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BURNIE WASTE MANAGEMENT CENTRE

WETLAND EPN 9421/2 ANNUAL ENVIRONMENTAL REVIEW NOVEMBER 2023 – OCTOBER 2024

March 2025

For Burnie City Council

SYRINX ENVIRONMENTAL

Document Control

Report **14010RPT042**

Version	Date	Prepared by	Approved	Issue Details
1	27.03.25	SW, LP	KM	Issued to Client

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TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ABBREVIATIONS

The following terms are used in the document.

Abbreviation or acronym	*What it stands for*
AEST	*Australian Eastern Standard Time*
BCC	*Burnie City Council*
BoM	*Bureau of Meteorology*
BWMC	*Burnie Waste Management Centre*
EFF1	*Monitoring Location – Effluent 1*
EFF2	*Monitoring Location – Effluent 2*
EPN	*Environmental Protection Notice*
GW01	*Monitoring Location – Groundwater 1*
INF	*Monitoring Location – Header Tank*
IB	*Infiltration Basin(s) - Wet Infiltration Forest*
LOR	*Limit of Reporting*
MH01	*Monitoring Location – Manhole 1*
QA/QC	*Quality Assurance/Quality Control*
SB04	*Monitoring Location – also EFF1*
SYR	*Syrinx Environmental*

EXECUTIVE SUMMARY

The Burnie Waste Management Centre (BWMC) at 289 Mooreville Rd, Burnie, Tasmania operates a Leachate Treatment Wetland system for treatment and disposal of leachate generated from the closed Stage 1 landfill. The wetland operates under Environmental Protection Notice (EPN) 9421/2 (draft revision of EPN 9421/1) which governs the operation of the system and provides specific water quality trigger values to assess compliance. This report is the Annual Wetland Environmental Review required under Condition G8.

Annual water quality sampling was undertaken by Syrinx Environmental PL during the reporting period of November 2023 to October 2024 to determine the compliance of the system with the conditions of the EPN. During the reporting period, the mean concentration of the key water quality parameters (ammonia, chromium, copper, nickel, and zinc) did not exceed trigger concentrations set out within the EPN (see below). As such, the **system was deemed compliant** with the water quality conditions in the Environmental Protection Notice 9421/2 during the reporting period.

System compliance with the water quality trigger limits listed in EPN 9421/2

Water Quality Parameter	EPN Condition	Sampling Location	Mean Concentration **	EPN Trigger Limit	Unit	Compliance with EPN 9421/2
Ammonia	EF1 - 1	EFF2	0.16	1.61	mg/L	✓
	EF2 - 1	EFF1	1.90	>1.61		
Chromium (total)	EF2 - 3*	EFF2	0.0005	0.0010		✓
Copper (total)			0.0005	0.0014		✓
Nickel (total)			0.0030	0.0110		✓
Zinc (total)			0.0025	0.0080		✓

Legend

✓ Water quality parameter is below the respective trigger limit defined in EPN 9421/1

✘ Water quality parameter exceeds the respective trigger limit defined in EPN 9421/1

* It has been assumed that the EPN trigger limits for metals were intended to be in µg/L rather than mg/L as was printed in the EPN. The higher, less stringent values printed in the EPN have been converted accordingly by a factor of 1000 and have been used in the above table.

** The arithmetic mean was used to calculate these values. Where a concentration was below the limit of detection, the concentration was taken at 50% of the limit of detection to enable the calculation.

ANNUAL WETLAND ENVIRONMENTAL REVIEW

1.0 INTRODUCTION

1.1 PROJECT BACKGROUND

Burnie City Council (BCC) owns and operates the Burnie Waste Management Centre (BWMC) at 289 Mooreville Road, Burnie Tasmania (hereafter, "the site"). Within the BWMC, a Leachate Treatment Wetland system (hereafter referred to as "the system") has been constructed to treat and dispose of leachate generated from the closed Stage 1 landfill area. The system was constructed in late 2016 with the commissioning period completed in June 2017; the operational phase commenced in July 2017.

An overall site map is provided in Figure 1 showing the various components and sampling locations within the system. A brief description of the wetland function is provided in Section 2.1 and is discussed in greater detail in previous Annual Environmental Reports.

Since July 2022 the site has operated under Environmental Protection Notice (EPN) 9421/2 (hereafter, "the EPN"), which is a draft revised edition of the original EPN 9421/1, issued on the 5th of February 2016 by the Tasmanian Environmental Protection Agency (EPA). The revised EPN included all of the same conditions as the original, except for a reduction in sampling frequencies to annual for all analytes not already monitored via telemetry. This reduction was granted based on the system's ongoing and consistent performance since commissioning.

1.2 EPN 9421/2 MONITORING AND REPORTING REQUIREMENTS

A summary of the EPN Conditions that relate to the Annual Environmental Review is presented in Table 1. This Annual Wetland Environmental Review covers the reporting period from November 2023 to October 2024 in fulfilment of Condition G of the EPN. Continuous (telemetric) monitoring of key parameters (ammonia, pH, conductivity, temp) and annual grab sampling are undertaken as required by the EPN and as discussed in detail in previous Annual Environmental Reports.

The compliance discharge point for the system is EFF2, which discharges to an unnamed tributary of Cooee Creek.

Table 1 Summary of EPN 9421/2 (draft) Conditions that relate to the Annual Environmental Review

G8 - Annual Environmental Review	
1	Unless otherwise specified in writing by the Director, a publicly available Annual Environmental Review for the activity must be submitted to the Director each year within three months of the end of the reporting period. Without limitation, each Annual Environmental Review must include the following information:
1.1	A statement by the General Manager, Chief Executive Officer or equivalent for the activity acknowledging the contents of the Annual Environmental Review;
1.2	Subject to the Personal Information Protection Act 2004, a list of all complaints received from the public during the reporting period concerning actual or potential environmental harm or environmental nuisance caused by the activity and a description of any actions taken as a result of those complaints;
1.3	Details of environment-related procedural or process changes that have been implemented during the reporting period;
1.4	A summary of the amounts (tonnes or litres) of both solid and liquid wastes produced and treatment methods implemented during the reporting period. Initiatives or programs planned to avoid, minimise, re-use, or recycle such wastes over the next reporting period should be detailed;
1.5	Details of all non-trivial environmental incidents and/or incidents of non compliance with these conditions that occurred during the reporting period, and any mitigative or preventative actions that have resulted from such incidents;
1.6	A summary of the monitoring data and record keeping required by these conditions. This information should be presented in graphical form where possible, including comparison with the results of at least the preceding reporting period. Special causes and system changes that have impacted on the parameters monitored must be noted. Explanation of significant deviations between actual results and any predictions made in previous reports must be provided;
1.7	Identification of breaches of limits specified in these conditions and significant variations from predicted results contained in any relevant DPEMP or EMP, an explanation of why each identified breach of specified limits or variation from predictions occurred and details of the actions taken in response to each identified breach of limits or variance from predictions;
1.8	A list of any issues, not discussed elsewhere in the report, that must be addressed to improve compliance with these conditions, and the actions that are proposed to address any such issues;
1.9	A summary of fulfilment of environmental commitments made for the reporting period. This summary must include indication of results of the actions implemented and explanation of any failures to achieve such commitments; and
1.10	A summary of any community consultation and communication undertaken during the reporting period.

1.2.1 Relationship with Other EPN's and Compliance Documents

The EPA has issued two Environmental Protection Notices and one Environmental Approval in relation to activities onsite at the BWMC:

- Environmental Protection Notice No. 9161/2, known as the 'Site EPN' which comprises quarterly monitoring (7 locations on site), and annual reporting.
- Environmental Approval M481808 ck (hereafter, "EA M481808 ck"), which relates to EPA approval to treat and apply manganese-contaminated sludge on site. On the 4th July 2019, the EPA approved BCC to continue the onsite storage, treatment, and reuse of manganese-contaminated sludge from the landfill leachate wetlands treatment system subject to the conditions of "EA M481808 ck".

This report is a requirement under 'draft EPN 9421/2' which specifically covers the Stage 1 Leachate Treatment Wetland system.

This report should also be read in conjunction with several other documents which include:

- Burnie Waste Management Centre Stage 1 Landfill Leachate Treatment Wetland Development Proposal & Environmental Management Plan (DPEMP);
- Relevant technical drawings;
- Environmental Protection Notice 9421/1;
- Environmental Protection Notice 9421/2 (draft version);
- BWMC Operation and Maintenance Manual (O & M Manual); and
- Previous annual report(s).

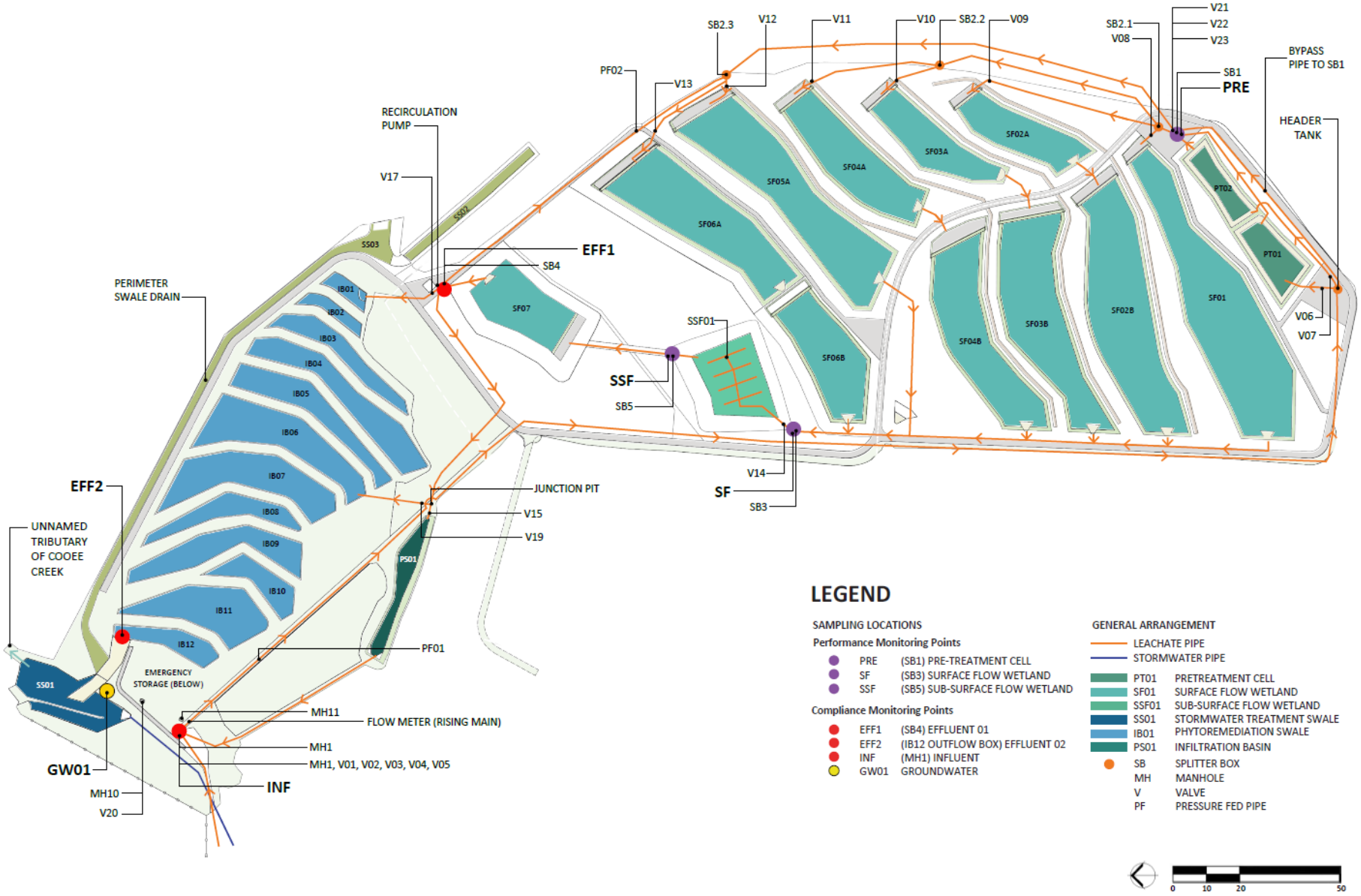

Figure 1: Schematic of the treatment system and compliance monitoring locations sampled to satisfy EPN 9421/2.

