/kg			<50	<50	<50	<50	<50
>C16 - C34 Fraction	---	100	mg/kg			1680	250	<100	<100	1810
>C34 - C40 Fraction	---	100	mg/kg			600	110	<100	<100	660
* >C10 - C40 Fraction (sum)	---	50	mg/kg			2280	360	<50	<50	2470

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Sample ID		S01_TC_100-200		S01_TC_200-300		S02_TC_100-200		S02_TC_200-300		S03_TC_100-200	
Compound	CAS Number	LOR	Unit	Sampling date / time	Result	Sampling date / time	Result	Sampling date / time	Result	Sampling date / time	Result	Sampling date / time	Result
					ES2518293-001		ES2518293-002		ES2518293-003		ES2518293-004		ES2518293-005
EP080071: Total Recoverable Hydrocarbons - NIEPM 2013 Fractions - Continued													
* >C10 - C16 Fraction minus Naphthalene (F2)	---	50	mg/kg		<50		<50		<50		<50		<50
EP0800: BTEX													
Benzene	71-43-2	0.2	mg/kg		<0.2		<0.2		<0.2		<0.2		<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5		<0.5		<0.5		<0.5		<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5		<0.5		<0.5		<0.5		<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5		<0.5		<0.5		<0.5		<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5		<0.5		<0.5		<0.5		<0.5
* Sum of BTEX	---	0.2	mg/kg		<0.2		<0.2		<0.2		<0.2		<0.2
* Total Xylenes	---	0.5	mg/kg		<0.5		<0.5		<0.5		<0.5		<0.5
Naphthalene	91-20-3	1	mg/kg		<1		<1		<1		<1		<1
EP231A: Perfluoroalkyl Sulfonic Acids													
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.0005	mg/kg		---		---		---		---		<0.0005
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002		---		---		---		<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-81-4	0.0002	mg/kg		---		---		---		---		<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-48-4	0.0002	mg/kg		<0.0002		---		---		---		<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-82-8	0.0002	mg/kg		---		---		---		---		<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		0.0005		---		---		---		0.0004
Perfluorononane sulfonic acid (PFNS)	68256-12-1	0.0002	mg/kg		---		---		---		---		<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		---		---		---		---		<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids													
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001		---		---		---		<0.001
Perfluoropentanoic acid (PFPeA)	2706-80-3	0.0002	mg/kg		<0.0002		---		---		---		<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002		---		---		---		<0.0002

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Sample ID		S01_TC_100-200		S01_TC_200-300		S02_TC_100-200		S02_TC_200-300		S03_TC_100-200	
Compound	CAS Number	LOR	Sampling date / time	Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued													
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002		mg/kg	<0.0002	---							<0.0002
Perfluorooctanoic acid (PFOA)	335-07-1	0.0002		mg/kg	<0.0002	---							<0.0002
Perfluorononanoic acid (PFNA)	375-05-1	0.0002		mg/kg	---	---							<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002		mg/kg	---	---							<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-04-8	0.0002		mg/kg	---	---							<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002		mg/kg	---	---							<0.0002
Perfluorotridecanoic acid (PFTriDA)	72628-04-8	0.0002		mg/kg	---	---							<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005		mg/kg	---	---							<0.0005
EP231C: Perfluoroalkyl Sulfonamides													
Perfluorooctane sulfonamide (FOSA)	754-91-8	0.0002		mg/kg	---	---							<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005		mg/kg	---	---							<0.0005
N-Ethyl perfluorooctane sulfonamide (EFOSA)	4151-50-2	0.0005		mg/kg	---	---							<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005		mg/kg	---	---							<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	1891-99-2	0.0005		mg/kg	---	---							<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002		mg/kg	---	---							<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	2891-50-8	0.0002		mg/kg	---	---							<0.0002
EP231D: (n-2) Fluorotelomer Sulfonic Acids													
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005		mg/kg	<0.0005	---							<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27815-97-2	0.0005		mg/kg	<0.0005	---							<0.0005



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 Project : Annual Soil Monitoring

Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Compound	CAS Number	Sampling date / time	Sample ID	S01_TC_100-200	S01_TC_200-300	S02_TC_100-200	S02_TC_200-300	S03_TC_100-200
		LOR	Unit	Result	Result	Result	Result	Result
EP231D: (n-2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	---	---	---	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	---	---	---	<0.0005
EP231P: PFAS Sum								
Sum of PFAS	---	0.0002	mg/kg	---	---	---	---	0.0004
Sum of PFHxS and PFOS	365-46-4/1763-23-1	0.0002	mg/kg	0.0005	---	---	---	0.0004
Sum of PFAS (WA DER List)	---	0.0002	mg/kg	0.0005	---	---	---	0.0004
EP065S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	81.6	87.7	84.4	112	116
EP080S: TPH(V)BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.2	%	76.2	85.2	81.1	84.4	99.6
Toluene-D8	2037-28-5	0.2	%	83.1	88.2	83.5	85.0	104
4-Bromofluorobenzene	480-00-4	0.2	%	89.8	89.4	86.7	87.7	102
EP231S: PFAS Surrogate								
13C4-PFOS	---	0.0002	%	106	---	---	---	110
13C8-PFOA	---	0.0002	%	108	---	---	---	98.8

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 Client : LOW ECOLOGICAL SERVICES
 Project : Annual Soil Monitoring



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID		Sampling date / time		Result	
Compound	CAS Number	LOR	Unit	S03_TC_200-300	S04_TC_100-200	S04_TC_200-300	S05_TC_100-200	S05_TC_200-300
				12-Jun-2025 12:35	12-Jun-2025 13:00	12-Jun-2025 13:00	12-Jun-2025 13:25	12-Jun-2025 13:25
				ES2518293-006	ES2518293-007	ES2518293-008	ES2518293-009	ES2518293-010
				Result	Result	Result	Result	Result
EA055: Moisture Content								
Moisture Content	---	1.0	%	4.4	<1.0	1.9	4.9	3.5
EG005(ED033): Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	27	6	15	10	12
Copper	7440-50-8	5	mg/kg	14	<5	8	6	7
Lead	7439-92-1	5	mg/kg	8	<5	29	<5	<5
Nickel	7440-02-0	2	mg/kg	14	4	8	5	6
Zinc	7440-66-8	5	mg/kg	38	10	30	16	15
EG05T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-8	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP056: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	---	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP050071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	---	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	---	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	---	100	mg/kg	610	<100	<100	200	<100
C29 - C36 Fraction	---	100	mg/kg	660	<100	<100	210	<100
^ C10 - C36 Fraction (sum)	---	50	mg/kg	1270	<50	<50	410	<50
EP050071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	---	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	---	100	mg/kg	1080	<100	<100	350	140
>C34 - C40 Fraction	---	100	mg/kg	330	<100	<100	150	<100
^ >C10 - C40 Fraction (sum)	---	50	mg/kg	1410	<50	<50	500	140

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Sample ID		S03_TC_200-300		S04_TC_100-200		S04_TC_200-300		S05_TC_100-200		S05_TC_200-300	
Compound	CAS Number	LOR	Unit	Sampling date / time	Result	Sampling date / time	Result	Sampling date / time	Result	Sampling date / time	Result	Sampling date / time	Result
EP080071: Total Recoverable Hydrocarbons – NEM 2013 Fractions - Continued													
* >C10 - C18 Fraction minus Naphthalene (F2)	---	50	mg/kg		<50		<50		<50		<50		<50
EP0805: BTEX													
Benzene	71-43-2	0.2	mg/kg		<0.2		<0.2		<0.2		<0.2		<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5		<0.5		<0.5		<0.5		<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5		<0.5		<0.5		<0.5		<0.5
meta- & para-Xylene	108-38-3 105-42-3	0.5	mg/kg		<0.5		<0.5		<0.5		<0.5		<0.5
ortho-Xylene	95-47-8	0.5	mg/kg		<0.5		<0.5		<0.5		<0.5		<0.5
* Sum of BTEX	---	0.2	mg/kg		<0.2		<0.2		<0.2		<0.2		<0.2
* Total Xylenes	---	0.5	mg/kg		<0.5		<0.5		<0.5		<0.5		<0.5
Naphthalene	81-20-3	1	mg/kg		<1		<1		<1		<1		<1
EP0555: PCB Surrogate													
Decachlorobiphenyl	2051-24-3	0.1	%		114		129		102		83.3		91.0
EP0805: TPHVBTX Surrogates													
1,2-Dichloroethane-D4	17060-07-0	0.2	%		89.6		81.6		80.5		83.4		84.0
Toluene-D8	2037-28-5	0.2	%		92.4		83.9		81.0		86.2		85.2
4-Bromofluorobenzene	460-00-4	0.2	%		92.2		83.7		83.1		86.5		86.2