2.0 MONITORING SAMPLING PLAN (CONDITIONS G8 1.6, M2, M3, M4, M5, M6)

2.1 SITE DETAILS

A site map depicting system components and sampling locations within the system is shown in Figure 1. Stage 1 landfill leachate is collected within Manhole 1 (MH1) from where it is pumped to the Header Tank (the "INF" monitoring location). Leachate is treated throughout the system and eventually flows to the Wet Infiltration Forest (EFF1) before discharging into an unnamed tributary of Cooee Creek at EFF2 (licensed discharge point). The system's function is discussed in greater detail in previous annual reports (Syrinx, 2022a & Syrinx, 2022b).

2.2 REFERENCES TO GUIDELINES (CONDITIONS M3-1.1)

Sample collection was conducted by qualified Syrinx Environmental (Syrinx) staff in line with the methodology outlined in the Australian/New Zealand Standards for Water Quality Sampling (AS/NZS 5667.1:1998).

2.3 SAMPLING LOCATIONS AND FREQUENCY

The original iteration of the EPN outlined a suite of surface water and groundwater sampling with various parameters being sampled from a monthly to annual frequency. On the 21st of February 2023, the EPA issued a draft update of EPN 9421/2. The primary change included in this update was a reduction of all surface water and groundwater sampling frequencies to annual (i.e. single grab sample event), for all parameters except for those which are monitored continuously via telemetry (ammonia, electrical conductivity, pH, temperature, and flow) as required by Condition M2 of the EPN (Appendix 1).

The four monitoring locations are shown in Figure 1 and include:

- ***Influent (INF):*** influent leachate;
- ***Effluent point 1 (EFF1):*** treated leachate, released to the Wet Infiltration Forest;
- ***Effluent point 2 (EFF2):*** treated leachate, released as surface water to the creek (licensed discharge and compliance monitoring point); and
- ***Groundwater location* (GW01)*:*** artesian bore, released to creek

Note that the INF sample was taken from the header tank rather than via the MH1 manhole, as the header tank is more easily accessible and the risk of falling or tripping into MH1 is then avoided.

2.4 ANALYTICAL LABORATORY DETAILS (CONDITION M3-1.2, M4-1.1)

The analytical laboratory used to carry out the water quality testing presented in this report was ALS Environmental Services in Springvale, VIC, Australia. ALS is a NATA certified laboratory.

2.5 QUALITY ASSURANCE (QA) / QUALITY CONTROL (QC)

The duplicate sampling rate objective for the reporting period was 1 in per 20 primary samples. One duplicate sample was taken during the reporting period to satisfy this objective. A summary of the QA/QC samples collected is provided in Section 3.3.5.

2.6 RESPONSIBLE PERSONNEL (CONDITION M4-1.2)

The contact details for the personnel undertaking the monitoring program are shown in Table 2 below.

Table 2. Personnel undertaking monitoring program for the reporting period

Person	Company	Role	Contact Email	Phone
Dr. Ljiljana Pantelic	Syrinx	Report Review/Quality Assurance	lpantelic@syrinx.net.au	08 9227 9355
Tania Imlach	Syrinx	Water Sampling	timlach@syrinx.net.au	0419 521 192
Suzanne Walker	Syrinx	Water Sampling, reporting	swalker@syrinx.net.au	0487 095 409

3.0 ANNUAL MONITORING RESULTS

3.1 FLOWS (CONDITION M4-1.3)

To satisfy condition M4-1.3 of the EPN, the volumes and flows of leachate entering and leaving the system during the reporting period were recorded by the telemetry system and have been summarised in tabulated and graphical form in the sections below. Throughout this document the term “volume” is used to describe the amount of leachate calculated (hereafter, “measured”) at the INF, EFF1 and EFF2 locations.

Volumes and flows of leachate through the system are influenced by rainfall. As such, rainfall data for the reporting period is discussed in Section 3.1.1 to provide additional context to the flow monitoring results.

3.1.1 Rainfall

Rainfall data is measured at the BWMC site and is shown in Figure 2. A tabulated summary of monthly rainfall data is provided in Table 3.

In the current reporting period (November 2023 – October 2024) there was 31% less rainfall than in the previous period, a reduction of 268 mm.

Figure 2 displays the daily rainfall over the previous 24 months. Most of the current reporting period's rainfall fell from June – August 2024 (Table 3, Figure 2).

The long-term (2007 – 2023) mean annual rainfall is 1,075 mm (± 237 mm), with the current reporting period (November 2023 – October 2024) falling well below this at 795 mm

Table 3. Rainfall measured at the BWMC Site FOR current and previous reporting period.

	Month	Daily Rainfall (mm) Range	Number of Days with Rainfall	Total Rainfall (mm)
November 2022 - October 2023	November 2022	0.0 - 34.0	16.0	135.0
	December 2022	0.0 - 7.0	5.0	15.0
	January 2023	0.0 - 9.0	7.0	26.0
	February 2023	0.0 - 15.0	5.0	42.0
	March 2023	0.0 - 16.0	16.0	72.0
	April 2023	0.0 - 20.0	12.0	56.0
	May 2023	0.0 - 7.0	15.0	32.0
	June 2023	0.0 - 30.0	26.0	180.0
	July 2023	0.0 - 27.0	17.0	**116.0**
	August 2023	0.0 - 23.0	15.0	**95.0**
	September 2023	0.0 - 12.0	12.0	46.0
	October 2023	0.0 - 15.0	12.0	54.0
	November 2022 - October 2023 Summary		**158**	**869**
November 2023 - October 2024	November 2023	0.0 - 27.0	6.0	56.0
	December 2023	0.0 - 55.0	8.0	89.0
	January 2024	0.0 - 30.0	10.0	95.0
	February 2024	0.0 - 3.0	4.0	8.0
	March 2024	0.0 - 9.4	7.0	16.2
	April 2024	0.0 - 43.0	9.0	58.0
	May 2024	0.0 - 19.0	11.0	43.0
	June 2024	0.0 - 40.0	11.0	89.0
	July 2024	0.0 - 138.0	17.0	276.0
	August 2024	0.0 - 31.0	24.0	169.0
	September 2024	0.0 - 22.0	24.0	120.0
	October 2024	0.0 - 59.0	12.0	118.0
	November 2023 - October 2024 Summary		**143**	**1137**
	Percentage difference		**9%**	**31%**

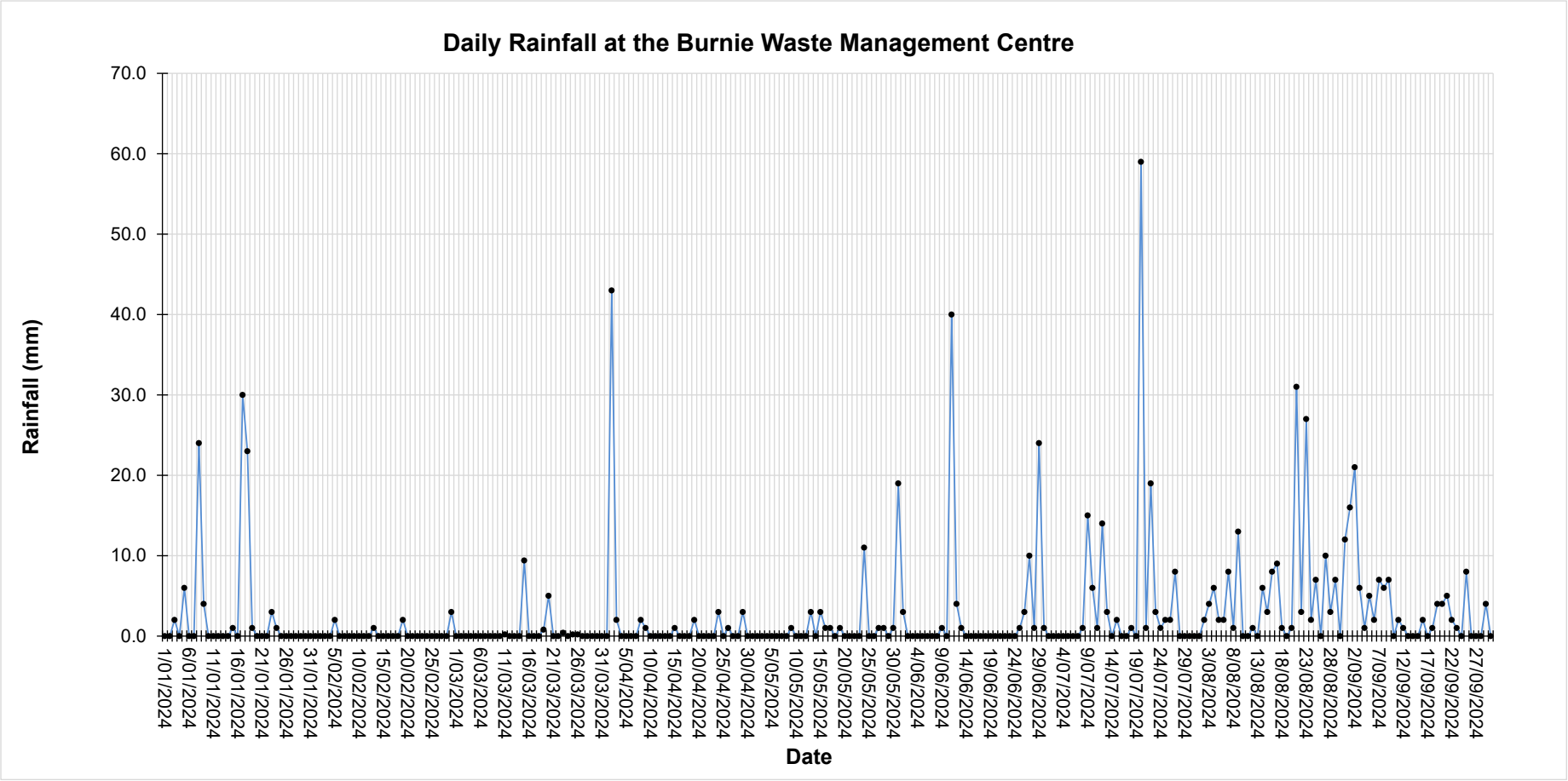

Figure 2. Daily rainfall data recorded at the Burnie Waste Management Centre (Source: Burnie City Council).