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 Client : LOW ECOLOGICAL SERVICES
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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Sample ID		Sampling date / time		Unit		Result		Result		Result	
Compound	CAS Number	LOD	%	Unit	Result	Unit	Result	Unit	Result	Unit	Result	Unit	Result
EA055: Moisture Content													
Moisture Content	---	1.0	%		8.6		7.8		7.7		6.8		2.7
EG005(ED093)I: Total Metals by ICP-AES													
Arsenic	7440-38-2	5	mg/kg		<5		<5		<5		<5		<5
Cadmium	7440-43-9	1	mg/kg		<1		<1		<1		<1		<1
Chromium	7440-47-3	2	mg/kg		31		33		36		36		14
Copper	7440-50-8	5	mg/kg		15		17		19		19		7
Lead	7439-92-1	5	mg/kg		7		7		8		9		<5
Nickel	7440-02-0	2	mg/kg		16		17		18		19		8
Zinc	7440-66-8	5	mg/kg		38		39		42		40		17
EG051T: Total Recoverable Mercury by FIMS													
Mercury	7439-97-8	0.1	mg/kg		<0.1		<0.1		<0.1		<0.1		<0.1
EP056: Polychlorinated Biphenyls (PCB)													
Total Polychlorinated biphenyls	---	0.1	mg/kg		<0.1		<0.1		<0.1		<0.1		<0.1
EP080071: Total Petroleum Hydrocarbons													
C6 - C9 Fraction	---	10	mg/kg		<10		<10		<10		<10		<10
C10 - C14 Fraction	---	50	mg/kg		<50		<50		<50		<50		<50
C15 - C28 Fraction	---	100	mg/kg		<100		<100		<100		<100		<100
C29 - C36 Fraction	---	100	mg/kg		<100		<100		<100		<100		<100
* C10 - C36 Fraction (sum)	---	50	mg/kg		<50		<50		<50		<50		<50
EP080071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions													
C6 - C10 Fraction	C6_C10	10	mg/kg		<10		<10		<10		<10		<10
* C6 - C10 Fraction minus BTEX (P1)	C6_C10-BTEX	10	mg/kg		<10		<10		<10		<10		<10
>C10 - C16 Fraction	---	50	mg/kg		<50		<50		<50		<50		<50
>C16 - C34 Fraction	---	100	mg/kg		<100		<100		<100		<100		<100
>C34 - C40 Fraction	---	100	mg/kg		<100		<100		<100		<100		<100
* >C10 - C40 Fraction (sum)	---	50	mg/kg		<50		<50		<50		<50		<50

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Sample ID		S06_TC_100-200		S06_TC_200-300		S07_TC_100-200		S07_TC_200-300		S08_TC_100-200	
Compound	CAS Number	LOR	Unit	Sampling date / time	Result	Sampling date / time	Result	Sampling date / time	Result	Sampling date / time	Result	Sampling date / time	Result
EP1800071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued													
^ >C10 - C16 Fraction minus Naphthalene (F2)	---	50	mg/kg	12-Jun-2025 15:10	ES2518293-011	12-Jun-2025 15:10	ES2518293-012	12-Jun-2025 14:25	ES2518293-013	12-Jun-2025 14:25	ES2518293-014	12-Jun-2025 13:50	ES2518293-015
EP180: BTEX													
Benzene	71-43-2	0.2	mg/kg		<0.2		<0.2		<0.2		<0.2		<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5		<0.5		<0.5		<0.5		<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5		<0.5		<0.5		<0.5		<0.5
meta- & para-Xylene	108-38-3 105-42-3	0.5	mg/kg		<0.5		<0.5		<0.5		<0.5		<0.5
ortho-Xylene	95-47-8	0.5	mg/kg		<0.5		<0.5		<0.5		<0.5		<0.5
^ Sum of BTEX	---	0.2	mg/kg		<0.2		<0.2		<0.2		<0.2		<0.2
^ Total Xylenes	---	0.5	mg/kg		<0.5		<0.5		<0.5		<0.5		<0.5
Naphthalene	81-20-3	1	mg/kg		<1		<1		<1		<1		<1
EP231A: Perfluoroalkyl Sulfonic Acids													
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		---		---		---		---		<0.0002
Perfluorohexane sulfonic acid (PFHxS)	365-48-4	0.0002	mg/kg		---		---		---		---		<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		---		---		---		---		<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids													
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		---		---		---		---		<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		---		---		---		---		<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		---		---		---		---		<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		---		---		---		---		<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		---		---		---		---		<0.0002
EP231D: (n-2) Fluorotelomer Sulfonic Acids													
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		---		---		---		---		<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27618-97-2	0.0005	mg/kg		---		---		---		---		<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	38105-34-4	0.0005	mg/kg		---		---		---		---		<0.0005

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Sample ID							
		Sampling date / time							
Compound	CAS Number	LOR	Unit	Result	S06_TC_100-200 ES2518293-011	S06_TC_200-300 ES2518293-012	S07_TC_100-200 ES2518293-013	S07_TC_200-300 ES2518293-014	S08_TC_100-200 ES2518293-015
EP231D: (m/z) Fluorotelomer Sulfonic Acids - Continued									
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	---	---	---	---	---	<0.0005
EP231P: PFAS Sum									
Sum of PFHxS and PFOS	355-48-4/1763-23-1	0.0002	mg/kg	---	---	---	---	---	<0.0002
Sum of PFAS (WA DER List)	---	0.0002	mg/kg	---	---	---	---	---	<0.0002
EP06S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	114	119	98.8	85.9	82.4	
EP06DS: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	80.6	85.1	85.7	86.1	87.6	
Toluene-D8	2037-26-5	0.2	%	78.0	81.7	87.0	86.8	85.5	
4-Bromofluorobenzene	460-00-4	0.2	%	82.0	84.8	86.5	88.1	85.4	
EP231S: PFAS Surrogate									
13C4-PFOS	---	0.0002	%	---	---	---	---	---	97.0
13C8-PFOA	---	0.0002	%	---	---	---	---	---	101

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID		Sampling date / time		Result		Result		Result	
Compound	CAS Number	LOR	Unit	S08_TC_200-300	S09_TC_100-200	S09_TC_200-300	S10_TC_100-200	S10_TC_200-300	S10_TC_100-200	S10_TC_200-300	S10_TC_100-200	S10_TC_200-300
				12-Jun-2025 13:50	12-Jun-2025 14:50	12-Jun-2025 14:50	12-Jun-2025 15:40	12-Jun-2025 16:40	12-Jun-2025 15:40	12-Jun-2025 16:40	12-Jun-2025 15:40	12-Jun-2025 16:40
				ES2518293-016	ES2518293-017	ES2518293-018	ES2518293-019	ES2518293-020	ES2518293-019	ES2518293-020	ES2518293-019	ES2518293-020
EA055: Moisture Content				Result	Result	Result	Result	Result	Result	Result	Result	Result
Moisture Content				6.7	4.7	4.0	8.0	6.9	8.0	6.9	8.0	6.9
EG005(ED03)T: Total Metals by ICP-AES												
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	29	33	32	27	22	27	22	27	22
Copper	7440-50-8	5	mg/kg	14	16	14	11	9	11	9	11	9
Lead	7439-92-1	5	mg/kg	6	8	7	6	<5	6	<5	6	<5
Nickel	7440-02-0	2	mg/kg	14	16	15	14	11	14	11	14	11
Zinc	7440-68-6	5	mg/kg	31	35	32	30	23	30	23	30	23
EG005T: Total Recoverable Mercury by FIMS												
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
EP056: Polychlorinated Biphenyls (PCB)												
Total Polychlorinated biphenyls	---	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
EP000071: Total Petroleum Hydrocarbons												
C6 - C9 Fraction	---	10	mg/kg	<10	<10	<10	<10	<10	<10	<10	<10	<10
C10 - C14 Fraction	---	50	mg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50
C15 - C28 Fraction	---	100	mg/kg	<100	<100	<100	<100	<100	<100	<100	<100	<100
C29 - C36 Fraction	---	100	mg/kg	<100	<100	<100	<100	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	---	50	mg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50
EP000071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions												
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10	<10	<10	<10	<10
>C10 - C16 Fraction	---	50	mg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50
>C16 - C34 Fraction	---	100	mg/kg	<100	<100	<100	<100	<100	<100	<100	<100	<100
>C34 - C40 Fraction	---	100	mg/kg	<100	<100	<100	<100	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	---	50	mg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Sample ID		S08_TC_200-300		S09_TC_100-200		S09_TC_200-300		S10_TC_100-200		S10_TC_200-300	
Compound	CAS Number	LCR	Sampling date / time	Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result
EP000071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued													
* >C10 - C16 Fraction minus Naphthalene (F2)		---	50	mg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50
EP0000: BTEX													
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-11-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 105-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
* Sum of BTEX	---	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
* Total Xylenes	---	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
EP0055: PCB Surrogate													
Decachlorobiphenyl	2051-24-3	0.1	%	96.6	80.5	96.0	99.5	108					
EP0005: TPH(V)BTEX Surrogates													
1,2-Dichloroethane-D4	17060-07-0	0.2	%	82.7	88.4	88.6	91.0	91.7					
Toluene-D8	2037-20-5	0.2	%	80.0	88.9	88.8	92.8	91.5					
4-Bromofluorobenzene	460-00-4	0.2	%	84.0	90.2	89.2	92.2	94.4					