3.1.2 System Flows (Condition G8 1.4, 1.6)

Mean and median daily treated leachate volumes and total volumes for the reporting period are summarised in Table 4, and shown for the INF, EFF1 and EFF2 in Figure 3.

Untreated Leachate Inflows – INF

The daily volumes of landfill leachate entering the system at MH01 via INF showed seasonal fluctuations primarily reflecting seasonal changes in rainfall, as has been observed in the past.

Daily leachate volumes observed from November 2023 through to October 2024 ranged from 158 to 497 kL/day (Table 4).

Treated Leachate Volumes - EFF1

The volume of treated leachate discharging to the Wet Infiltration Forest is measured at EFF1 (Figure 1). The Wet Infiltration Forest receives, and infiltrates treated leachate, with overflows discharged to a swale and the unnamed tributary.

The daily volume of leachate treated by the wetland at EFF1 is shown in Figure 3, and fluctuated from 128-797 kL/day. The total volume of treated leachate as measured at EFF1 during the reporting period was 100 ML. The 'wet year' leachate volume prescribed in *Development Proposal & Environmental Management Plan* (DPEMP, 2015) is any year totalling > 45 ML.

Outlet of Wet Infiltration Forest - EFF2

Peaks daily volume of treated leachate discharged (by overland flow) via EFF2 to the unnamed tributary of Cooee Creek mirror those at EFF1. Differences in treated volume between EFF2 and EFF1 are influenced by rainfall additions and infiltration losses The total volume of leachate flow through EFF2 during this reporting period was 51 ML.

Table 4. Volumes of leachate and treated leachate measured in the previous and current reporting periods.

Flows in previous 12 months (November 2021 - October 2022)

Location	Volume				Sum volume over reporting period (kL)
	Mean ± St. Dev	Median	Range	Unit	
INF (A)	255 ± 65	240	158 - 497	kL/day	92,763
EFF1 (B)	289 ± 124	263	128 - 1,167		105,287
EFF2 (C)	144 ± 115	115	20 - 1,150		52,536
Net volume added to the treatment system by rainfall (B-A)					12,524
Net volume added to the treatment system (B-A) as a % of total flows at (B)					11.9%
Net volume of treated leachate infiltrated via the Infiltration Wet Forest (B-C)					52,750
Net volume infiltrated (B-C) as a percentage of total flows at (B)					50.1%

Flows in current reporting period (November 2022 - October 2023)

Location	Volume				Sum volume over reporting period (kL)
	Mean ± St. Dev	Median	Range	Unit	
INF (A)	260 ± 70	247	158 - 411	kL/day	96,790
EFF1 (B)	301 ± 127	264	128 - 797		100,247
EFF2 (C)	154 ± 112	120	21 - 645		50,999
Net volume added to the treatment system by rainfall (B-A)					3,457
Net volume added to the treatment system (B-A) as a % of total flows at (B)					3.4%
Net volume of treated leachate infiltrated via the Infiltration Wet Forest (B-C)					49,247
Net volume infiltrated (B-C) as a percentage of total flows at (B)					49.1%

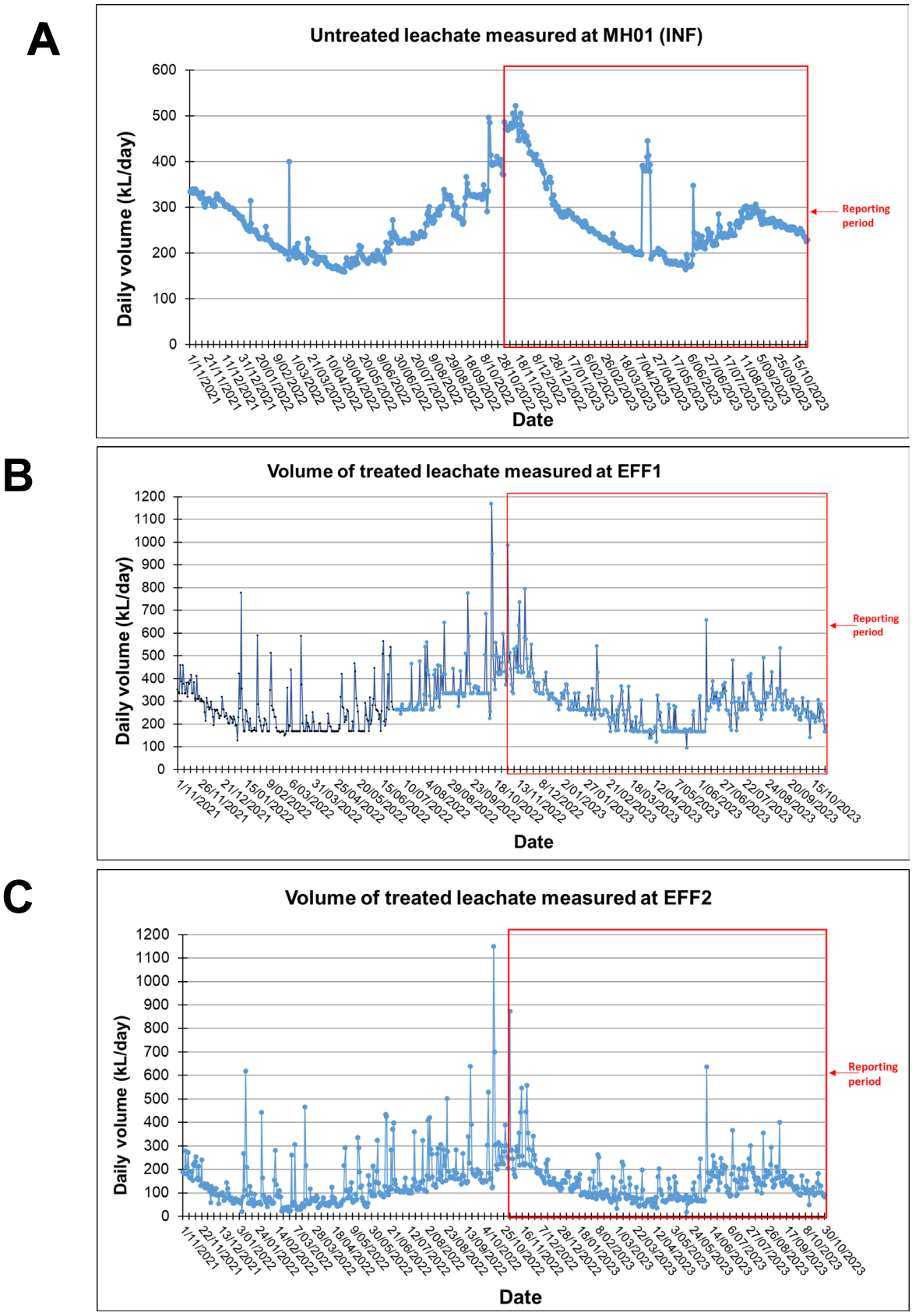

Figure 3. Daily volumes of A) influent (untreated) landfill leachate pumped via INF into the treatment wetland, B) treated leachate which passed through EFF1 prior to infiltration in the Wet Infiltration Fores, and C) treated leachate which passed through the V-notch weir at EFF2 prior to discharging to the unnamed tributary of Cooee Creek

3.2 RECIRCULATION EVENTS (CONDITION M4-1.6)

3.2.1 Background to the requirement for recirculation

Condition EF2-1 of the EPN states that:

"…treated leachate within the polishing pond must be recirculated back into the treatment system if ammonia is detected at concentrations greater than 1.61 mg/L, and discharge is occurring to the unnamed tributary, as measured at EFF 2…"

To meet this condition the continuously monitoring telemetry system housed within the SB04 control shed (Figure 1) recirculates leachate when an ammonia reading of > 1.61 mg/L is measured at the outlet to the polishing wetland (EFF1) in conjunction with measured discharge of flows from the outlet of the infiltration forest (EFF2). During the recirculation event, the leachate is recirculated from EFF1 back into SF05A and SF06A for further treatment (see Figure 1).

3.2.2 Recirculation events during the monitoring period

There were no recirculation events during this reporting period.

3.3 WATER QUALITY (CONDITIONS M2, M4-1.4, 1.5)

3.3.1 Water Quality Data – Continuous Monitoring

Continuous water quality monitoring is undertaken by a set of probes and a telemetry system at the wetland monitoring point (EFF1), which provides continuous data for ammonia, electrical conductivity, pH, and temperature.

The summary statistics for these parameters is shown in Table 5. Key points are as follows:

- Based on the pH and temperature of the system measured throughout the reporting period, a great proportion (>90%) of the total ammonia was in the non-toxic ammonium form. Therefore, ammonia data represents both the ionised and unionised forms of ammonia.
- Ammonia concentrations were well within compliance at 0.16 mg/L mean and 0.13 mg/L median, Table 5 and **Error! Reference source not found.**).
- The mean electrical conductivity (EC) measurements across the reporting period was 432µS/cm with minimal fluctuations.
- pH was in circumneutral range .
- Temperature ranged from -2.5 to 28.1 degrees Celsius

Table 5. Summary statistics for continuously monitored parameters at EFF1 for the reporting period.

NH4+ Summary Statistics for reporting period	
Unit:	**(NH_4^+-N mg/L)**
Min	0.00
Max	3.84
Mean	0.16
Median	0.13
Standard Deviation	0.28
Standard Error	0.002

Electrical Conductivity Summary Statistics for reporting period	
Unit:	**(µS/cm)**
Min	0.0
Max	546.0
Mean	431.8
Median	450.0
Standard Deviation	83.6
Standard Error	0.7

Temperature Summary Statistics for reporting period	
Unit:	**°C**
Min	-2.5
Max	28.1
Mean	12.8
Median	12.2
Standard Deviation	6.1
Standard Error	0.05

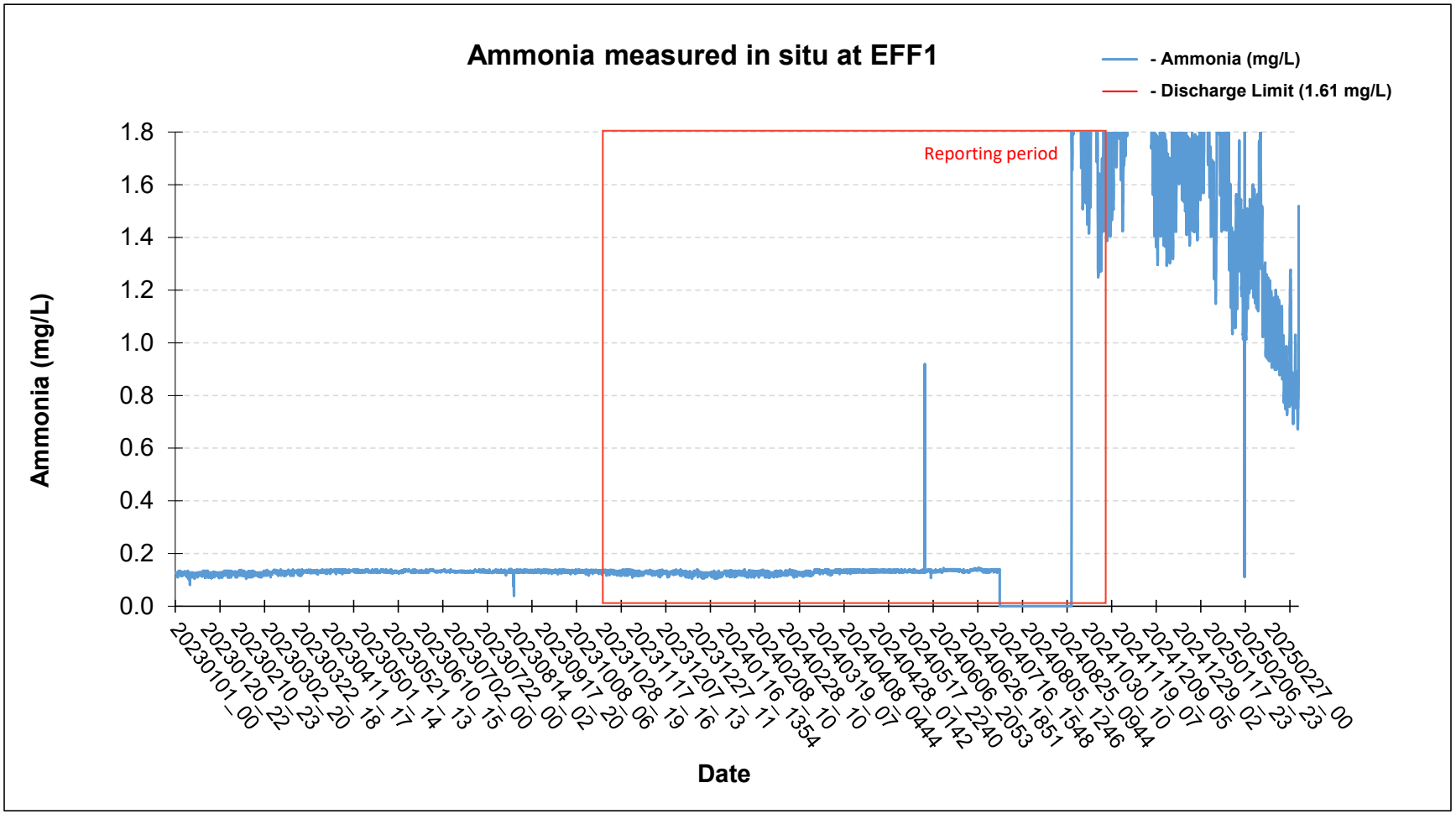

Figure 4. Hourly ammonia concentrations as measured by an *in-situ* water quality probe at EFF1

3.3.2 Issues and Maintenance Undertaken on the *in-situ* Probes (Condition M3-1.4)

Scheduled maintenance on the in-situ probes was conducted by Cromarty.

pH in situ probe

pH measurements increased after calibration events which was attributed to the measurement drift of the instrument (sensor drift) rather than an actual increase in pH. The data was cross checked with the handheld field probe readings and laboratory pH measurements (**Error! Reference source not found.**) which showed comparable results following calibration. Sudden spikes / dips in pH measurements were attributed to external disruptions to the probe such as power outages or recalibration events.

3.3.3 Water Quality Data – Laboratory Results (Condition G8 1.6)

Water quality grab sampling was conducted yearly at the INF, EFF1, EFF2 and GW01 sampling locations. A suite of parameters was sampled in accordance with the requirements of the EPN (APPENDIX 1). The documentation for the laboratory analysis undertaken is provided in APPENDIX 2, with tabulated water quality laboratory and field results provided in APPENDIX 3.

The five key water quality parameters with respect to the EPN (described under Conditions E1-1, EF2-3) were ammonia, copper, nickel, zinc, and chromium, with their respective trigger values shown in Table 6.

Table 6 Water quality trigger limits as set in the EPN 9421/2 for EFF2.

Water Quality Parameter	Unit*	EPN Trigger Limit	EPN Condition
Ammonia	mg/L	1.61	EF1 - 1
Chromium (total)	mg/L	0.001	EF2 - 3
Copper (total)	mg/L	0.0014	EF2 - 3
Nickel (total)	mg/L	0.011	EF2 - 3
Zinc (total)	mg/L	0.008	EF2 - 3

*It has been assumed that the EPN trigger limits for metals were intended to be in µg/L rather than mg/L as was printed in the EPN. The higher, less stringent values printed in the EPN have been converted accordingly by a factor of 1000 and are shown in the above table.

Data for the single sampling event during the reporting period (Oct 2024) for ammonia, chromium, copper, nickel, and zinc are provided in Table 7 against their respective EPN trigger values. A summary graph for ammonia concentrations measured via laboratory analysis is also shown in Figure 5. The system was fully compliant with ammonia concentrations well below 1.61 mg/L at EFF2 during the monitoring period.

No water quality parameters were found to exceed water quality trigger limits of the EPN, hence **the system is fully compliant with EPN requirements in terms of water quality.**

Table 7. System compliance with the water quality trigger limits listed in EPN 9421/2.

Date range of data: Nov-23 to Oct-24

Water Quality Parameter	EPN Condition	Sampling Location	Mean Concentration **	EPN Trigger Limit	Unit	Compliance with EPN 9421/2
Ammonia	EF1 - 1	EFF2	0.16	1.61	mg/L	✓
	EF2 - 1	EFF1	1.90	>1.61		
Chromium (total)	EF2 - 3*	EFF2	0.0005	0.0010		✓
Copper (total)			0.0005	0.0014		✓
Nickel (total)			0.0030	0.0110		✓
Zinc (total)			0.0025	0.0080		✓

Legend

✓ Water quality parameter is below the respective trigger limit defined in EPN 9421/1

✘ Water quality parameter exceeds the respective trigger limit defined in EPN 9421/1

* It has been assumed that the EPN trigger limits for metals were intended to be in µg/L rather than mg/L as was printed in the EPN. The higher, less stringent values printed in the EPN have been converted accordingly by a factor of 1000 and have been used in the above table.

** The arithmetic mean was used to calculate these values. Where a concentration was below the limit of detection, the concentration was taken at 50% of the limit of detection to enable the calculation.

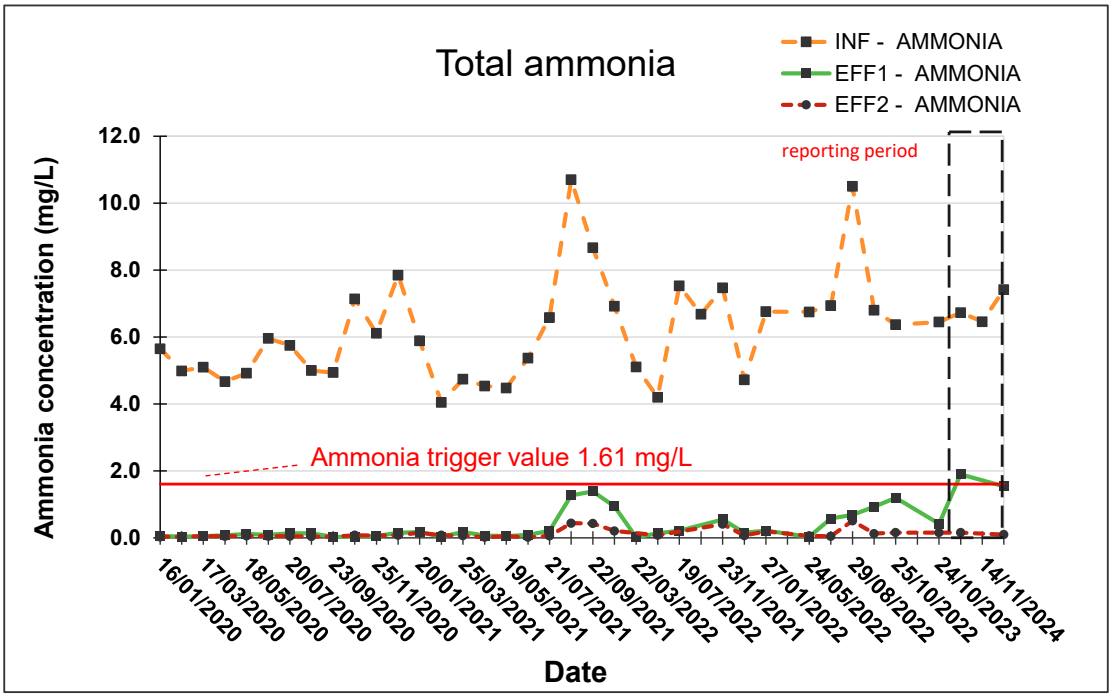

Figure 5. Ammonia concentrations in the influent (INF), discharge from the surface wetlands (EFF1) and effluent discharge to the unnamed tributary to Cooee creek (EFF2).

3.3.4 Groundwater Quality Results

Groundwater quality results from the GW01 sampling location are tabulated in APPENDIX 3. Similar to the previous reporting period, groundwater quality at GW01 was generally good and characterised by low ammonia, high nitrate, low TP, and very limited and low-level detections of metals (aluminium and nickel) which all fell below the ANZECC water quality trigger values. There were no concerning trends in any water quality parameters during the reporting period.

Physico-chemical

Groundwater at GW01 was found to have a circumneutral pH (range = 7.4 – 7.82). TDS (range = 312 – 469.6 mg/L) EC (range = 467 – 573 µS/cm) and TSS (range = 0.5 - 0.5) measurements were consistent throughout the reporting period. Bicarbonate alkalinity averaged 179 mg/L, which indicates a good acidity buffering capacity. These values are within the historical range since 2017.

Nutrients

Ammonia concentrations were below the Limit of Reporting (LoR) – 0.14 mg/L at GW01. The mean nitrate concentration was 1.95 mg/L, with little variation across the reporting period. These results are comparable to the previous reporting period, highlighting the stability of the groundwater conditions. Ammonia, nitrate, and nitrogen concentrations have remained stable at GW01 since 2017.

The total phosphorus (TP) concentration at GW01 averaged 0.09 mg/L during this reporting period. Since measurements began in 2017, TP concentrations have remained stable.