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Sample ID		Sampling date / time		S11_TC_100-200		S11_TC_200-300		SC1		SC2	
Compound	CAS Number	LOR	Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
EA055: Moisture Content													
Moisture Content	---	1.0	%	---	8.4	---	9.8	---	---	---	---	---	---
EA055: Moisture Content (Dried @ 105-110°C)													
Moisture Content	---	0.1	%	---	---	---	---	---	---	3.9	---	6.5	---
EG005(ED003)T: Total Metals by ICP-AES													
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	22	22	34	34	34	34	---	---	---	---
Copper	7440-50-8	5	mg/kg	11	11	17	17	17	17	---	---	---	---
Lead	7439-92-1	5	mg/kg	11	11	8	8	8	8	---	---	---	---
Nickel	7440-02-0	2	mg/kg	10	10	17	17	17	17	---	---	---	---
Zinc	7440-68-0	5	mg/kg	62	62	40	40	40	40	---	---	---	---
EG035T: Total Recoverable Mercury by FIMS													
Mercury	7439-97-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	---	---	---	---
EP056: Polychlorinated Biphenyls (PCB)													
Total Polychlorinated biphenyls	---	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	---	---	---	---
EP080071: Total Petroleum Hydrocarbons													
C6 - C9 Fraction	---	10	mg/kg	<10	<10	<10	<10	<10	<10	---	---	---	---
C10 - C14 Fraction	---	50	mg/kg	<50	<50	<50	<50	<50	<50	---	---	---	---
C15 - C28 Fraction	---	100	mg/kg	<100	<100	<100	<100	<100	<100	---	---	---	---
C29 - C36 Fraction	---	100	mg/kg	120	120	<100	<100	<100	<100	---	---	---	---
* C10 - C36 Fraction (sum)	---	50	mg/kg	120	120	<50	<50	<50	<50	---	---	---	---
EP080071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions													
C6 - C10 Fraction	C6, C10	10	mg/kg	<10	<10	<10	<10	<10	<10	---	---	---	---
* C6 - C10 Fraction minus BTEX (F1)	C6, C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10	<10	---	---	---	---
>C10 - C16 Fraction	---	50	mg/kg	<50	<50	<50	<50	<50	<50	---	---	---	---
>C16 - C34 Fraction	---	100	mg/kg	170	170	<100	<100	<100	<100	---	---	---	---
>C34 - C40 Fraction	---	100	mg/kg	<100	<100	<100	<100	<100	<100	---	---	---	---

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Sample ID		S11_TC_100-200		S11_TC_200-300		SC1		SC2	
Compound	CAS Number	LOD	Sampling date / time	Unit	Result	Result	Result	Result	Result	Result	Result
EP231D: (n-2) Fluorotelomer Sulfonic Acids - Continued											
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005		mg/kg	---	---	<0.0005	<0.0005	<0.0005	---	---
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005		mg/kg	---	---	<0.0005	<0.0005	<0.0005	---	---
EP231P: PFAS Sum											
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002		mg/kg	---	---	<0.0002	<0.0002	<0.0002	---	---
Sum of PFAS (WA DER List)	---	0.0002		mg/kg	---	---	<0.0002	<0.0002	<0.0002	---	---
EP06SS: PCB Surrogate											
Decachlorobiphenyl	2051-24-3	0.1		%	92.4	94.6	---	---	---	---	---
EP080S: TPH(V)/BTEX Surrogates											
1,2-Dichloroethane-D4	17060-07-0	0.2		%	74.0	74.9	---	---	---	---	---
Toluene-D8	2037-26-6	0.2		%	87.5	85.5	---	---	---	---	---
4-Bromofluorobenzene	480-00-4	0.2		%	98.7	96.0	---	---	---	---	---
EP231S: PFAS Surrogate											
13C4-PFOS	---	0.0002		%	---	---	97.5	97.5	107	---	---
13C8-PFOA	---	0.0002		%	---	---	97.4	97.4	100	---	---



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Surrogate Control Limits

Substrate: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	148
EP060S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17000-07-0	83	125
Toluene-D8	2037-38-5	67	124
4-Bromofluorobenzene	480-00-4	88	131
EP231S: PFAs Surrogate			
13CLPFO5	---	60	120
13CS-PFOA	---	60	120