Metals

Total arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, selenium, tin, and zinc were not detected at GW01. This is consistent with previous reporting periods. Minimal (0.005 mg/L) aluminium was detected, although all other sampling rounds reported < LoR. Nickel concentrations ranged from < LoR – 0.001 mg/L and remained well below the ANCEZZ & ARMCANZ freshwater trigger value for 99% species protection for this analyte (0.008 mg/L). Both aluminium and nickel concentrations have been consistent since at least 2017.

3.3.5 Quality Control

Duplicate Sample(s)

A total of one duplicate sample was taken during the reporting period and analysed for total metals to assess the variability of laboratory results between samples. As summarised in Table 8, 100% of QA/QC sample analysed were determined to be reflective of the primary sample concentrations, i.e. within ± 30% of the primary result or within ± 50% if the result was within 5 fold the limit of reporting (data provided in APPENDIX 2). The results of the QA/QC analysis provide confidence in the accuracy and precision of the analytical results captured during this reporting period.

Table 8. Summary of data from QA/QC samples and an assessment against their primary sample

Sample location	Date taken	Lab ID	Was duplicate data within ± 30% of primary result? *
GW01 Dupe	29/10/2024	EM2418858028	**Yes - PASS**

** Or within ± 50% if result was < 5x the LOR.*

Sample Non-Compliance

The laboratory used for analysis (ALS in Victoria) advised of holding time non-compliance for the pH and redox analysis across all sampling events, as these parameters have a short holding time of 6 hours (laboratory reports are provided in APPENDIX 2). The holding time non-compliance for these analytes was as a result the overnight transport of samples from Tasmania to the laboratory in Victoria and as such were unavoidable. Field measurements were taken to supplement this data where possible.

3.4 RESULTS OF LANDFILL SETTLEMENT (CONDITION M4-1.7)

EPN Condition M4-1.7 states that the results of all settlement monitoring shall be included within the annual review.

No settlement monitoring has been conducted since March 2021 due to ongoing management changes and budgetary constraints at BWMC. BCC has confirmed that they are seeking to urgently have surveyors attend site to perform a settlement monitoring survey. Note, settlement data has historically been very stable.

3.5 RESULTS OF PIEZOMETER MONITORING (CONDITION M4-1.7)

The results of all piezometer monitoring (leachate level monitoring) are presented in Figure 6 to fulfil EPN Condition M4-1.7. Generally, levels measured within each of the monitoring bores during the reporting period were consistent with the trends identified during the previous reporting period.

Piezometer measurement and monitoring is the responsibility of Burnie City Council. Note that two piezometers (MW21 and MW22) were removed during construction of the wetland system.

4.0 ENVIRONMENTAL PERFORMANCE

4.1 PUBLIC COMPLAINTS (EPN CONDITION G8 1.2)

No public complaints were received during the reporting period.

4.2 PROCEDURAL OR PROCESS CHANGES (EPN CONDITION G8 1.3)

No procedural or process-related changes were undertaken during the reporting period.

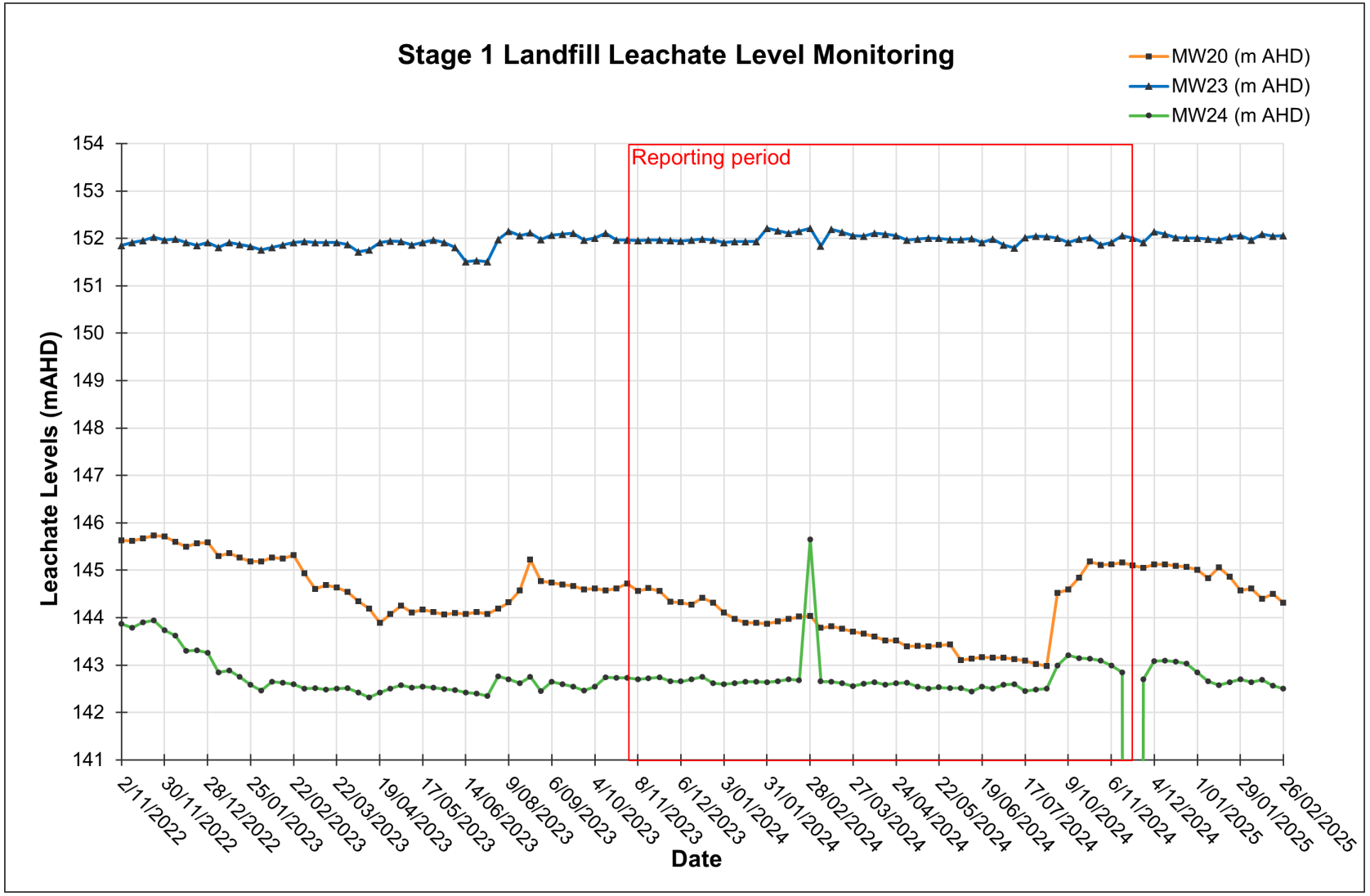

Figure 6. Leachate levels as measured by piezometers at several locations surrounding the landfill cap. Note that piezometers at MW21 and MW22 were removed during construction of the wetland.

4.3 WASTE MINIMISATION INITIATIVE (EPN CONDITION G8 1.4)

One (1) waste minimisation initiative was implemented during the reporting period which involved:

- Harvesting of sludge from within PT01, PT02 and PT02 Legacy (Figure 1); and
- Disposal to landfill

The initiative was carried out under EPA Approval G3 of the EPN 9421/1 and document EA M481808 ck which stipulates the conditions required to treat sludge material to meet the category of Level 1 Fill Material as described in *Information Bulletin No. 105 – Classification and Management of Contaminated Soil for Disposal* (EPA Tas, 2018). The initiative is anticipated to continue in subsequent reporting periods under the standard procedure documented within the Operations and Maintenance Manual (Syrinx, 2019).

This material was non-compliant and disposed of to Dulverton Waste Management center.

4.3.1 Sludge removal, treatment, and reuse

No desludging or treatment occurred throughout the reporting period. Details of incidents or NON-COMPLIANCE with the EPN (EPN Condition G8 1.5).

4.4 SUMMARY OF COMMUNITY CONSULTATION / COMMUNICATION (CONDITION G8 1.10)

No community consultation or communication was required or undertaken during the reporting period.

5.0 SUMMARY OF RESULTS AND COMPLIANCE (CONDITION G8 1.9)

The results of the monitoring data collected during the reporting period are summarised below.

Volume of untreated and treated leachate processed by the system

- The total volume of untreated leachate entering the system via INF was 97 ML, and the treatment system discharged 100 ML via EFF1.
- 51 ML of treated flows were discharged at the downstream boundary of the Wet Infiltration Forest (EFF2), indicating that 50% was infiltrated during the reporting period.

Water quality monitoring data

- The water quality monitoring data for the reported period showed full system compliance with EPN 9421/2 (draft version).
- The quality of groundwater at GW01 during the reporting period was consistent with the previous reporting period and as such did not show a deterioration in water quality.

REFERENCES

Burnie Waste Management Centre (2016). Leachate Treatment Wetland Settlement Monitoring Plan.

Environmental Protection Authority Tasmania (2016). Environmental Protection Notice 9421/1.

Environmental Protection Authority Tasmania (2016). Environmental Protection Notice 9421/2 (draft).

Environmental Protection Authority Tasmania (2018). *Information Bulletin 105 – Classification and Management of Contaminated Soil for Disposal*

Environmental Protection Authority Tasmania (2019). Landfill Leachate Wetland Treatment Sludge Management Approval Under G3 Of Environment Protection Notice No, 9421/1 M481808 ck

National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended 2013.

Natural Environment Services Tasmania (2014). Natural Values Assessment Unnamed Tributary of Cooee Creek

Syrinx Environmental PL (2015). Burnie Waste Management Centre Stage 1 Landfill Leachate Treatment Wetland Development Proposal & Environmental Management Plan (DPEMP)

Syrinx Environmental PL (2019). Burnie Waste Management Centre Stage 1 Landfill Leachate Treatment Wetland Operations and Maintenance Manual

Syrinx Environmental PL (2021a). BWMC “Site” EPN 9161/2 Annual Environmental Review August 2021 – July 2022

Syrinx Environmental PL (2021b). BWMC “Wetland” EPN 9421/1 Annual Environmental Review July 2021 – June 2022

APPENDICES

APPENDIX 1. Table of EPN 9421/2 Monitoring Parameters and Frequencies

Surface water monitoring				
Parameter	**Units**	**Location**	**Frequency**	**Method**
Flow	m^3/day	INF, EFF1, EFF2	continuous	Field –online flow meter
Temp	°C		annually	Field
pH		EFF1	continuous	Field
		INF, EFF2	annually	lab
Conductivity	µS/cm	EFF1	continuous	Field
		INF, EFF2	annually	lab
Alkalinity total	mg $CaCO^3$/L	INF, EFF1, EFF2	annually	lab
Total suspended solids	mg/L		annually	
Total dissolved solids				
Dissolved oxygen				Field
Dissolved oxygen content			annually	lab
Chemical oxygen demand			annually	
Oxidation reduction potential	Eh mV		annually	
Cyanide total	µg/L		annually	
PCB	µg/L		annually	
Ammonia	mg/l	EFF1	continuous	Field
		INF, EFF1, EFF2	annually	lab

Nitrate Nitrite Total nitrogen Total phosphorus Phosphorous dissolved reactive		INF, EFF1, EFF2	annually	lab
Chloride Sulphate			annually	
Mg, K, Na				
Al, As, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Se, Zn	µg/L		annually	
E.coli	Org / 100 mls	INF, EFF1, EFF2	annually	
Enterococci				
Acenaphthene Acenaphthylene Anthracene Benzene Benzo(a)anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b&k)fluoanthene Benzo(ghi)perylene Chrysene Dibenzo(ah)anthracene Fluranthrene	µg/L	INF, EFF1, EFF2	annually	

Acenaphthene Acenaphthylene Anthracene Benzene Benzo(a)anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b&k)fluoanthene Benzo(ghi)perylene Chrysene Dibenzo(ah)anthracene Fluranthrene Fluorene Indeno(123-cd)pyrene Naphthalene Phenanthrene Pyrene	µg/L	INF, EFF1, EFF2	annually	
Ethylbenzene, Om&p Xylene, Toluene, Total BTEX	µg/L	INF, EFF1, EFF2	annually	lab

Groundwater monitoring

Parameter	**Units**	**Location**	**Frequency**	**Method**
Water level	m^3/day	GW1	annually	Field
Temp	°C		annually	Field
pH			annually	

Cyanide total	µg/L		annually	
PCB	µg/L		annually	
Ammonia	mg/l		continuous	
			annually	
Nitrate Nitrite Total nitrogen Total phosphorus Phosphorous dissolved reactive			annually	
Chloride Sulphate			annually	
Mg, K, Na				
Al, As, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Se, Zn	µg/L		annually	

APPENDIX 2. Laboratory Analytical Data

Page : 7 of 28
Work Order : EM2418858
Client : SYRINX ENVIRONMENTAL PL
Project : 22054

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	GW03	INF	EFF1	EFF2	PRE (SB01)
				Sampling date / time	29-Oct-2024 13:20	29-Oct-2024 09:35	29-Oct-2024 10:00	29-Oct-2024 10:40	29-Oct-2024 09:45
Compound	CAS Number	LOR	Unit		EM2418858-006	EM2418858-007	EM2418858-008	EM2418858-009	EM2418858-010
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		6.37	7.05	7.63	7.86	7.14
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		147	492	444	428	499
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		92	293	251	242	188
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	1	mg/L		<1	32	2	5	27
EA075: Redox Potential									
Redox Potential	----	0.1	mV		251	167	201	238	----
pH Redox	----	0.01	pH Unit		5.59	6.36	7.15	7.95	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		10	178	164	152	192
Total Alkalinity as CaCO3	----	1	mg/L		10	178	164	152	192
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		2	11	4	4	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		16	46	43	40	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		4	24	26	24	----
Magnesium	7439-95-4	1	mg/L		5	21	21	21	----
Sodium	7440-23-5	1	mg/L		15	35	36	36	----
Potassium	7440-09-7	1	mg/L		2	7	8	8	----
ED093T: Total Major Cations									
Calcium	7440-70-2	1	mg/L		4	23	24	23	25
Magnesium	7439-95-4	1	mg/L		5	20	21	21	21
Sodium	7440-23-5	1	mg/L		14	35	36	36	34

Page : 8 of 28
Work Order : EM2418858
Client : SYRINX ENVIRONMENTAL PL
Project : 22054

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	GW03	INF	EFF1	EFF2	PRE (SB01)
			Sampling date / time	29-Oct-2024 13:20	29-Oct-2024 09:35	29-Oct-2024 10:00	29-Oct-2024 10:40	29-Oct-2024 09:45
Compound	CAS Number	LOR	Unit	EM2418858-006	EM2418858-007	EM2418858-008	EM2418858-009	EM2418858-010
				Result	Result	Result	Result	Result
ED093T: Total Major Cations - Continued								
Potassium	7440-09-7	1	mg/L	2	7	7	7	7
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	0.01	---
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	0.004	<0.001	<0.001	<0.001	---
Copper	7440-50-8	0.001	mg/L	0.004	0.002	<0.001	<0.001	---
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	---
Manganese	7439-96-5	0.001	mg/L	0.002	4.30	1.20	0.128	---
Nickel	7440-02-0	0.001	mg/L	0.009	0.008	0.005	0.002	---
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	---
Tin	7440-31-5	0.001	mg/L	<0.001	---	---	---	---
Zinc	7440-66-6	0.005	mg/L	0.007	0.008	<0.005	<0.005	---
Iron	7439-89-6	0.05	mg/L	<0.05	17.1	0.05	<0.05	---
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	0.03	<0.01
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	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.004	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L	0.002	3.88	1.22	0.135	3.61
Nickel	7440-02-0	0.001	mg/L	0.009	0.006	0.006	0.003	0.006
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Tin	7440-31-5	0.001	mg/L	<0.001	---	---	---	---
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Iron	7439-89-6	0.05	mg/L	<0.05	14.7	0.82	0.51	9.28

Page	: 9 of 28
Work Order	: EM2418858
Client	: SYRINX ENVIRONMENTAL PL
Project	: 22054

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	GW03	INF	EFF1	EFF2	PRE (SB01)
				Sampling date / time	29-Oct-2024 13:20	29-Oct-2024 09:35	29-Oct-2024 10:00	29-Oct-2024 10:40	29-Oct-2024 09:45
Compound	CAS Number	LOR	Unit		EM2418858-006	EM2418858-007	EM2418858-008	EM2418858-009	EM2418858-010
					Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		---	<0.0001	<0.0001	<0.0001	---
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		---	<0.0001	<0.0001	<0.0001	<0.0001
EG049F: Dissolved Trivalent Chromium									
Trivalent Chromium	16065-83-1	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	---
EG049T: Total Trivalent Chromium									
Trivalent Chromium	16065-83-1	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
EG050F: Dissolved Hexavalent Chromium									
Hexavalent Chromium	18540-29-9	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	---
EG050T: Total Hexavalent Chromium									
Hexavalent Chromium	18540-29-9	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		<0.004	<0.004	<0.004	<0.004	---
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		<0.01	6.73	1.80	0.18	7.18
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	<0.01	<0.01	0.05	<0.01
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		7.71	0.23	0.35	1.18	0.29
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	---	0.01	mg/L		7.71	0.23	0.35	1.23	0.29
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	---	0.1	mg/L		1.2	7.5	2.2	0.7	7.1
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	---	0.1	mg/L		8.9	7.7	2.6	1.9	7.4
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	---	0.01	mg/L		<0.02	0.05	<0.01	0.05	<0.01
EK071FG: Dissolved Reactive Phosphorus as P by DA									

Page : 10 of 28
Work Order : EM2418858
Client : SYRINX ENVIRONMENTAL PL
Project : 22054

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	GW03	INF	EFF1	EFF2	PRE (SB01)
				Sampling date / time	29-Oct-2024 13:20	29-Oct-2024 09:35	29-Oct-2024 10:00	29-Oct-2024 10:40	29-Oct-2024 09:45
Compound	CAS Number	LOR	Unit		EM2418858-006	EM2418858-007	EM2418858-008	EM2418858-009	EM2418858-010
					Result	Result	Result	Result	Result
EK071FG: Dissolved Reactive Phosphorus as P by DA - Continued									
Dissolved Reactive Phosphorus as P	---	0.01	mg/L		0.02	<0.01	0.02	<0.01	<0.01
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		0.02	<0.01	0.02	<0.01	<0.01
EP002: Dissolved Organic Carbon (DOC)									
Dissolved Organic Carbon	---	0.2	mg/L		0.4	---	---	---	---
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	---	1	mg/L		---	<1	3	4	<1
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	---	0.1	mg/L		---	5.4	7.2	10.8	---
EP026SP: Chemical Oxygen Demand (Spectrophotometric)									
Chemical Oxygen Demand	---	10	mg/L		<10	<10	15	18	<10
EP030: Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	---	2	mg/L		---	3	<2	<2	<2
EP066: Polychlorinated Biphenyls (PCB)									
^ Total Polychlorinated biphenyls	---	1	µg/L		---	<1	<1	<1	---
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	1	µg/L		---	<1	<1	<1	---
Toluene	108-88-3	2	µg/L		---	<2	<2	<2	---
Ethylbenzene	100-41-4	2	µg/L		---	<2	<2	<2	---
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		---	<2	<2	<2	---
Styrene	100-42-5	5	µg/L		---	<5	<5	<5	---
ortho-Xylene	95-47-6	2	µg/L		---	<2	<2	<2	---
Isopropylbenzene	98-82-8	5	µg/L		---	<5	<5	<5	---
n-Propylbenzene	103-65-1	5	µg/L		---	<5	<5	<5	---
1,3,5-Trimethylbenzene	108-67-8	5	µg/L		---	<5	<5	<5	---
sec-Butylbenzene	135-98-8	5	µg/L		---	<5	<5	<5	---
1,2,4-Trimethylbenzene	95-63-6	5	µg/L		---	<5	<5	<5	---

Page : 11 of 28
Work Order : EM2418858
Client : SYRINX ENVIRONMENTAL PL
Project : 22054

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	GW03	INF	EFF1	EFF2	PRE (SB01)
				Sampling date / time	29-Oct-2024 13:20	29-Oct-2024 09:35	29-Oct-2024 10:00	29-Oct-2024 10:40	29-Oct-2024 09:45
Compound	CAS Number	LOR	Unit		EM2418858-006	EM2418858-007	EM2418858-008	EM2418858-009	EM2418858-010
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
tert-Butylbenzene	98-06-6	5	µg/L	—	<5	<5	<5	—	
p-Isopropyltoluene	99-87-6	5	µg/L	—	<5	<5	<5	—	
n-Butylbenzene	104-51-8	5	µg/L	—	<5	<5	<5	—	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L	—	<1.0	<1.0	<1.0	—	
Acenaphthylene	208-96-8	1.0	µg/L	—	<1.0	<1.0	<1.0	—	
Acenaphthene	83-32-9	1.0	µg/L	—	<1.0	<1.0	<1.0	—	
Fluorene	86-73-7	1.0	µg/L	—	<1.0	<1.0	<1.0	—	
Phenanthrene	85-01-8	1.0	µg/L	—	<1.0	<1.0	<1.0	—	
Anthracene	120-12-7	1.0	µg/L	—	<1.0	<1.0	<1.0	—	
Fluoranthene	206-44-0	1.0	µg/L	—	<1.0	<1.0	<1.0	—	
Pyrene	129-00-0	1.0	µg/L	—	<1.0	<1.0	<1.0	—	
Benz(a)anthracene	56-55-3	1.0	µg/L	—	<1.0	<1.0	<1.0	—	
Chrysene	218-01-9	1.0	µg/L	—	<1.0	<1.0	<1.0	—	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	—	<1.0	<1.0	<1.0	—	
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	—	<1.0	<1.0	<1.0	—	
Benzo(a)pyrene	50-32-8	0.5	µg/L	—	<0.5	<0.5	<0.5	—	
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	—	<1.0	<1.0	<1.0	—	
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	—	<1.0	<1.0	<1.0	—	
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	—	<1.0	<1.0	<1.0	—	
^ Sum of polycyclic aromatic hydrocarbons	—	0.5	µg/L	—	<0.5	<0.5	<0.5	—	
^ Benzo(a)pyrene TEQ (zero)	—	0.5	µg/L	—	<0.5	<0.5	<0.5	—	
EP080: BTEXN									
^ Sum of BTEX	—	1	µg/L	—	<1	<1	<1	—	
MM301: E.coli & Faecal Coliforms MPN									
Escherichia coli	—	0	MPN/100mL	—	0	170	610	—	
Faecal Coliforms	—	0	MPN/100mL	—	0	220	610	—	

Page : 22 of 28
Work Order : EM2418858
Client : SYRINX ENVIRONMENTAL PL
Project : 22054

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SS01 OUT	GW01	DUPE	SB03	----
				Sampling date / time	29-Oct-2024 11:30	29-Oct-2024 10:50	29-Oct-2024 10:50	29-Oct-2024 15:15	---
Compound	CAS Number	LOR	Unit		EM2418858-028	EM2418858-027	EM2418858-028	EM2418858-029	------
					Result	Result	Result	Result	---
EA005P: pH by PC Titrator									
pH Value	---	0.01	pH Unit		7.60	7.40	---	7.78	---
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	---	1	µS/cm		288	487	---	457	---
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	---	10	mg/L		142	312	---	251	---
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	---	1	mg/L		8	<1	---	5	---
EA075: Redox Potential									
Redox Potential	---	0.1	mV		---	222	---	238	---
pH Redox	---	0.01	pH Unit		---	6.71	---	7.29	---
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	<1	---	<1	---
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	<1	---	<1	---
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		86	179	---	169	---
Total Alkalinity as CaCO3	---	1	mg/L		86	179	---	169	---
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		---	2	---	5	---
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		---	39	---	41	---
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		---	44	---	28	---
Magnesium	7439-95-4	1	mg/L		---	28	---	21	---
Sodium	7440-23-5	1	mg/L		---	24	---	35	---
Potassium	7440-09-7	1	mg/L		---	4	---	8	---
ED093T: Total Major Cations									
Calcium	7440-70-2	1	mg/L		12	39	---	24	---
Magnesium	7439-95-4	1	mg/L		10	25	---	20	---
Sodium	7440-23-5	1	mg/L		22	24	---	34	---

Page : 23 of 28
Work Order : EM2418858
Client : SYRINX ENVIRONMENTAL PL
Project : 22054

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SS01 OUT	GW01	DUPE	SB03	----
				Sampling date / time	29-Oct-2024 11:30	29-Oct-2024 10:50	29-Oct-2024 10:50	29-Oct-2024 15:15	---
Compound	CAS Number	LOR	Unit		EM2418858-026	EM2418858-027	EM2418858-028	EM2418858-029	------
					Result	Result	Result	Result	---
ED093T: Total Major Cations - Continued									
Potassium	7440-09-7	1	mg/L		2	3	---	7	---
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		---	<0.01	---	0.02	---
Arsenic	7440-38-2	0.001	mg/L		---	<0.001	---	<0.001	---
Cadmium	7440-43-9	0.0001	mg/L		---	<0.0001	---	<0.0001	---
Chromium	7440-47-3	0.001	mg/L		---	<0.001	---	<0.001	---
Copper	7440-50-8	0.001	mg/L		---	<0.001	---	0.006	---
Lead	7439-92-1	0.001	mg/L		---	<0.001	---	<0.001	---
Manganese	7439-96-5	0.001	mg/L		---	<0.001	---	0.786	---
Nickel	7440-02-0	0.001	mg/L		---	<0.001	---	0.002	---
Selenium	7782-49-2	0.01	mg/L		---	<0.01	---	<0.01	---
Zinc	7440-66-6	0.005	mg/L		---	<0.005	---	<0.005	---
Iron	7439-89-6	0.05	mg/L		---	<0.05	---	<0.05	---
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		0.30	<0.01	<0.01	0.02	---
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	<0.001	<0.001	<0.001	---
Copper	7440-50-8	0.001	mg/L		0.001	<0.001	<0.001	<0.001	---
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	---
Manganese	7439-96-5	0.001	mg/L		0.218	<0.001	<0.001	0.864	---
Nickel	7440-02-0	0.001	mg/L		0.002	0.001	0.001	0.002	---
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	---
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	---
Iron	7439-89-6	0.05	mg/L		1.54	<0.05	<0.05	1.24	---
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		---	<0.0001	---	<0.0001	---

Page : 12 of 28
Work Order : EM2418858
Client : SYRINX ENVIRONMENTAL PL
Project : 22054

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	GW03	INF	EFF1	EFF2	PRE (SB01)
				Sampling date / time	29-Oct-2024 13:20	29-Oct-2024 09:35	29-Oct-2024 10:00	29-Oct-2024 10:40	29-Oct-2024 09:45
Compound	CAS Number	LOR	Unit		EM2418858-006	EM2418858-007	EM2418858-008	EM2418858-009	EM2418858-010
					Result	Result	Result	Result	Result
MM517: Enterococci by Enterolert									
Enterococci	---	0	MPN/100mL		---	0	72	920	---
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		---	88.3	90.0	85.1	---
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	5	%		---	100	108	102	---
Toluene-D8	2037-26-5	5	%		---	104	108	106	---
4-Bromofluorobenzene	460-00-4	5	%		---	108	111	110	---
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		---	31.5	29.9	29.2	---
2-Chlorophenol-D4	93951-73-6	1.0	%		---	68.3	63.9	61.5	---
2.4.6-Tribromophenol	118-79-6	1.0	%		---	102	90.7	85.8	---
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		---	87.7	82.7	82.6	---
Anthracene-d10	1719-06-8	1.0	%		---	91.5	88.5	87.8	---
4-Terphenyl-d14	1718-51-0	1.0	%		---	88.2	82.3	85.2	---
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		---	104	110	107	---
Toluene-D8	2037-26-5	2	%		---	98.5	100	98.4	---
4-Bromofluorobenzene	460-00-4	2	%		---	107	110	108	---

Page	: 24 of 28
Work Order	: EM2418858
Client	: SYRINX ENVIRONMENTAL PL
Project	: 22054

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SS01 OUT	GW01	DUPE	SB03	----
				Sampling date / time	29-Oct-2024 11:30	29-Oct-2024 10:50	29-Oct-2024 10:50	29-Oct-2024 15:15	---
Compound	CAS Number	LOR	Unit		EM2418858-026	EM2418858-027	EM2418858-028	EM2418858-029	------
					Result	Result	Result	Result	---
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	---
EG049F: Dissolved Trivalent Chromium									
Trivalent Chromium	16065-83-1	0.01	mg/L		---	<0.01	---	<0.01	---
EG049T: Total Trivalent Chromium									
Trivalent Chromium	16065-83-1	0.01	mg/L		<0.01	<0.01	---	<0.01	---
EG050F: Dissolved Hexavalent Chromium									
Hexavalent Chromium	18540-29-9	0.01	mg/L		---	<0.01	---	<0.01	---
EG050T: Total Hexavalent Chromium									
Hexavalent Chromium	18540-29-9	0.01	mg/L		<0.01	<0.01	---	<0.01	---
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		---	<0.004	---	<0.004	---
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		0.07	0.14	---	2.88	---
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	<0.01	---	<0.01	---
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		1.20	1.95	---	0.40	---
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	---	0.01	mg/L		1.20	1.95	---	0.40	---
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	---	0.1	mg/L		0.4	0.2	---	3.8	---
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	---	0.1	mg/L		1.6	2.2	---	4.2	---
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	---	0.01	mg/L		0.02	0.09	---	<0.01	---
EK071FG: Dissolved Reactive Phosphorus as P by DA									
Dissolved Reactive Phosphorus as P	---	0.01	mg/L		<0.01	0.12	---	<0.01	---
EK071G: Reactive Phosphorus as P by discrete analyser									

Page : 25 of 28
Work Order : EM2418858
Client : SYRINX ENVIRONMENTAL PL
Project : 22054

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SS01 OUT	GW01	DUPE	SB03	----
				Sampling date / time	29-Oct-2024 11:30	29-Oct-2024 10:50	29-Oct-2024 10:50	29-Oct-2024 15:15	---
Compound	CAS Number	LOR	Unit		EM2418868-026	EM2418868-027	EM2418868-028	EM2418868-029	------
					Result	Result	Result	Result	---
EK071G: Reactive Phosphorus as P by discrete analyser - Continued									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	0.12	---	<0.01	---
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	---	1	mg/L		2	---	---	---	---
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	---	0.1	mg/L		---	4.6	---	8.6	---
EP026SP: Chemical Oxygen Demand (Spectrophotometric)									
Chemical Oxygen Demand	---	10	mg/L		<10	<10	---	16	---
EP030: Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	---	2	mg/L		<2	---	---	---	---
EP066: Polychlorinated Biphenyls (PCB)									
^ Total Polychlorinated biphenyls	---	1	µg/L		---	---	---	<1	---
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	1	µg/L		---	---	---	<1	---
Toluene	108-88-3	2	µg/L		---	---	---	<2	---
Ethylbenzene	100-41-4	2	µg/L		---	---	---	<2	---
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		---	---	---	<2	---
Styrene	100-42-5	5	µg/L		---	---	---	<5	---
ortho-Xylene	95-47-6	2	µg/L		---	---	---	<2	---
Isopropylbenzene	98-82-8	5	µg/L		---	---	---	<5	---
n-Propylbenzene	103-65-1	5	µg/L		---	---	---	<5	---
1.3.5-Trimethylbenzene	108-67-8	5	µg/L		---	---	---	<5	---
sec-Butylbenzene	135-98-8	5	µg/L		---	---	---	<5	---
1.2.4-Trimethylbenzene	95-63-6	5	µg/L		---	---	---	<5	---
tert-Butylbenzene	98-06-6	5	µg/L		---	---	---	<5	---
p-Isopropyltoluene	99-87-6	5	µg/L		---	---	---	<5	---
n-Butylbenzene	104-51-8	5	µg/L		---	---	---	<5	---
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									

APPENDIX 3. Tabulated Field And Lab Data

Sample ID	Sample Date	Lab ID	PHYSICAL PARAMETERS																
			ELECTRICAL CONDUCTIVITY	DO (mg/L)	DO (%)	TEMPERATURE	Eh (199 mV offset)	REDOX POTENTIAL (No offset)	REDOX (Lab)	pH	pH Redox	SALINITY	TOTAL DISSOLVED SOLIDS	TOTAL SUSPENDED SOLIDS	CHEMICAL OXYGEN DEMAND	TURBIDITY	DISSOLVED ORGANIC CARBON	TOTAL ORGANIC CARBON
			µS/cm	mg/L	%	°C	mV	mV		pH units	pH units	PPT	mg/L	mg/L	mg/L	NTU	mg/L	mg/L
EFF1	29-October-2024	EM2418858008	**444.00**	**7.20**	74.40	13.50	----	**201.00**	----	**7.63**	**7.15**	0.19	**251.00**	**2.00**	**15.00**	----	----	**3.00**
EFF2	29-October-2024	EM2418858009	**428.00**	**10.80**	116.70	12.60	----	**238.00**	----	**7.86**	**7.95**	0.18	**242.00**	**5.00**	**18.00**	----	----	**4.00**
GW01	29-October-2024	EM2418858027	**467.00**	**4.50**	26.20	15.20	----	**222.00**	----	**7.40**	**6.71**	0.20	**312.00**	<1	<10	----	----	----
DUPE	29-October-2024	EM2418858028	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
INF	29-October-2024	EM2418858007	**492.00**	**5.40**	55.10	14.70	----	**167.00**	----	**7.05**	**6.36**	0.24	**293.00**	**32.00**	<10	----	----	<1
PRE (SB01)	29-October-2024	EM2418858010	**499.00**		70.00	14.70	----	----	----	**7.14**		0.23	**188.00**	**27.00**	<10	----	----	<1
SB03	29-October-2024	EM2418858029	**457.00**	**8.50**	----	----	----	**238.00**	----	**7.78**	**7.29**	----	**251.00**	**5.00**	**15.00**	----	----	----
SF (SB03)	29-October-2024	EM2418858021	**460.00**	----	93.00	18.40	----	----	----	**7.88**	----	0.19	**266.00**	**1.00**	**16.00**	----	----	**3.00**
SSF (SB05)	29-October-2024	EM2418858022	**446.00**	----	51.30	18.70	----	----	----	**7.84**	----	0.19	**232.00**	**4.00**	**14.00**	----	----	**2.00**

INORGANICS

ALKALINITY (TOTAL)	ALKALINITY (BICARBONATE)	ALKALINITY (CARBONATE)	ALKALINITY (HYDROXIDE)	HARDNESS as CaCO3	CHLORIDE	SULFATE (AS SO4 -)	CYANIDE TOTAL	TOTAL ANIONS	TOTAL CATIONS	IONIC BALANCE
mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	%
164.00	**164.00**	<1	<1	----	**43.00**	**4.00**	<0.004	----	----	----
152.00	**152.00**	<1	<1	----	**40.00**	**4.00**	<0.004	----	----	----
179.00	**179.00**	<1	<1	----	**39.00**	**2.00**	<0.004	----	----	----
----	----	----	----	----	----	----	----	----	----	----
178.00	**178.00**	<1	<1	----	**46.00**	**11.00**	<0.004	----	----	----
192.00	**192.00**	<1	<1	----	----	----	----	----	----	----
169.00	**169.00**	<1	<1	----	**41.00**	**5.00**	<0.004	----	----	----
170.00	**170.00**	<1	<1	----	----	----	----	----	----	----
168.00	**168.00**	<1	<1	----	----	----	----	----	----	----

DISSOLVED MAJOR CATIONS				TOTAL MAJOR CATIONS				NUTRIENTS				
CALCIUM	MAGNESIUM	SODIUM	POTASSIUM	CALCIUM	MAGNESIUM	SODIUM	POTASSIUM	AMMONIA (AS N)	NITRATE (AS N)	NITRITE (AS N)	NITRITE + NITRATE	TOTAL KJELDAHL NITROGEN AS N
mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
26.00	21.00	36.00	8.00	24.00	21.00	36.00	7.00	1.90	0.35	<0.01	0.35	2.20
24.00	21.00	36.00	8.00	23.00	21.00	36.00	7.00	0.16	1.18	0.05	1.23	0.70
44.00	26.00	24.00	4.00	39.00	25.00	24.00	3.00	0.14	1.95	<0.01	1.95	0.20
----	----	----	----	----	----	----	----	----	----	----	----	----
24.00	21.00	35.00	7.00	23.00	20.00	35.00	7.00	6.73	0.23	<0.01	0.23	7.50
----	----	----	----	25.00	21.00	34.00	7.00	7.19	0.29	<0.01	0.29	7.10
26.00	21.00	35.00	8.00	24.00	20.00	34.00	7.00	2.96	0.40	<0.01	0.40	3.80
----	----	----	----	24.00	20.00	33.00	7.00	3.55	0.40	<0.01	0.40	3.70
----	----	----	----	24.00	20.00	35.00	7.00	2.05	0.35	<0.01	0.35	2.40

				TOTAL METALS								
ORGANIC NITROGEN (calc)	NITROGEN (TOTAL)	PHOSPHORUS (TOTAL)	PHOSPHORUS DISSOLVED REACTIVE (AS P)	TOTAL ALUMINIUM	TOTAL ARSENIC	TOTAL CADMIUM	TOTAL CHROMIUM	TOTAL COPPER	TOTAL COPPER ORC-ICP-MS	TOTAL IRON	TOTAL LEAD	TOTAL MANGANESE
mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
----	2.60	<0.01	0.02	<0.01	<0.001	<0.0001	<0.001	<0.001	----	0.82	<0.001	1.22
----	1.90	0.05	<0.01	0.03	<0.001	<0.0001	<0.001	<0.001	----	0.51	<0.001	0.14
----	2.20	0.09	0.12	<0.01	<0.001	<0.0001	<0.001	<0.001	----	<0.05	<0.001	<0.001
----	----	----	----	<0.01	<0.001	<0.0001	<0.001	<0.001	----	<0.05	<0.001	<0.001
----	7.70	0.05	<0.01	<0.01	<0.001	<0.0001	<0.001	<0.001	----	14.70	<0.001	3.98
----	7.40	<0.01	<0.01	<0.01	<0.001	<0.0001	<0.001	<0.001	----	9.28	<0.001	3.51
----	4.20	<0.01	<0.01	0.02	<0.001	<0.0001	<0.001	<0.001	----	1.24	<0.001	0.86
----	4.10	<0.01	<0.01	0.01	<0.001	<0.0001	<0.001	<0.001	----	1.34	<0.001	0.87
----	2.80	<0.01	<0.01	0.02	<0.001	<0.0001	<0.001	<0.001	----	1.06	<0.001	1.29

					DISSOLVED METALS							
TOTAL MERCURY	TOTAL NICKEL	TOTAL SELENIUM	TOTAL TIN	TOTAL ZINC	DISSOLVED ALUMINIUM	DISSOLVED ARSENIC	DISSOLVED CADMIUM	DISSOLVED TRIVALENT CHROMIUM	DISSOLVED HEXAVALENT CHROMIUM	DISSOLVED CHROMIUM	DISSOLVED COPPER	DISSOLVED COPPER ORC-ICP-MS
mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
<0.0001	0.01	<0.01	----	<0.005	<0.01	<0.001	<0.0001	<0.01	<0.01	<0.001	<0.001	----
<0.0001	0.00	<0.01	----	<0.005	0.01	<0.001	<0.0001	<0.01	<0.01	<0.001	<0.001	----
<0.0001	0.00	<0.01	----	<0.005	<0.01	<0.001	<0.0001	<0.01	<0.01	<0.001	<0.001	----
<0.0001	0.00	<0.01	----	<0.005	----	----	----	----	----	----	----	----
<0.0001	0.01	<0.01	----	<0.005	<0.01	<0.001	<0.0001	<0.01	<0.01	<0.001	0.00	----
<0.0001	0.01	<0.01	----	<0.005	----	----	----	----	----	----	----	----
<0.0001	0.00	<0.01	----	<0.005	0.02	<0.001	<0.0001	<0.01	<0.01	<0.001	0.01	----
<0.0001	0.00	<0.01	----	<0.005	----	----	----	----	----	----	----	----
<0.0001	0.01	<0.01	----	<0.005	----	----	----	----	----	----	----	----

								MICROBIOLOGY		
DISSOLVED IRON	DISSOLVED LEAD	DISSOLVED MANGANESE	DISSOLVED MERCURY	DISSOLVED NICKEL	DISSOLVED SELENIUM	DISSOLVED TIN	DISSOLVED ZINC	TOTAL COLIFORMS	ENTEROCOCCI	E. COLI
mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	CFU / 100mL	orgs /100mL	CFU / 100mL
0.05	<0.001	**1.20**	<0.0001	**0.01**	<0.01	**----**	<0.005	**220.00**	**72.00**	**170.00**
<0.05	<0.001	**0.13**	<0.0001	**0.00**	<0.01	**----**	<0.005	**610.00**	**920.00**	**610.00**
<0.05	<0.001	<0.001	<0.0001	<0.001	<0.01	**----**	<0.005	**----**	**----**	**----**
----	**----**	**----**	**----**	**----**	**----**	**----**	**----**	**----**	**----**	**----**
17.10	<0.001	**4.30**	<0.0001	**0.01**	<0.01	**----**	**0.01**	**0.00**	**0.00**	**0.00**
----	**----**	**----**	**----**	**----**	**----**	**----**	**----**	**----**	**----**	**----**
	<0.001	**0.80**	<0.0001	**0.00**	<0.01	**----**	<0.005	**160.00**	**27.00**	**120.00**
----	**----**	**----**	**----**	**----**	**----**	**----**	**----**	**----**	**----**	**----**
----	**----**	**----**	**----**	**----**	**----**	**----**	**----**	**----**	**----**	**----**

Polychlorinated Biphenyls (as Aroclors)								Polynuclear Aromatic Hydrocarbons											
Total Polychlorinated biphenyls	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b+j)fluoranthene	Benzo(k)fluoranthene
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
<1	----	----	----	----	----	----	----	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
<1	----	----	----	----	----	----	----	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
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<1	----	----	----	----	----	----	----	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
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<1	----	----	----	----	----	----	----	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
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						BTEXN							
Benzo(a)pyrene	Indeno(1.2.3.cd)pyrene	Dibenz(a.h)anthracene	Benzo(g.h.i)perylene	Sum of polycyclic aromatic hydrocarbons	Benzo(a)pyrene TEQ (zero)	Benzene	Toluene	Ethylbenzene	meta- & para-Xylene	Styrene	ortho-Xylene	n-Propylbenzene	1.3.5-Trimethylbenzene
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<1	<2	<2	<2	<5	<2	<5	<5
<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<1	<2	<2	<2	<5	<2	<5	<5
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<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<1	<2	<2	<2	<5	<2	<5	<5
----	----	----	----	----	----	----	----	----	----	----	----	----	----
<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<1	<2	<2	<2	<5	<2	<5	<5
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sec-Butylbenzene	1.2.4-Trimethylbenzene	tert-Butylbenzene	p-Isopropyltoluene	n-Butylbenzene	Total Xylenes	Sum of BTEX	Naphthalene
					µg/L	µg/L	µg/L
<5	<5	<5	<5	<5	<5	----	<1
<5	<5	<5	<5	<5	<5	----	<1
----	----	----	----	----	----	----	----
----	----	----	----	----	----	----	
<5	<5	<5	<5	<5	<5	----	<1
----	----	----	----	----	----	----	----
<5	<5	<5	<5	<5	<5	----	<1
----	----	----	----	----	----	----	----
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